



JOINT SECOND BIENNIAL TRANSPARENCY REPORT and NINTH NATIONAL COMMUNICATION OF TÜRKİYE

under the United Nations Framework Convention
on Climate Change and the Paris Agreement

ANKARA 2026



JOINT SECOND BIENNIAL TRANSPARENCY REPORT and NINTH NATIONAL COMMUNICATION OF TÜRKİYE

under the United Nations Framework Convention
on Climate Change and the Paris Agreement

ANKARA 2026



EXECUTIVE SUMMARY

This document contains Türkiye's Joint **Second Biennial Transparency Report (BTR2)** submitted under Article 13 of the Paris Agreement and prepared in accordance with Decision 18/CMA.1 and the **Ninth National Communication (9NC)** submitted together with the BTR as an annex, is reported quadrennially in accordance with Article 12 of UNFCCC, Decision 17/CP.8, and Decision 1/CP.16. It provides updated information on Türkiye's national greenhouse gas (GHG) inventory, progress toward its Nationally Determined Contribution (NDC), climate change policies and measures, climate change impacts and adaptation, and the finance, technology and capacity-building support Türkiye needs and has received.

The Report reflects a substantially strengthened institutional and legal foundation for climate action since Türkiye's previous reporting cycle — most notably the entry into force of **Climate Law No. 7552** in 2025, Türkiye's first comprehensive framework climate legislation, which establishes the legal basis for a national Emissions Trading System, a Green Taxonomy, and mandatory provincial climate planning. It also details Türkiye's **Second NDC (NDC 3.0)**, submitted on 9 November 2025, and the country's long-term objective of reaching **net-zero emissions by 2053**.

Türkiye submitted its **First Biennial Transparency Report (BTR1)** in November 2024, covering GHG inventory data up to 2022 and reporting progress against its first NDC. BTR2 builds on BTR1 and responds to the findings of its technical expert review, expanding information coverage through 2026 and incorporating GHG inventory data up to and including **2024**, an updated and more ambitious NDC, and a considerably more developed policy, legal and institutional framework for climate governance.

TURKIYE'S NATIONALLY DETERMINED CONTRIBUTION

Türkiye submitted its Intended Nationally Determined Contribution (INDC) in 2015, formalized it as its first NDC in 2022, and updated it in 2023 (**NDC 2.0**) to commit to a 41% reduction in GHG emissions by 2030 compared to the Business-as-Usual (BAU) scenario. On **9 November 2025**, Türkiye submitted its Second NDC (**NDC 3.0**), extending this ambition: Türkiye now commits to limiting its total GHG emissions to **643 Mt CO₂ eq. by 2035**, a reduction of **466 Mt CO₂ eq.** from the projected 2035 BAU level of around **1,109 Mt CO₂ eq.** The reference year for the target is 2018.

NDC 3.0 is economy-wide, covering all IPCC sectors — energy, industry, transport, agriculture, buildings, waste and LULUCF — and all relevant greenhouse gases. It sets Türkiye firmly on the pathway to its long-term objective of net-zero emissions by 2053. The target is implemented through the Climate Change Mitigation Strategy and Action Plan (CCMSAP) and the Climate Change Adaptation Strategy and Action Plan (CCASAP), and was informed by the outcomes of the first Global Stocktake.

Türkiye considers its NDC both fair and highly ambitious in light of its national circumstances. Although Türkiye's per capita income has grown substantially, reaching **USD 15,325** in 2024, it remains below the level of many developed countries, while its GHG emissions have continued to rise, reaching **584.5 Mt CO₂ eq. (6.8 t CO₂ eq. per capita)** in the same year. Türkiye's commitment to the most ambitious mitigation target feasible reflects the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC), and its continued support for the global goal of limiting the temperature increase to 1.5°C.



NATIONAL CIRCUMSTANCES

Türkiye is a presidential republic with 17 ministries. Between 1990 and 2024, the country underwent rapid economic and demographic transformation: **GDP grew by 810%** to USD 1,358 billion, and **GDP per capita rose by 477%** to USD 15,325. Population increased by 52%, from 56.47 million to **85.66 million**, accompanied by a marked shift from rural to urban living — urban population grew by 140% while rural population fell by 76%.

This growth in population and economic output has driven a corresponding rise in energy demand: total primary energy supply increased by 215% to **165.2 Mtoe**, and per capita electricity consumption rose by 398% to **4,128 kWh**. These trends have been the principal drivers behind a **155% increase** in Türkiye's total GHG emissions over the same period.

Türkiye's geography spans temperate and subtropical zones with a mountainous, coastal landscape, placing it within the **Mediterranean Basin** — a region identified by the IPCC as one of the most climate-vulnerable in the world. Its economy is shaped by an energy sector still heavily reliant on imported fossil fuels, an industrial base led by cement, iron and steel, and glass production, extensive agricultural land, and an expanding transport and construction sector — all central to both its emissions profile and its mitigation and adaptation priorities.

INVENTORY OF GREENHOUSE GAS EMISSIONS AND SINKS

According to Türkiye's latest national GHG inventory, submitted to the UNFCCC in 2026, total GHG emissions in 2024 were **584.5 Mt CO₂ eq.** excluding LULUCF and **517.4 Mt CO₂ eq.** including LULUCF — an increase of around 218% (including LULUCF) relative to 1990. The **energy sector** remained by far the largest source, accounting for **71.8%** of emissions (419.9 Mt CO₂ eq.), followed by industrial processes and product use (IPPU, **12.9%**), **agriculture (12.6%)** and **waste (2.6%)**, while the LULUCF sector remained a net sink.

Within the energy sector, energy industries were the largest contributor (**38.4%** of energy-sector emissions), followed by transport (24.5%), other sectors (18.4%) and manufacturing industries and construction (15.9%). In IPPU, cement and iron and steel production were the leading sources, while F-gases accounted for 12.8% of IPPU emissions. In agriculture, enteric fermentation (51.6%) and agricultural soils (32.2%) dominated the sector's emissions.

Emissions from all sectors except LULUCF have increased since 1990 — led by IPPU (**+228%**) and energy (+192%) — while Türkiye's GHG emissions intensity of GDP has fallen significantly over the same period, reflecting a gradual decoupling of economic growth from emissions growth even as total and per-capita emissions continue to rise.

POLICIES AND MEASURES

Türkiye became a Party to the UNFCCC in 2004, ratified the Kyoto Protocol in 2009 and the Paris Agreement in 2021. In 2025, it adopted **Climate Law No. 7552** — its first comprehensive framework climate legislation — establishing the legal basis for a national **Emissions Trading System (ETS)**, MRV and emission-permit obligations, a Green Taxonomy, and mandatory Provincial Climate Change Action Plans across all 81 provinces. Climate policy is coordinated by the Climate Change and Adaptation Coordination Board (CCACB), chaired by the Minister of Environment, Urbanization and Climate Change, and implemented by the Directorate of Climate Change (DoCC) together with sectoral ministries.



Türkiye's mitigation action is organized around the **Climate Change Mitigation Strategy and Action Plan (CCMSAP, 2024–2030)**, which sets out **49 strategies and 260 actions** across energy, industry, buildings, transport, agriculture, waste and LULUCF, and the Twelfth Development Plan (2024–2028), which embeds climate objectives within national development planning. In 2024, Türkiye set a combined target of **120 GW** of installed solar and wind capacity by 2035, alongside continued investment in grid infrastructure, energy efficiency and transport electrification.

Policies span every major emitting sector: renewable energy deployment through the Renewable Energy Sources Support Mechanism (YEKDEM) and Renewable Energy Resource Areas (YEKA); energy efficiency in buildings and industry; expansion of the railway network and electrification of road transport; sustainable agricultural practices and fertilizer management; landfill gas capture in the waste sector; and continued afforestation and forest protection.

PROGRESS TRACKING FOR ACHIEVING NDC AND PROJECTIONS

Progress toward NDC 3.0 is tracked using **net national GHG emissions relative to the Business-as-Usual (BAU) scenario** as the primary indicator, in accordance with Article 4 of the Paris Agreement and Decision 18/CMA.1. Under the BAU (Without Measures) scenario — projected using the CLEWs/OSeMOSYS modelling framework — total GHG emissions, including LULUCF, would reach approximately **1,109 Mt CO₂ eq. by 2035** in the absence of measures introduced after 2018. Türkiye's NDC 3.0 target of 643 Mt CO₂ eq. represents a 466 Mt CO₂ eq. reduction from this reference pathway.

The With-Measures (WM) scenario incorporates the mitigation impact of Türkiye's current policy framework, including the Climate Law, the national ETS and sectoral policies and measures. This report also responds directly to the technical expert review of Türkiye's first BTR, providing clearer institutional arrangements for monitoring progress, distinguishing the formal 2035 NDC target from Türkiye's longer-term 2053 net-zero visions, and strengthening the transparent link between policies and measures and their expected mitigation impact.

CLIMATE CHANGE IMPACTS AND ADAPTATION

Türkiye is already experiencing measurable impacts of climate change. The long-term mean annual temperature has risen from **13.2°C (1971–2000) to 13.9°C (1991–2020)**, and **2025 was the fifth-warmest year on record, at 15.1°C, 1.2°C above the recent normal**. Extreme weather events, including storms, floods and droughts, have become more frequent, and precipitation patterns are projected to become increasingly uneven, with drying trends expected across western and southern Türkiye alongside potential increases in parts of the north and east.

Türkiye is also updating its scientific basis for adaptation planning through new high-resolution regional climate projections. **Six CMIP6** global climate models have been dynamically downscaled to **3 km resolution under the SSP2-4.5 and SSP5-8.5 scenarios**. These projections provide a stronger basis for regional, provincial and sectoral vulnerability and risk assessments.

Adaptation is coordinated by the Ministry of Environment, Urbanization and Climate Change through the Directorate of Climate Change and the Ministry of Agriculture and Forestry, together with sectoral institutions including the Directorate General of Water Management (DGWM), the General Directorate of State Hydraulic Works (DSI), the Disaster and Emergency Management Presidency (AFAD), the Turkish State Meteorological Service (TSMS). The **National Climate Change Adaptation Strategy and Action Plan (2024–2030)** addresses priority sectors including agriculture and food security, biodiversity, water resources management, tourism, cultural heritage,



industry, urban areas, social development, public health, transportation, communication, energy, disaster risk reduction, and cross-cutting issues.

Türkiye is moving toward mandatory **Local Climate Change Action Plans** across all 81 provinces, with preparations under way in six pilot provinces. The updated vulnerability and risk assessment framework is expected to support 12 NUTS-1 regions, six pilot provinces and 11 priority sectors, enabling more localized identification of climate hazards, exposure, sensitivity, adaptive capacity and priority adaptation needs.

Early warning and disaster risk reduction systems also form an important part of Türkiye's adaptation capacity. Meteorological warnings, flood and drought early warning systems, and disaster risk information tools supported by TSMS, DSI, DGWM and AFAD include FFGS, MEUS, TATUS, TAMBIS, TEUS and ARAS. These systems support monitoring, timely warning, preparedness, hazard mapping and risk assessment for climate-related hazards.

School-based climate education initiatives have also expanded significantly, with over **170,000 teachers and 1.1 million students** trained on environmental awareness and climate change to date. Continued efforts are needed to strengthen local-level adaptive capacity, mobilize adequate adaptation financing, maintain early warning and monitoring systems, and ensure coordinated governance across national, provincial and municipal levels as climate risks intensify.

SUPPORT NEEDED

Türkiye has established a comprehensive climate governance framework to support the implementation of the Paris Agreement and its long-term climate objectives. Since ratification of Paris Agreement in 2021, the country has strengthened institutional arrangements, integrated climate considerations into national development planning, and advanced policies supporting mitigation, adaptation, green transformation and a just transition. The adoption of the Climate Law in 2025 provides the legal foundation for Türkiye's climate governance architecture, including the national ETS, green taxonomy, climate planning frameworks, and enhanced monitoring and reporting mechanisms. Complementary strategies, including the Second NDC, LTS, Development Plan and sectoral strategies, establish a coordinated pathway toward a climate-resilient and net-zero economy by 2053.

Achieving these objectives will require substantial investment across all sectors of the economy. Although, Türkiye has contributed a limited share of historical global greenhouse gas emissions, it has financed most climate investments through domestic public and private resources, significant additional financing will be needed to accelerate the low-carbon transition and strengthen climate resilience. The largest investment requirements are concentrated in the energy sector, including renewable energy, electricity networks, energy storage, energy efficiency, grid modernization and emerging technologies. Additional investments are also required for industrial decarbonization, sustainable transport, buildings, circular economy, waste management, nature-based solutions and climate adaptation. The Twelfth Development Plan estimates that achieving the 2053 net-zero target will require additional annual investments equivalent to at least 1.7 percent of Gross National Income across the energy, buildings, industry, transport, agriculture and forestry sectors. Of this amount, approximately 1 percentage point is expected to be mobilized from the private sector and 0.7 percentage points from the public sector.

The energy sector highlights the scale of Türkiye's climate finance needs, representing both the



largest source of emissions and the most critical investment area for achieving the country's low-carbon transition. Achieving the country's 2053 net-zero target will require substantial investments in renewable energy deployment, electricity transmission and distribution infrastructure, energy storage, energy efficiency, grid modernization, and emerging technologies such as green hydrogen. Current estimates indicate investment needs of USD 108 billion to expand renewable energy capacity by 2035, USD 30 billion for transmission network modernization, USD 20.2 billion for energy efficiency measures through 2030, and approximately USD 526 billion in cumulative energy-sector investments through 2055 under the net-zero pathway.

Technology development and transfer will be essential for achieving Türkiye's climate objectives. National strategies prioritize clean technologies, including renewable energy, hydrogen, CCUS, battery and energy storage systems, digital solutions, sustainable transport, climate-smart agriculture, and circular economy applications. While Türkiye has strengthened domestic research, innovation, and industrial capabilities, enhanced international cooperation on technology transfer, joint research, demonstration projects, technical assistance, and access to global innovation networks will be important to accelerate the deployment and commercialization of climate technologies.

Capacity-building remains a key enabler of Türkiye's climate transition. Continued efforts are needed to strengthen institutional coordination, technical expertise, and implementation capacity across public institutions, local administrations, financial institutions, the private sector, and Small and Medium-Sized Enterprises (SMEs). Priority areas include climate finance mobilization, carbon market implementation, project preparation, workforce development, green skills, and climate education.

RESEARCH AND SYSTEMATIC OBSERVATION

Türkiye's climate-related research and innovation agenda is shaped by the complementary roles of the Ministry of Industry and Technology, the Ministry of Environment, Urbanisation and Climate Change, the Ministry of Energy and Natural Resources, and the Ministry of Agriculture and Forestry. Within their respective mandates, these institutions guide industrial decarbonisation and technology development, climate planning and evidence generation, the transition to clean and low-carbon energy systems, and the development of climate-resilient agricultural production, food security, and sustainable soil and water management.

The overarching policy direction is established by the Twelfth Development Plan and further articulated for industrial and technological transformation through the Industry and Technology Strategy for 2030. At the sectoral level, the Türkiye National Energy Plan sets out a quantified pathway for the transformation of the energy system. In agriculture and water management, sectoral planning instruments, including the Türkiye Agricultural Drought Strategy and Action Plan, are complemented by priorities identified through the Fourth Agriculture and Forestry Council in 2025, together guiding climate-resilient production and the sustainable and efficient management of soil and water resources. These higher-level and sectoral directions are translated into more detailed technological needs, development pathways, and time-bound targets through participatory technology roadmapping and priority-setting exercises involving relevant public institutions, industry, academia, research organizations, and other stakeholders.

Implementation is supported by a differentiated research and innovation ecosystem comprising TÜBİTAK, TENMAK, TAGEM, universities, public research institutions, and specialized research infrastructures. Within this ecosystem, TÜBİTAK plays a central role through dedicated green-



transformation calls and by prioritizing climate-related projects across its broader support programmes. Between 2002 and 2026, TÜBİTAK allocated TRY 31.5 billion, at constant 2026 prices, to 4,291 projects and supported 4,318 researchers and young participants in this field. Funding, public investment, collaborative R&D, and commercialization mechanisms support technology development across a broad range of fields, including renewable and low-carbon energy, hydrogen and energy storage, industrial decarbonization and circular economy solutions, sustainable transport, smart environmental technologies, climate-resilient and digital agriculture, water-efficient irrigation, soil and water monitoring, and climate adaptation.

Complementing these research and innovation capabilities, systematic observation is underpinned by nationwide meteorological, hydrological, and climatological monitoring systems operated primarily by the Turkish State Meteorological Service and the General Directorate of State Hydraulic Works.



TABLE OF CONTENTS

EXECUTIVE SUMMARY IV

TÜRKİYE'S NATIONALLY DETERMINED CONTRIBUTION	IV
NATIONAL CIRCUMSTANCES	V
INVENTORY OF GREENHOUSE GAS EMISSIONS AND SINKS	V
POLICIES AND MEASURES	V
PROGRESS TRACKING FOR ACHIEVING NDC AND PROJECTIONS	VI
CLIMATE CHANGE IMPACTS AND ADAPTATION	VI
SUPPORT NEEDED	VII
RESEARCH AND SYSTEMATIC OBSERVATION	VIII
TABLE OF CONTENTS.....	X
LIST OF FIGURES	XV
LIST OF TABLES.....	XVII
ABBREVIATIONS	XIX

SECOND BIENNIAL TRANSPARENCY REPORT 24

1 TÜRKİYE'S NATIONALLY DETERMINED CONTRIBUTION 24

1.1 DESCRIPTION OF THE NATIONALLY DETERMINED CONTRIBUTION 25

1.2 INDICATORS OF THE NATIONALLY DETERMINED CONTRIBUTION 27

1.2.1 Description of Indicators 27

1.2.2 Methodologies and Accounting Approaches 30

2 NATIONAL CIRCUMSTANCES 32

2.1 GOVERNMENT STRUCTURE..... 34

2.2 POPULATION PROFILE 35

2.3 GEOGRAPHICAL PROFILE..... 36

2.4 CLIMATE PROFILE 37

2.4.1 Temperature 37

2.4.2 Precipitation..... 38

2.4.3 Extreme Weather Events 40

2.5 ECONOMIC PROFILE 41

2.6 ENERGY INDUSTRIES..... 44

2.6.1 Primary Energy 45

2.6.2 Waste Heat 50

2.6.3 Electricity Sector..... 51

2.6.4 Energy Efficiency 53

2.7 BUILDING STOCKS AND URBANIZATION..... 53

2.8 MANUFACTURING INDUSTRIES AND CONSTRUCTION..... 55

2.9 TRANSPORTATION 56

2.10 WASTE 59

2.11 AGRICULTURE..... 62

2.11.1 Agricultural Lands..... 63

2.11.2 Livestock 64

2.11.3 Value Added 66

2.11.4 Organic Agriculture 66

2.11.5 Agricultural Soils 66



2.12 FORESTRY	67
2.13 TOURISM	70
2.14 WATER RESOURCES	72
2.15 CLIMATE FINANCE FRAMEWORK	73
2.16 TÜRKİYE'S SPECIAL CIRCUMSTANCES	74
2.17 FLEXIBILITY PROVISIONS.....	78
3 INVENTORY OF GREENHOUSE GAS EMISSIONS AND SINKS	80
3.1 GREENHOUSE GAS EMISSION TRENDS.....	80
3.1.1 General Factors Underlying Emission Trends.....	82
3.1.2 GHG Emission Trends By Gas	83
3.1.3 Indirect GHG Emissions	85
3.2 GREENHOUSE GAS EMISSIONS BY SECTOR.....	87
3.2.1 Energy.....	87
3.2.2 Industrial Processes And Product Use.....	98
3.2.3 Agriculture	101
3.2.4 Land Use Land Use Change And Forestry (LULUCF).....	103
3.2.5 Waste	105
3.3 NATIONAL INVENTORY SYSTEM.....	107
3.3.1 Institutional, Legal and Procedural Arrangements	107
3.3.2 Quality Assurance and Quality Control (QA/QC) and Verification.....	110
3.3.3 Reporting under Article 3, Paragraphs 3 and 4, of the Kyoto Protocol	111
3.3.4 National Registry	111
4 POLICIES AND MEASURES	112
4.1 INSTITUTIONAL, LEGISLATIVE AND POLICY FRAMEWORKS AND MONITORING AND EVALUATION APPROACH	112
4.1.1 Policymaking and Institutional Framework.....	112
4.1.2 Legislative Framework.....	115
4.1.3 Main Policy Documents	115
4.1.4 Monitoring and Evaluation of Policies and Measures	117
4.2 POLICIES AND MEASURES AND THEIR EFFECTS.....	118
4.2.1 Cross-Cutting Policies and Measures.....	119
4.2.2 Energy Industries	131
4.2.3 Buildings.....	144
4.2.4 Transport.....	152
4.2.5 Industry, Industrial Processes and Product Use.....	163
4.2.6 Agriculture.....	170
4.2.7 Land Use, Land Use Change and Forestry (LULUCF).....	179
4.2.8 Waste.....	186
4.2.9 Policies and Measures in Accordance With Article 2	192
4.2.10 Policies and Measures No Longer in Place.....	196
5 PROGRESS TRACKING FOR ACHIEVING NDC AND PROJECTIONS	197
5.1 NATIONAL CIRCUMSTANCES AND INSTITUTIONAL ARRANGEMENTS RELATED TO NDC IMPLEMENTATION.....	197
5.1.1 Institutional Arrangements	197
5.1.2 Key Policy and Legal Instruments Underpinning NDC Implementation.....	198



5.2 DESCRIPTION OF THE SECOND NDC (3.0)	200
5.3 PROJECTIONS OF GHG EMISSIONS AND REMOVALS	201
5.3.1 Business-as-Usual Scenario (Without Measures)	202
5.3.2 Mitigation Scenario (With Measures)	203
5.3.3 Progress Made Towards the NDC	205
6 CLIMATE CHANGE IMPACTS AND ADAPTATION	209
6.1 NATIONAL CIRCUMSTANCES, INSTITUTIONAL ARRANGEMENTS, AND LEGAL FRAMEWORKS	209
6.1.1 National Circumstances	209
6.1.2 Institutional Arrangements	209
6.1.3 Legal Frameworks	212
6.2 IMPACTS, RISKS AND VULNERABILITIES	213
6.2.1 Impacts	213
6.2.2 Vulnerability and Risk Assessment	219
6.3 ADAPTATION PRIORITIES AND BARRIERS	226
6.3.1 Domestic Adaptation Priorities And Progress	226
6.3.2 Adaptation Challenges And Gaps	240
6.4 ADAPTATION STRATEGIES, POLICIES, PLANS, GOALS, AND ACTIONS	243
6.4.1 National Strategic and Policy Framework	243
6.4.2 Water Resources Management and Water Efficiency	244
6.4.3 Agriculture, Land, Forests, and Ecosystems	245
6.4.4 Coastal Areas and Integrated Coastal Zone Management	245
6.4.5 Disaster Risk Reduction, Early Warning, And Risk-Informed Recovery	246
6.4.6 Spatial Planning, Local Adaptation, and Capacity Development	246
6.4.7 Sectoral Integration and Implementation Support	247
6.4.8 Adaptation Goals and Objectives	247
6.4.9 Integration of Science, Gender Perspectives, Nature-Based Solutions, and Stakeholder Engagement	248
6.5 PROGRESS ON IMPLEMENTATION OF ADAPTATION	249
6.5.1 Progress in the Implementation of Adaptation Actions	250
6.5.2 Progress in Planning, Policy Development, and NDC Implementation	250
6.5.3 Coordination, Capacity-Building, and Stakeholder Engagement	251
6.6 MONITORING AND EVALUATION OF ADAPTATION ACTIONS AND PROCESSES	252
6.6.1 National Monitoring and Evaluation Framework	252
6.6.2 Sectoral, Basin-Based and Local Monitoring Systems	253
6.6.3 Achievements, Effectiveness, Learning and Further Development	253
6.7 INFORMATION RELATED TO AVERTING, MINIMIZING AND ADDRESSING LOSS AND DAMAGE ASSOCIATED WITH CLIMATE CHANGE IMPACTS	254
6.8 COOPERATION, GOOD PRACTICES, EXPERIENCE, AND LESSONS LEARNED	255
6.8.1 Information Sharing and Cooperation	255
6.8.2 Good Practices and Lessons Learned	255
7 SUPPORT NEEDED AND RECEIVED	256
7.1 INSTITUTIONAL ARRANGEMENTS AND COUNTRY-DRIVEN STRATEGIES	256
7.1.1 Institutional Arrangements	256
7.1.2 Climate Finance Governance	257



7.1.3 Country-Driven Climate Strategies	259
7.1.4 Role of Local Administrations, Private Sector and Other Stakeholders	263
7.2 UNDERLYING ASSUMPTIONS, DEFINITIONS AND METHODOLOGIES	264
7.3 INFORMATION ON FINANCIAL SUPPORT NEEDED	265
7.3.1 Economy-Wide Climate Investment Needs.....	267
7.3.2 Mitigation Investment Needs	267
7.3.3 Adaptation Investment NeedS.....	272
7.3.4 Climate Finance Gap and Priority Areas for International Support	274
7.4 INFORMATION ON FINANCIAL SUPPORT RECEIVED.....	274
7.5 INFORMATION ON TECHNOLOGY DEVELOPMENT AND TRANSFER SUPPORT NEEDED..	277
7.6 INFORMATION ON CAPACITY-BUILDING AND INSTITUTIONAL SUPPORT NEEDS.....	282
7.6.1 Climate Governance, Finance and Regulatory Capacity.....	283
7.6.2 Sectoral and Local Capacity Development.....	283
7.6.3 Human Capital and Green Skills	284
7.6.4 Long-Term Institutional Development Priorities	284
7.7 INFORMATION ON CAPACITY-BUILDING SUPPORT RECEIVED.....	285
7.7.1 Major Areas of Capacity-Building Support	286
7.7.2 Key Achievements	286
7.7.3 Remaining Capacity Needs.....	286
7.8 INFORMATION ON SUPPORT NEEDED AND RECEIVED FOR THE IMPLEMENTATION OF ARTICLE 13 OF THE PARIS AGREEMENT AND TRANSPARENCY-RELATED ACTIVITIES, INCLUDING TRANSPARENCY-RELATED CAPACITY-BUILDING	287
8 REFERENCES	289
ANNEX I NINTH NATIONAL COMMUNICATION.....	295
1 RESEARCH AND SYSTEMATIC OBSERVATION.....	295
1.1 GENERAL POLICY ON RESEARCH AND SYSTEMATIC OBSERVATION.....	295
1.2 RESEARCH	298
1.2.1 Research and Development Innovation (RDI) Supports.....	298
1.2.2 Human Resources Supports.....	302
1.2.3 Research and Development Innovation (RDI) Activities	303
1.3 SYSTEMATIC OBSERVATION.....	306
1.3.1 Atmospheric and Terrestrial Climate Observing Systems.....	306
1.3.2 Ocean Climate Observing Systems.....	313
1.3.3 Cryosphere Observations	313
1.4 OTHER ACTIONS TAKEN TO SUPPORT RELATED CAPACITY- BUILDING IN DEVELOPING COUNTRIES	313
1.4.1 International Cooperation by the Turkish State Meteorological Service.....	313
1.5 NATIONAL AND INTERNATIONAL DATA SHARING	313
2 EDUCATION, TRAINING AND PUBLIC AWARENESS.....	314
2.1 GENERAL POLICY ON EDUCATION, TRAINING AND PUBLIC AWARENESS.....	314
2.1.1 Current Climate Change Awareness in Türkiye.....	316
2.2 PRIMARY, SECONDARY AND HIGHER EDUCATION	317
2.2.1 Pre-Primary Education	317
2.2.2 Primary and Lower Secondary Education.....	317
2.2.3 Upper Secondary and Vocational Education.....	318



2.2.4 Higher Education 318

2.3 PUBLIC INFORMATION CAMPAIGNS AND SCHOOL-BASED CLIMATE ACTION..... 318

2.4 TRAINING PROGRAMMES AND INSTITUTIONAL CAPACITY-BUILDING..... 321

2.4.1 Energy Efficiency and Sustainable School Operations321

2.4.2 Staff Awareness, Adaptation Training and Local Climate Action321

2.5 ACCESS TO INFORMATION: RESOURCE AND INFORMATION CENTRES322

2.6 INVOLVEMENT OF NGOS AND OTHER ORGANIZATIONS322

2.7 INTERNATIONAL COOPERATION323

2.7.1 International Events In Türkiye 324

2.8 MONITORING, REVIEW AND EVALUATION OF THE IMPLEMENTATION OF ARTICLE 6 OF THE CONVENTION 326

2.9 PUBLIC PARTICIPATION IN THE PREPARATION AND DOMESTIC REVIEW OF THE NATIONAL COMMUNICATION 326

3 FINANCIAL, TECHNOLOGICAL AND CAPACITY-BUILDING SUPPORT 327



LIST OF FIGURES

Figure 1 - Annual mean temperature in Türkiye.....	37
Figure 2 - Long-term mean temperature distribution in Türkiye (TSMS, 2026)	38
Figure 3 - Annual precipitation in Türkiye (1991-2025)	39
Figure 4 - Long-term mean total precipitation distribution in Türkiye (TSMS, 2026).....	39
Figure 5 - Total numbers of annual extreme weather events in Türkiye (1940-2025)	40
Figure 6 - Extreme weather events in 2025.....	41
Figure 7 - GDP, billion USD, 1990 - 2025	42
Figure 8 - Foreign trade, 1990-2025.....	43
Figure 9 - Primary energy supply 1990 and 2024.....	45
Figure 10 - Final energy consumption by sector, 1990-2024.....	46
Figure 11 - Distribution of final energy consumption by sectors (%), 2024.....	47
Figure 12 - The share of renewable energy by energy resources, 2024.....	48
Figure 13 - Electricity generation by primary energy resources, 1990-2024.....	51
Figure 14 - Electricity generation and shares by energy resources, 1990 - 2024.....	52
Figure 15 - Number of new buildings' occupancy permit by year (2002-2024).....	54
Figure 16 - Energy consumption in buildings by energy resource (2024).....	54
Figure 17 - Road motor vehicles, 1990-2024	57
Figure 18 - Change in passenger transport in Türkiye (1990-2024).....	57
Figure 19 - Distribution of cars registered to the traffic according to fuel type, 2005 - 2025	58
Figure 20 - Total domestic and international travel passengers at the airports	59
Figure 21 - Recovered methane at the solid waste disposal sites (2002-2024).....	60
Figure 22 - Wastewater amount and services.....	61
Figure 23 - Recovered methane at the wastewater treatment facilities (1998-2024).....	62
Figure 24 - Agriculture basins of Türkiye.....	63
Figure 25 - Total arable land and land under permanent crops (1990-2024)	64
Figure 26 - Livestock population, 1990-2024	65
Figure 27 - Population numbers for cattle categories, 1990-2024.....	65
Figure 28 - Value added of agriculture sector as % of GDP, 1960-2024	66
Figure 29 - Change in forest areas of Türkiye (1990-2024).....	68
Figure 30 - Reforestation activities, 1992-2024.....	69
Figure 31 - Forest rehabilitation activities, 1998-2024.....	69
Figure 32 - Number of visitors (1990-2025).....	71
Figure 33 - Tourism income and expenditure (2012-2025)	72
Figure 34 - Greenhouse gas emissions/removals, Mt CO ₂ eq., 1990-2024.....	81
Figure 35 - GHG emission trend by sectors, Mt CO ₂ eq., 1990-2024	81
Figure 36 - Trends in emissions per capita and dollar of GDP relative to 1990.....	83
Figure 37 - Emission trend of main GHGs, 1990-2024.....	84
Figure 38 - Trends in emissions by gas relative to 1990	85
Figure 39 - Trends in emissions per capita and dollar of GDP relative to 1990.....	86
Figure 40 - Energy sector emissions, 1990-2024.....	87
Figure 41 - Fuel combustion CO ₂ eq. emissions by sectors, 1990 and 2024.....	88
Figure 42 - The trend in the emissions from fuel combustion by the energy industries sector (1990-2024)	90
Figure 43 - The trend in the emissions from fuel combustion by the manufacturing industries and construction sector (1990-2024).....	91



Figure 44 - The trend in the emissions from fuel combustion by the transport sector (1990-2024)	92
Figure 45 - GHG emission by transport mode, 1990-2024	93
Figure 46 - GHG emission trend by transport mode except road transportation, 1990-2024	93
Figure 47 - Emission distributions by fuel types in road transportation (1990-2024)	94
Figure 48 - GHG emissions for domestic aviation, Mt CO ₂ eq., 1990-2024	95
Figure 49 - GHG emissions by sub-sectors within the other sectors category (2024)	95
Figure 50 - The trend in the emissions from fuel combustion by the other sectors (1990-2024)	96
Figure 51 - Emissions from industrial processes and product use by subsector, 2024	99
Figure 52 - Emissions from industrial processes and product use by subsector, 1990-2024	99
Figure 53 - Share of CO ₂ emissions from mineral production, 2024	100
Figure 54 - Emissions from metal industry, 2024	101
Figure 55 - Cumulative emissions of agricultural categories, 1990-2024	102
Figure 56 - Enteric fermentation emission sources, 2024	102
Figure 57 - Sub-categories of agricultural soils emission sources, 2024	103
Figure 58 - The trend of LULUCF 1990-2024	104
Figure 59 - Trend of total emissions from the LULUCF sector, 1990-2024	105
Figure 60 - CH ₄ emissions from solid waste disposal, 1990-2024	106
Figure 61 - Annual mean temperature of Türkiye	214
Figure 62 - Annual mean areal precipitation of Türkiye	215
Annex I Figure 63 - Distribution of the TSMS's regional directorates	307
Annex I Figure 64 - Observation network by TSMS in Türkiye	308



LIST OF TABLES

Table 1 – Türkiye’s main indicator to track NDC progress.....	29
Table 2 – Projection results in implementing the NDC 3.0.....	30
Table 3 – Selected indicators of Türkiye, 1990-2024	33
Table 4 – Population of Türkiye.....	36
Table 5 – Main indicators of industry sector, 2024	55
Table 6 – Selected key indicators for transportation sector	56
Table 7 – Forest inventory results of Türkiye, Area 2024.	68
Table 8 – Forest inventory results of Türkiye, Growing Stock, 2024.	68
Table 9 – Forest inventory results of Türkiye, Annual Increment, 2024.	68
Table 10 – Flexibility provisions	79
Table 11 – Greenhouse gas emissions/removals, Mt CO ₂ eq., 1990-2024.....	82
Table 12 – Aggregated GHG emissions excluding LULUCF, Mt CO ₂ eq., 1990-2024	84
Table 13 – Total emissions for indirect greenhouse gases, kt, 1990-2024	85
Table 14 – Total emissions from fuel combustion by sectors, Mt CO ₂ eq., 1990-2024	88
Table 15 – Fugitive emissions from fuels, kt, 1990-2024	97
Table 16 – Fugitive emissions from fuels by subcategory, 1990-2024 (kt CO ₂ eq.)	97
Table 17 – Industrial processes and product use sector emissions, (kt CO ₂ eq.), 2024	98
Table 18 – Total emissions and removals from the LULUCF sector by source (kt CO ₂ eq.)	104
Table 19 – Total emissions from the waste sector by source (kt CO ₂ eq.).....	106
Table 20 – Institutions by responsibilities for national GHG inventory.....	109
Table 21 – Cross-cutting policies and measures	130
Table 22 – 12 th Development Plan renewable energy targets.....	135
Table 23 – Details of YEKDEM	136
Table 24 – 12 th Development Plan battery storage capacity targets	141
Table 25 – Energy sector policies and measures	143
Table 26 – Maximum loan amount for housing acquisitions and housing-collateralized loans	150
Table 27 – Buildings sector policies and measures	151
Table 28 – Transport sector policies and measures	161
Table 29 – Manufacturing industry, industrial process and product use sector policies and measures.....	169
Table 30 – Agriculture sector policies and measures.....	178
Table 31 – LULUCF sector policies and measures.....	185
Table 32 – Waste sector policies and measures	191
Table 33 – Policies and measures policies and measures in accordance with Article 2.....	195
Table 34 – Key parameters for the NDC.....	200
Table 35 – GHG emissions in reference and mitigation scenarios.....	202
Table 36 – Key parameters used in the projections of the Second NDC (NDC 3.0).....	202
Table 37 – GHG emission projections-BaU (without measures) scenario (Mt CO ₂ eq.)	203
Table 38 – GHG emission projections- Mitigation (with measures) scenario (Mt CO ₂ eq.)	204
Table 39 – Sectoral comparison of targets of First, Updated First and Second NDC of Türkiye	205
Table 40 – Main progresses between First (Updated) and Second NDC.....	207
Table 41 – Projection of key Indicator to track progress.....	207
Table 42 – Tracking progress made in implementing and achieving the NDC under Article 4 of the Paris Agreement.....	208
Table 43 – Ranking of the seasonal and annual warmest decades.....	214



Table 44 - Ranking of the monthly, seasonal and annual wettest and driest years.....	216
Table 45 - Key national climate strategies and planning documents.....	262
Table 46 - Estimated energy investment needs	269
Table 47 - Estimated industry decarbonization investment needs	270
Table 48 - Estimated transport sector investment needs.....	271
Table 49 . Long-term technology priorities	277
Table 50 - Technology needs and priorities under the Climate Change Mitigation Strategy and Action Plan	279
Table 51 - Strategies for technology development under Türkiye's LTS	280
Annex I Table 52 - Types and number of observation stations installed by State Hydraulic Works.	310
Annex I Table 53 - Water quality monitoring points of 2025	311



ABBREVIATIONS

ADB	Asian Development Bank
AFAD	Disaster and Emergency Management Authority
AI	Artificial Intelligence
AIIB	Asian Infrastructure Investment Bank
ARAS	Disaster Risk Reduction System
ASDEP	Family Social Support Programme
BEP-TR	Building Energy Performance Application
BIST	Borsa Istanbul Inc.
BTR	Biennial Transparency Report
CBAM	Carbon Border Adjustment Mechanism
CBRT	Central Bank of the Republic of Türkiye
CCACB	Climate Change and Adaptation Coordination Board
CCAMCB	Climate Change and Air Management Coordination Board
CCCB	Climate Change Coordination Board
CCUS	Carbon Capture, Utilization and Storage
CH₄	Methane
CIF	Climate Investment Funds
CMB	Capital Markets Board of Türkiye
CO	Carbon Monoxide
CO₂	Carbon Dioxide
CO₂ eq.	Carbon Dioxide Equivalent
CoHE	Council of Higher Education
CRF	Common Reporting Format
DGWM	Directorate General of Water Management
DoCC	Directorate of Climate Change
DOMs	Dead Organic Matter
DSI	Directorate General of State Hydraulic Works
EBRD	European Bank for Reconstruction and Development
EKA	Energy and Carbon Reduction Support Programme
EMRA	Republic of Türkiye Energy Market Regulatory Authority
EPC	Energy Performance Certificate
ETF	Enhanced Transparency Framework
ETS	Emissions Trading System
EU	European Union
FAO	Food and Agriculture Organization
FFGS	Flash Flood Guidance System
F-gases	Fluorinated Gases
GDCDE	General Directorate of Combating Desertification and Erosion



GDP	Gross Domestic Product
GEF	Global Environment Facility
GWh	Gigawatt Hour
HadGEM	Hadley Centre Global Environment Model
HCFC	Hydrochlorofluorocarbon
IBRD	International Bank for Reconstruction and Development
ICMA	International Capital Market Association
IFC	International Finance Corporation
İLBANK	İlbank Inc.
IPA	Instrument for Pre-Accession Assistance
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ISO	International Organization for Standardization
KOSGEB	Small and Medium Enterprises Development Organization of Türkiye
Kt	Kilo Tons
kWh	Kilowatt Hours
LTS	Long-Term Climate Strategy
LULUCF	Land Use, Land Use Change and Forestry
MDBs	Multilateral Development Banks
MENR	Republic of Türkiye Ministry of Energy and Natural Resources
MEUS	Forest Fires and Meteorological Early Warning System
Mha	Million Hectares
MoAF	Republic of Türkiye Ministry of Agriculture and Forestry
MoCT	Republic of Türkiye Ministry of Culture and Tourism
MoEUCC	Republic of Türkiye Ministry of Environment, Urbanization and Climate Change
MoFA	Republic of Türkiye Ministry of Foreign Affairs
MoH	Republic of Türkiye Ministry of Health
MoI	Republic of Türkiye Ministry of Interior
MoIT	Republic of Türkiye Ministry of Industry and Technology
MoNE	Republic of Türkiye Ministry of National Education
MoT	Republic of Türkiye Ministry of Trade
MoTF	Republic of Türkiye Ministry of Treasury and Finance
MoTI	Republic of Türkiye Ministry of Transport and Infrastructure
MRV	Monitoring, Reporting and Verification
Mt	Million Tons
MTA	Directorate General of Mineral Research and Exploration
MToe	Million Tons of Oil Equivalent
MW	Megawatt
MWe	Megawatt Electricity
MWt	Megawatt Thermal



N₂O	Nitrous Oxide
NC	National Communication
NCCS	National Climate Change Strategy
NDC	Nationally Determined Contribution
NE	Not Estimated
NGO	Non-Governmental Organization
NIR	National Inventory Report
NMVOC	Non-Methane Volatile Organic Compounds
NO	Not Occurred
NO_x	Nitrogen Oxides
NUTS-1	Nomenclature of Territorial Units for Statistics, Level 1
nZEB	Nearly Zero Energy Buildings
OECD	Organisation for Economic Co-operation and Development
OIZ	Organized Industrial Zone
OSP	Official Statistics Programme
PMI	Partnership for Market Implementation
PMR	Partnership for Market Readiness
POA	Public Oversight, Accounting and Auditing Standards Authority
PPP	Public-Private Partnership
PPP	Purchasing Power Parity
R&D	Research and Development
SBB	Presidency of Strategy and Budget
SDG	Sustainable Development Goals
SME	Small and Medium-Sized Enterprises
SO₂	Sulphur Dioxide
SOE	State-Owned Enterprise
SPI	Standardized Precipitation Index
SSI	Social Security Institution
STI	Science, Technology and Innovation
TAMBIS	Flood, Failure and Intervention Spatial Information System
TATUS	Flood Forecasting and Early Warning System in Pilot Sub-Basins
TBB	The Union of Municipalities of Türkiye
TEİAŞ	Directorate General of Turkish Electricity Transmission Corporation
TEMA	The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats
TEUS	Flood Early Warning System
TIDIP	Türkiye Industrial Decarbonization Investment Platform
TOBB	Union of Chambers and Commodity Exchanges of Türkiye
TOE	Tonne of Oil Equivalent
TOKİ	Housing Development Administration



TRY	Turkish Lira
TSE	Turkish Standards Institution
TSMS	Turkish State Meteorological Service
TUDES	Turkish National Sea Level Monitoring Network
TurkStat	Turkish Statistical Institute
TURSAB	Association of Turkish Travel Agencies
TÜBİTAK	The Scientific and Technological Research Council of Türkiye
TÜÇA	Turkish Directorate of Environment Agency
TÜRKAK	Turkish Accreditation Agency
TÜSİAD	Turkish Industry and Business Association
TWh	Terawatt Hours
UCLG-MEWA	Middle East and West Asia Section
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
WMO	World Meteorological Organization
WRF	Weather Research and Forecasting
YEKA	Renewable Energy Resource Areas
YEKDEM	Renewable Energy Sources Support Mechanism
YeS-INT	International Green Certificate Information System
YeS-TR	Green Certificate Information System





SECOND BIENNIAL TRANSPARENCY REPORT

1. TÜRKİYE'S NATIONALLY DETERMINED CONTRIBUTION

Türkiye is a transcontinental country situated at the junction of Europe and Asia, located between the northern latitudes of 36° and 42° and the eastern longitudes of 26° and 45°.¹ Covering a total surface area of 783,562 km², it is the largest country bridging the European and Asian continents and one of the largest in the wider Mediterranean and Black Sea region. Türkiye is bounded by the Black Sea to the north, the Aegean Sea to the west and the Mediterranean Sea to the south, along a total coastline of approximately 8,333 km, while the Sea of Marmara and the Turkish Straits — the Bosphorus and the Dardanelles — connect these seas and physically divide the country's European territory (Thrace) from its much larger Asian territory (Anatolia). Inland, Türkiye shares roughly 2,753 km of land borders with eight countries: Bulgaria and Greece to the west; Georgia, Armenia, Azerbaijan and Iran to the east; and Syria and Iraq to the south.² It encompasses a wide range of climatic and topographic zones — from the coastal plains of the Aegean and Mediterranean to the semi-arid steppe of Central Anatolia and the high plateaus of Eastern Anatolia — and contains the headwaters of major transboundary river systems, including the Euphrates and the Tigris.

Since 1990, Türkiye has undergone substantial economic and demographic growth, which together constitute the principal drivers behind the corresponding rise in its national greenhouse gas emissions. Between 1990 and 2024, Türkiye's population increased by approximately 52%, from 56.47 million to 85.66 million, accompanied by a pronounced shift from rural to urban living, with the urban population growing by 140% while the rural population declined by 75%.³ Over the same period, the Turkish economy expanded rapidly, with Gross Domestic Product (GDP) (current prices) rising by approximately 810%, from around USD 149 billion to USD 1,358 billion, while GDP per capita grew by approximately 477%, reaching USD 15,325 in 2024.⁴ This combination of population growth, rising per capita income and rapid urbanization has driven substantially higher demand for energy, housing, transport, food and industrial production, translating directly into higher levels of energy consumption and greenhouse gas emissions. As a result, Türkiye's total greenhouse gas emissions increased by approximately 155% between 1990 and 2024, with population growth, economic growth and the associated rise in per capita energy consumption identified as the principal underlying factors behind this trend.

Despite reporting and implementing its climate commitments under the Paris Agreement — with correspondingly lower historical responsibility and more limited capacity than developed countries — Türkiye has demonstrated a consistently proactive approach to climate action, in several respects moving ahead of its formal reporting obligations. Türkiye is submitting this Second Biennial Transparency Report several months ahead of its 31 December 2026 deadline under Decision 18/CMA.1, reflecting its commitment to timely and transparent reporting under the Enhanced Transparency Framework (ETF). One of these proactive efforts is that Türkiye will host

1. UNFCCC. 2007. Republic of Türkiye First National Communication

2. GDM, 2026. General Directorate of Mapping

3. TurkStat, 2026_a. 2026_a. Population and Demography

4. TurkStat, 2026_b. National Account. <https://veriportalı.tuik.gov.tr/en/statistical-themes>



COP31. Hosting COP31 reinforces Türkiye's own determination to accelerate the implementation of its Nationally Determined Contribution (NDC) and its long-term 2053 net-zero objective.

In accordance with Article 4 of the Paris Agreement and decision 1/CP.21, Türkiye submitted its second Nationally Determined Contribution (**NDC 3.0**) to the United Nations Framework Convention on Climate Change (UNFCCC) on 9 November 2025⁵ Prior NDC 3.0, Türkiye submitted its first Nationally Determined Contribution (NDC) in 2022 (**NDC 1.0**) formalizing its Intended Nationally Determined Contribution (INDC)⁶ in 2015, as its initial commitments. Türkiye updated its first NDC (**NDC 2.0**)⁷ in 2023, committing to a 41% reduction in greenhouse gas emissions by 2030 compared to Business as Usual (BAU) projections.

This chapter presents the scope, ambition and targets of NDC 3.0 in detail in Section 1.1, together with the indicators used to track its implementation.

Türkiye considers its NDC to be fair and ambitious in light of its national circumstances, acknowledging the need for improvements in social and economic development areas such as education and employment. Although Türkiye's per capita income has risen significantly over the years and reached \$15,325 in 2024,⁸ it remains lower than many developed countries. At the same time, Türkiye's greenhouse gas emissions have continued to rise in recent years, reaching about 584.52 million tonnes of carbon dioxide equivalent (CO₂ eq.) in total (excluding Land Use, Land Use Change and Forestry (LULUCF)) and 6.8 tonnes of CO₂ eq. per person in 2024.⁹ Despite these challenges, Türkiye has adopted the most ambitious mitigation target possible, reflecting its unique national circumstances and aligning with the principle of common but differentiated responsibilities (CBDR) and respective capabilities (RC). Türkiye also actively supports the global goal of limiting temperature increases to 1.5 degrees Celsius.

1.1 DESCRIPTION OF THE NATIONALLY DETERMINED CONTRIBUTION

Türkiye's economy-wide mitigation approach is documented in its Updated First NDC (**NDC 2.0**), submitted on 13 April 2023, committing to a 41% emissions reduction relative to the business-as-usual scenario by 2030 (695 Million Tons (Mt) CO₂ eq.), covering the energy, industry, transport, buildings, agriculture, waste, and LULUCF sectors. This has since been extended by Türkiye's Second NDC (**NDC 3.0**), submitted in November 2025, targeting a 466 Mt CO₂ eq. reduction (below the projected 2035 Business-as-Usual level) and limiting emissions to 643 Mt CO₂ eq. in 2035, on the pathway to Türkiye's 2053 net-zero objective.

The reference year for the Second NDC is 2018, and implementation of the 2035 mitigation target is embedded within Türkiye's broader climate policy framework. International support in the areas of climate finance, technology transfer, and capacity building is emphasized as critical for achieving this target and advancing Türkiye's green transformation.

5. UNFCCC. 2025. Republic of Türkiye The Second Nationally Determined Contribution. [https://unfccc.int/sites/default/files/2025-11/The Second NDC of Türkiye.pdf](https://unfccc.int/sites/default/files/2025-11/The%20Second%20NDC%20of%20T%C3%9CRkiye.pdf)

6. UNFCCC. 2015_a. Republic of Turkey Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/PublishedDocuments/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf.

7. UNFCCC. 2023_a. Republic of Türkiye Updated First Nationally Determined Contribution. https://unfccc.int/sites/default/files/NDC/2023-04/T%C3%9CRkiye%20Updated%201st%20NDC_EN.pdf

8. TurkStat 2026_b. National Account. <https://veriportali.tuik.gov.tr/en/statistical-themes>

9. NID 2026. TurkStat, Turkish Greenhouse Gas Inventory, 1990 to 2024.



Türkiye's mitigation policies cover sectors such as energy, industry, transport, agriculture, buildings, waste, and LULUCF, addressing all major anthropogenic GHG emissions and removals in accordance with the 2006 IPCC Guidelines and as reported in the National Inventory Document (NID). The GHGs covered include CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, and NF₃. Additionally, LULUCF pools include living biomass, dead organic matter, soil carbon, and harvested wood products as carbon reservoirs. Adaptation policies address agriculture and forestry, water, disaster risk management, urban and rural development, and public health sectors.

Türkiye's **NDC 3.0** target reflects both increased ambition and a realistic assessment of national circumstances, capacities, and priorities in the fight against climate change across all sectors and GHGs. This NDC target is operationalized through the Climate Change Mitigation Strategy and Action Plan (**CCMSAP**),¹⁰ and the Climate Change Adaptation Strategy and Action Plan (CCASAP).¹¹, which function as the primary implementation instruments and are subject to periodic revisions to maintain full alignment with national commitments. The new target has been established through a rigorous, science-based process, guided by Türkiye's long-term strategies aligned with its 2053 net-zero ambition, and informed by the outcomes of the First Global Stocktake (GST) to significantly contribute to global efforts, as summarized below.

1.1.1.1 NDC Targets

- To achieve economy-wide emission reduction from the Business as Usual (BAU) scenario.
- To limit total GHG emissions to 643 Mt CO₂ eq. by 2035.
- To reduce emissions by 466 Mt CO₂ eq. compared to the BAU projection for 2035.

1.1.1.2 Target year

- The target year for emission reduction as to BAU scenario is 2035.

1.1.1.3 Reference year

- The reference year for inventory reporting is 2018.

1.1.1.4 Time frames

- Time frame: Single-year target: 2035

1.1.1.5 Scope and coverage

- Economy-wide.
- Sectors:
 - all IPCC sectors, including energy, industry, transport, agriculture, buildings, waste, and LULUCF.
- Gases
 - Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).
- Pools and Reservoirs
 - LULUCF pools are included in the NDC: living biomass, DOMs, soil, including harvested wood products carbon reservoir.

10. DoCC, 2024_a. "Climate Change Mitigation Strategy and Action Plan (2024-2030)." 2023. <https://iklim.gov.tr/eylem-planlari-i-19>.

11. DoCC, 2024_b. Climate Change Adaptation Strategy and Action Plan (2024-2030). 2024. <https://iklim.gov.tr/eylem-planlari-i-19>.



Türkiye's **2053 Long-Term Climate Strategy (LTS)**¹² defines the high-level roadmap and ultimate vision for the nation's net-zero transition. enshrines the national 2053 net-zero emissions target, ensuring full alignment with the Climate Change Mitigation Strategy and Action Plan 2024–2030 (CCMSAP) and the Climate Change Adaptation Strategy and Action Plan 2024–2030 (CCASAP) and the overarching vision of the **12th Development Plan (2024–2028)**¹³. LTS establishes a roadmap to achieve net-zero emissions by 2053.

Türkiye has gained substantial experience in preparing national communications (NC) by preparing and submitting eight National Communications (NCs): the **First National Communication (NC1)** on Climate Change in 2007¹⁴; the **Second, Third, Fourth and Fifth National Communication (joint report)** in 2013¹⁵; the **Sixth National Communication** in 2016¹⁶, the **Seventh National Communication** in 2019¹⁷ and the **Eighth National Communication** in 2023¹⁸ as reaffirmed by UNFCCC decision 9/CP.16 and UNFCCC decision 2/CP.17. Additionally, under the Paris Agreement, Türkiye submitted first Biennial Transparency Report (BTR1) in 2024.¹⁹

The second BTR (BTR2) has been prepared by updating the developments and data and by considering the Technical Expert Review of the BTR1. The **first chapter** of the BTR2 provides detailed information on Türkiye's current NDC and commitments. The **second chapter** presents integrated information on the **"National Circumstances"**. The **third chapter** of the BTR2 focuses on Türkiye's **national GHG emissions and removals inventory**, relying largely on data from the NID published in 2026. The **fourth and fifth chapters** cover Türkiye's **mitigation policies and measures** and NDC tracking. The **sixth chapter** addresses the **impacts of climate change and adaptation policies and measures**. The **seventh chapter** details the **needed and received support** of Türkiye, covering aspects of finance, technology, and capacity building. As a developing country, Türkiye does not report on finance provided. **The Ninth National Communication (9NC)** submitted together with the BTR2 as an annex.

1.2 INDICATORS OF THE NATIONALLY DETERMINED CONTRIBUTION

1.2.1 Description of Indicators

1.2.1.1 Primary Indicator

Türkiye's main indicator is **Net Greenhouse Gas Emissions**. This indicator is quantified based on national GHG emissions as reported in Türkiye's National Inventory Document (NID), submitted to the UNFCCC. The reference year for the Second NDC (**NDC 3.0**) is 2018, in which total net GHG emissions were 462.9 Mt CO₂ eq., including LULUCF, as to Türkiye's 2026 NID. Under its **NDC**

12. DoCC, 2024_c. 2053 Long Term Climate Strategy

13. 12th Development Plan 2023

14. UNFCCC, 2007. 1st NC of Türkiye, <https://unfccc.int/resource/docs/natc/turnc1.pdf>

15. UNFCCC, 2013. 2-5th NC of Türkiye, https://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/nc5_turkey%5B1%5D.pdf

16. UNFCCC, 2016. 6th NC of Türkiye, https://unfccc.int/files/national_reports/non-annex_i_natcom/application/pdf/6_bildirim_eng_t1_reducedfilesize.pdf

17. UNFCCC, 2019. 7th NC of Türkiye, <https://unfccc.int/documents/199646>

18. UNFCCC, 2023. 8th NC of Türkiye, <https://unfccc.int/documents/628372>

19. BTR1 of Türkiye, <https://unfccc.int/documents/642617>



3.0, Türkiye aims to reduce its GHG emissions by 466 Mt CO₂ eq. compared to the BAU scenario, limiting total emissions to 643 Mt CO₂ eq. by 2035, relative to a BAU projection of 1,109 Mt CO₂ eq. for the same year (Table 1 and Table 2).

NDC 3.0 sets a single-year economy-wide GHG mitigation target for 2035, expressed relative to a national Reference (business-as-usual, BAU) Scenario, consistent with Article 4.8, Article 13 of the Paris Agreement²⁰ and Decisions 4/CMA.1²¹ and 18/CMA.1²².

The projections were produced using the CLEWs modelling framework, built on the Open Source Energy Modelling System (OSeMOSYS), an integrated approach for assessing sectoral interactions consistent with the 2006 IPCC Guidelines (including the 2019 Refinement). GHG values are reported in CO₂ eq. using 100-year Global Warming Potential values from the IPCC Fifth Assessment Report (AR5), as agreed under Decision 18/CMA.1, paragraph 37.²³ The projections were carried out through a rigorous, science-based, and comprehensive process, drawing on the latest available data, sectoral expertise, national development plans, and climate policy objectives.

Türkiye's NDC represents an economy-wide mitigation commitment covering all IPCC sectors and greenhouse gases. Therefore, total net GHG emissions (including LULUCF) constitute the most appropriate and comprehensive primary indicator for tracking progress under the NDC within the ETF.

20. UNFCCC, 2015_b. "Adoption of the Paris Agreement." 2015. <http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>.

21. UNFCCC, 2018. Decision of 4/CMA.1 Further Guidance in Relation to the Mitigation Section of the Paris Agreement. 2018. https://unfccc.int/sites/default/files/resource/4-CMA.1_English.pdf.

22. UNFCCC, 2018. Decision 18/CMA.1. Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement, (March), 1-65.

23. UNFCCC, 2018. Decision 18/CMA.1. Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement, (March), 1-65.



Table 1 – Türkiye’s main indicator to track NDC progress

Indicator selected to track progress	Description
Net Greenhouse Gases Reduced Compared to the BAU	
Description	<p>The indicator encompasses all IPCC sectors in Türkiye, including energy, industrial processes and product use, agriculture, waste, and LULUCF. It includes greenhouse gases such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃). Additionally, LULUCF pools are incorporated within the indicator, covering living biomass, dead organic matter (DOMs), soil, and carbon reservoirs in harvested wood products. The sectors, gases, categories, and pools reflected in the indicator are based on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, ensuring a standardized and comprehensive approach. This indicator reflects all major anthropogenic GHG emissions and removals, as documented in the National Inventory Report (NIR).</p>
Reference Year, Current Year and Target Year Committed Data	<p>2018 (reference year): 463 Mt CO₂ eq. (Türkiye’s 2026 NID)</p> <p>Latest reported year (2026): 2024 as reported in the most recent inventory submission: 517.4 Mt CO₂ eq. (including LULUCF), 584.5 Mt CO₂ eq. (excluding the LULUCF),</p> <p>2035 target: 643 Mt CO₂ eq. (including LULUCF), corresponding to a reduction of 466 Mt CO₂ eq. from the BAU level of 1,109 Mt CO₂ eq.</p>
Relations to NDC	<p>Türkiye’s NDC is economy-wide; therefore, total GHG emissions serve as the most appropriate indicator for this type of NDC.</p>
Differences to the NIR	<p>No differences. The indicator is fully consistent with the national inventory scope, sectoral coverage, and methodologies applied in the NID.</p>
Non-GHG mitigation benefits	<p>Not applicable as a quantified component of the mitigation target. However, mitigation actions under the NDC are expected to generate co-benefits in air quality, public health, energy security, resource efficiency, and just transition policies.</p>

**Table 2 – Projection results in implementing the NDC 3.0**

Year	BAU ²⁴ (incl. LULUCF)	NDC Target ²⁴ (incl. LULUCF)	Actual ²⁵ (incl. LULUCF)	Reduction from the BAU level	NDC3.0 target Change to BAU
	Mt CO ₂ eq.	Mt CO ₂ eq.	Mt CO ₂ eq.	Mt CO ₂ eq.	%
2018 (Reference year)	457	457	463		
2020	506	489	476		
2024	600	517	517		
2025	640	533		107	-16,7
2030	880	604		276	-31,4
2035	1109	643		466	-42,0

1.2.1.2 Additional Indicators

In its NDC 3.0, Türkiye has identified economy-wide net greenhouse gas (GHG) emissions relative to the Business-as-Usual (BAU) scenario as its primary indicator for tracking progress. No additional or supplementary quantitative indicators are formally defined under the NDC.

1.2.2 Methodologies and Accounting Approaches

Türkiye uses net GHG emissions in 2035 as the primary reference indicator for its NDC. This indicator is published annually in the National Inventory Report (NIR) in accordance with the IPCC 2006 Guidelines for GHG emissions and is consistent with decision 18/CMA.1. GHGs are reported in CO₂ eq. using 100-year GWP values from the IPCC Fifth Assessment Report (AR5), as agreed by the CMA. The definitions, data sources, and models used to estimate net emissions are detailed in the NIR, ensuring methodological consistency and transparency.

Under the modalities, procedures, and guidelines established in Decisions 4/CMA.1 and 18/CMA.1, Türkiye submits an annual National Inventory Document (NID) and Biennial Transparency Report (BTR) to the UNFCCC Secretariat. The NID provides a comprehensive account of Türkiye's anthropogenic GHG emissions and removals, while the BTR presents structured updates on progress toward achieving Türkiye's NDC. Türkiye's approach to NDC accountability involves comparing achieved net GHG emission reductions against its 2035 NDC target. Türkiye ensures consistency with current and future UNFCCC reporting guidelines for tracking and reporting NDC progress.

Türkiye applies specific assumptions and methodologies, as appropriate, to assess progress under the policies and measures related to the implementation of its NDC in its Biennial Transparency Reports (BTRs).

Türkiye uses the 2006 IPCC Guidelines, or any future updates approved by the CMA, for estimating anthropogenic greenhouse gas emissions and removals. Global warming potential (GWP) values on a 100-year timescale, as specified in the IPCC's Fifth Assessment Report, are used to calculate CO₂ equivalents.

To address emissions and subsequent removals from natural disturbances on managed lands, Türkiye prioritizes wildfire management as the primary strategy. Wildfires are the major natural disturbance affecting emissions in Türkiye, and the national approach has shifted from a focus

²⁴. UNFCCC, 2025. Türkiye Second NDC (NDC 3.0).

²⁵. NID, 2026



on suppression to prevention and preparedness. This shift aims to reduce both fire-related emissions and associated management costs, utilizing drones and advanced technological tools. Additionally, Türkiye is working to enhance public participation and awareness, recognizing that local communities play a vital role in effective fire management, with their collaboration and contributions considered invaluable.

To account for emissions and removals from harvested wood products, Türkiye applies the “Production Approach” as outlined in IPCC 2006 (Vol. 4, Chapter 12.A.1). This approach calculates emissions based solely on carbon inventories from domestically harvested wood, without providing a complete inventory of wood carbon in national stocks. The calculation uses a Tier 1 and Tier 2 methods and incorporates country-specific coefficients to ensure accuracy in emissions estimates.

Türkiye does not use a separate approach for age-class structure in forests. To address the effects of age-class structure in forests, Türkiye is developing a comprehensive National Forest Inventory, expected to be completed by the end of 2025 and subsequently repeated in 5-year cycles. Currently, the Forest Service uses inventories from temporary sample plots for management, conducted at 10-year intervals. Given that the General Directorate of Forestry effectively oversees forest management, Türkiye anticipates that the age-class structure will support continued increases in Net Primary Productivity. However, recent data from the planning database suggests that additional efforts may be needed to increase the standing stock of forest stands.

Türkiye reserves the right to use voluntary cooperation under Article 6 of the Paris Agreement, as considerations for the application of market mechanisms under Article 6 are still ongoing. If Türkiye decides to engage in such cooperation, corresponding adjustments would be applied, and all reporting requirements in line with guidance adopted under Article 6 by the CMA would be fulfilled.

Türkiye’s fairness considerations are rooted in the principle of equity, aligned with the approach of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) as established under the UNFCCC and the Paris Agreement.

In addressing Article 4, paragraph 3 of the Paris Agreement, Türkiye has submitted its second NDC to the UNFCCC Secretariat in 2025, targeting a 466 Mt CO₂ eq. reduction (Business-as-Usual level) and limiting emissions to 643 Mt CO₂ eq. in 2035, on the pathway to Türkiye’s 2053 net-zero objective.

In addressing Article 4, paragraph 4 of the Paris Agreement, Türkiye is not among the countries obligated to maintain a leadership role, as recognized by the Conference of the Parties in consideration of its special circumstances. Nevertheless, as a developing country, Türkiye remains committed to implementing its mitigation efforts with the highest possible ambition, taking into account its national conditions.



2 NATIONAL CIRCUMSTANCES

This chapter provides an overview of Türkiye's national circumstances and institutional arrangements relevant to climate change mitigation and adaptation, as well as to the preparation and reporting of its greenhouse gas (GHG) inventory under the ETF.

It describes the governance structure and institutional framework for climate policy development and implementation, including coordination mechanisms at national and subnational levels. In addition, it outlines key demographic trends, macroeconomic developments, and sectoral structures that influence greenhouse gas emissions and removals. Particular attention is given to Türkiye's geographical and climatic characteristics, energy system profile, industrial composition, and the management of natural resources such as water resources, forests, and agricultural lands, which play a significant role in both emissions and carbon sinks. These national circumstances provide the contextual basis for understanding Türkiye's mitigation and adaptation priorities, the design and ambition of its NDC, and the methodological framework applied in its national GHG inventory. This information enhances transparency and facilitates the assessment of progress made in implementing and achieving Türkiye's NDC commitments.

Economic and demographic data indicate Türkiye's rapid growth, with GDP expanding by 810% and electricity consumption per capita rising by 398% between 1990 and 2024. This economic and population expansion has driven increases in energy demand and urbanization, contributing to a 155% rise in GHG emissions. Furthermore, the rural-to-urban shift, with rural populations decreasing by 75% and urban populations growing by 140%, underscores the changing landscape that Türkiye must consider in climate change policies (Table 3).



Table 3 – Selected indicators of Türkiye, 1990-2024²⁶

Indicators	1990	2000	2010	2020	2022	2023	2024	Change (%) in the most recent year in the table compared to 1990
GDP (current, Billion US\$)	149.20	273.537	783.042	730.372	924.766	1,153.24	1,358.25	810%
GDP per capita (current US\$)	2,654	4,256	10,706	8,397	10,434	13,008	15,325	477%
Population (million people)	56.47	64.73	73.72	83.61	85.28	85.37	85.66	52%
Urban Population (million people)	33,32	42.01	56.22	77.74	79.61	79.38	80.01	140%
Rural Population (million people)	23,15	22.72	17.50	9.36	9.21	5.99	5.65	-75%
Total Primary Energy Supply (Mtoe)	52.50	79.40	105.90	147.17	157.77	158.4	165.2	215%
Primary Energy Supply Per Capita (toe/person)	0.93	1.17	1.44	1.75	1.85	1.86	1.93	108%
Electricity consumption per capita (kWh/capita)	829	1,450	2,334	3,910	3,837	3,926	4,128	398%
Total GHG emissions (Excluding LULUCF) (Mt CO ₂ eq.)	228.90	306.39	405.27	530.18	558.27	552.2	584.52	155%
Greenhouse Emissions Per Capita (ton CO ₂ eq. per capita)	4.14	4.73	5.50	6.34	6.55	6.47	6.80	64%

26. Data sources: TurkStat, (population,GDP, NIR, NID), MENR(energy)



2.1 GOVERNMENT STRUCTURE

Türkiye is a presidential representative democracy and a constitutional republic. The legislative branch is the Grand National Assembly of Türkiye (GNAT), which is responsible for enacting laws and overseeing the government's actions. GNAT consists of 600 elected members who serve five-year terms. The public elects the President for a maximum of two five-year terms. The President wields executive power, overseeing the appointment of vice presidents and ministers, as well as leading the central administration. There are 17 ministries²⁷ and several other administrative units. The judicial branch, composed of independent courts and judges, is responsible for enforcing the laws.

Türkiye's local administration structure is organized into 81 provinces. There are two main administrative structures at the provincial level; Governorates and Municipalities. Governorates serve as the central government and its structures' representation. Governorates are headed by a governor, whom the central government appoints, and who is responsible for coordinating policy and regulation implementation. The governor is supported by district governors responsible for ensuring that policies and regulations are implemented effectively at the district level. Municipalities have a range of responsibilities, including infrastructure development, public transportation, waste management, water supply and sewerage, and land use planning. Municipalities are headed by a mayor, who is elected by the public for a five-year term. 30 of 81 provinces of Türkiye are metropolitan areas, each managed by a metropolitan municipality mayor. District municipality mayors manage the district municipalities and collaborate with the metropolitan municipality to ensure adequate public service conditions within the metropolitan area.

The Ministry of Environment, Urbanization, and Climate Change (MoEUCC) is mandated to explicitly incorporate climate change into its core responsibilities. The Directorate of Climate Change (DoCC) was established as an affiliated institution of the MoEUCC by Presidential Decree in 2021 to strengthen Türkiye's institutional capacity for climate governance.

The MoEUCC is responsible for the development and implementation of national policies, strategies, and action plans related to climate change mitigation and adaptation. Its mandate includes:

- National climate change plans, policies, and strategies encompassing both mitigation and adaptation priorities;
- National GHG monitoring, control, and reporting systems based on internationally recognized methodologies;
- Sectoral policy analyses and legislative arrangements to support GHG emission reduction efforts;
- Engagement in international climate negotiation processes and preparation of reports and documentation required under international conventions, including the UNFCCC.

The DoCC serves as the primary administrative unit responsible for climate policy development, implementation coordination, and reporting. The DoCC is designated as Türkiye's national focal point for the UNFCCC. The organizational structure, working procedures, and principles of the

²⁷ Ministry of Justice, Ministry of Foreign Affairs, Ministry of the Interior, Ministry of National Defense, Ministry of Treasury and Finance, Ministry of Energy and Natural Resources, Ministry of Industry and Technology, Ministry of Trade, Ministry of Environment, Urbanization and Climate Change, Ministry of National Education, Ministry of Health, Ministry of Transport and Infrastructure, Ministry of Culture and Tourism, Ministry of Labor and Social Security, Ministry of Family and Social Services, Ministry of Agriculture and Forestry, Ministry of Youth and Sports.



DoCC were formalized by regulation published in the Official Gazette dated 21 June 2022 (No. 31873), providing a clear legal mandate for the execution of its responsibilities under the ETF.

Further details on Türkiye's governance structure for the formulation, implementation, and evaluation of climate change policies are provided in Chapter 4.

2.2 POPULATION PROFILE

While the population of Türkiye was 56.47 million in 1990, it reached 85.66 million in 2024 (Table 4). Although the population has steadily increased since 1990, the annual population growth rate has shown a declining trend over recent decades. According to Turkish Statistical Institute (TurkStat)'s population projections, Türkiye's population is expected to reach approximately 88–89 million by 2030, and around 93–94 million in the early 2050s, before gradually declining. Projections indicate that the population will peak around the mid-2050s (approximately 93–94 million) and subsequently decrease. This downward trend is expected to continue, with Türkiye's population projected to decline to 76.8 million by 2100.²⁸

As of 2024, approximately 93.4% of the population resided in urban areas, while 6.6% lived in rural areas, reflecting the continued urbanization trend in Türkiye. The median age increased to 34.4 years in 2024, indicating progressive population aging. In 2024:

- The working-age population (15–64 years) constituted approximately 68% of the total population.
- The population aged 0–14 accounted for approximately 20%.
- The population aged 65 and over represented approximately 10–11% of the total population.
- Population density reached approximately 112 persons per km².²⁹

The continued increase in total population, particularly in urban areas, has significant implications for housing demand, energy consumption, transportation needs, and infrastructure development. Urbanization trends are closely linked to increased energy use and associated greenhouse gas emissions. Given that the vast majority of the population resides in urban areas, the role of metropolitan and district municipalities is particularly critical in shaping mitigation and adaptation outcomes through spatial planning, public transport systems, waste management, and local climate action planning.

28. TurkStat, 2026_a.

29. TurkStat, 2026_a.

**Table 4 – Population of Türkiye³⁰**

Data	1990	2000	2010	2015	2020	2022	2023	2024
Population (millions)	56.47	67.80	73.72	78.74	83.61	85.28	85.37	85.66
Female (millions)	27.87	33.46	36.68	39.23	41.70	42.6	42.63	42.81
Male (millions)	28.61	34.35	37.04	39.51	41.92	42.7	42.73	42.85
Annual growth rate of population (‰)	21.7	18.3	15.9	13.4	5.5	7.1	1.1	3.4
Population density (person/km ²)	73	88	96	102	109	111	111	112
Urban population (% of total) ⁽¹⁾	59	64.9	76.3	92.1	93.0	93.4	93.0	93.4
Rural Population (% of total) ⁽²⁾	41	35.1	23.7	7.9	7.0	6.6	7.0	6.6

(1) “Urban population” is defined as population of the localities which has population 20.001 and over

(2) “Rural population” is defined as population of the localities which has population 20.000 and below.

2.3 GEOGRAPHICAL PROFILE

Türkiye is situated between the Northern latitudes of 36°- 42° and eastern longitudes of 26°- 45°. It is bordered by Georgia, Armenia, Azerbaijan, and Iran to the east; Bulgaria and Greece to the west; and Syria and Iraq to the south. The country is surrounded by the Black Sea, the Mediterranean Sea, and the Aegean Sea, with the Sea of Marmara connecting them through the Turkish Straits (the Bosphorus and the Dardanelles). This strategic location positions Türkiye as a geographical bridge between Asia and Europe. The total length of land borders is approximately 2,753 km, while the coastline extends approximately 8,333 km. The extensive coastal areas increase Türkiye's exposure to sea-level rise and climate-related coastal risks.

Türkiye has a total surface area of 783,562 km². According to national land cover statistics, approximately 29% of the territory consists of forest land, around 34% is agricultural land, and nearly 30% comprises grasslands and pastures. The remaining areas include wetlands, inland waters, settlements, and other land uses. Türkiye possesses diverse freshwater systems, including major transboundary rivers such as the Euphrates (approximately 1,263 km in total length) and the Tigris (approximately 523 km). The country also hosts numerous natural and artificial lakes. With an average elevation of approximately 1,100 meters and predominantly mountainous terrain, Türkiye exhibits considerable climatic and ecological diversity.³¹

Türkiye's rich biodiversity is closely linked to its varied topography, climatic gradients, and its location at the intersection of three major biogeographical regions: the Euro-Siberian, Mediterranean, and Irano-Turanian regions. According to the Noah's Ark National Biological Diversity Database (2024), more than 12,000 vascular plant taxa (species and subspecies) have been recorded in Türkiye, approximately one-third of which are endemic. The country hosts over 19,000 invertebrate species, with a significant proportion of which being endemic. In terms of vertebrate fauna, approximately 500 bird species, more than 170 mammal species, over 140 reptile species, nearly 40 amphibian

30. TurkStat, 2026_a;

31. TurkStat, 2026_a;



species, and around 400 freshwater fish species have been documented. In total, more than 1,300 vertebrate species have been identified nationwide, including over 200 endemics.³² The high level of endemism and ecosystem diversity underscores Türkiye’s global ecological significance. However, climate change poses substantial risks to biodiversity through altered precipitation regimes, increased frequency and intensity of droughts and heatwaves, shifts in species distribution ranges, and habitat degradation and fragmentation.

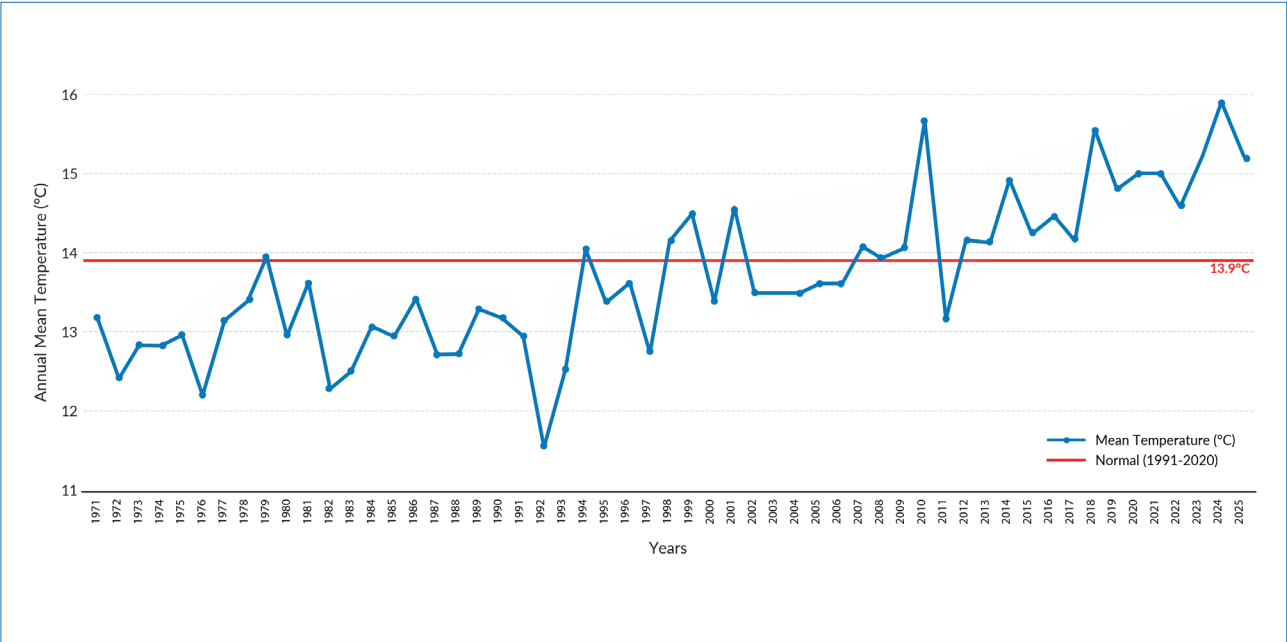
Türkiye has seven geographical regions based on its terrain, climate, and physical features. These seven regions are the Marmara Region, Black Sea Region, Aegean Region, Mediterranean Region, Central Anatolia Region, Eastern Anatolia Region, and Southeastern Anatolia Region . Each region has its own distinct climate, landscape, and flora and fauna. Climate change impact assessments, extreme hazard analyses, and vulnerability evaluations are conducted within this regional framework to ensure region-specific mitigation and adaptation planning.

2.4 CLIMATE PROFILE

2.4.1 Temperature

The Turkish State Meteorological Service (TSMS) has reported that the long-term annual mean temperature in Türkiye has increased to 13.9°C during the new normal period of 1991-2020. In 2025, Türkiye’s mean temperature was 15.1°C; this is 1.2°C above the 1991-2020 mean value of 13.9°C. Observed temperature data from TSMS shows the year 2024 had the highest recorded temperature anomalies, with temperatures 1.7°C above average, while 1992 had the lowest, with temperatures 2.5°C below average, as shown in Figure 1 . Further elaboration on observed temperature changes can be found in Chapter 6.2.1.

Figure 1 - Annual mean temperature in Türkiye

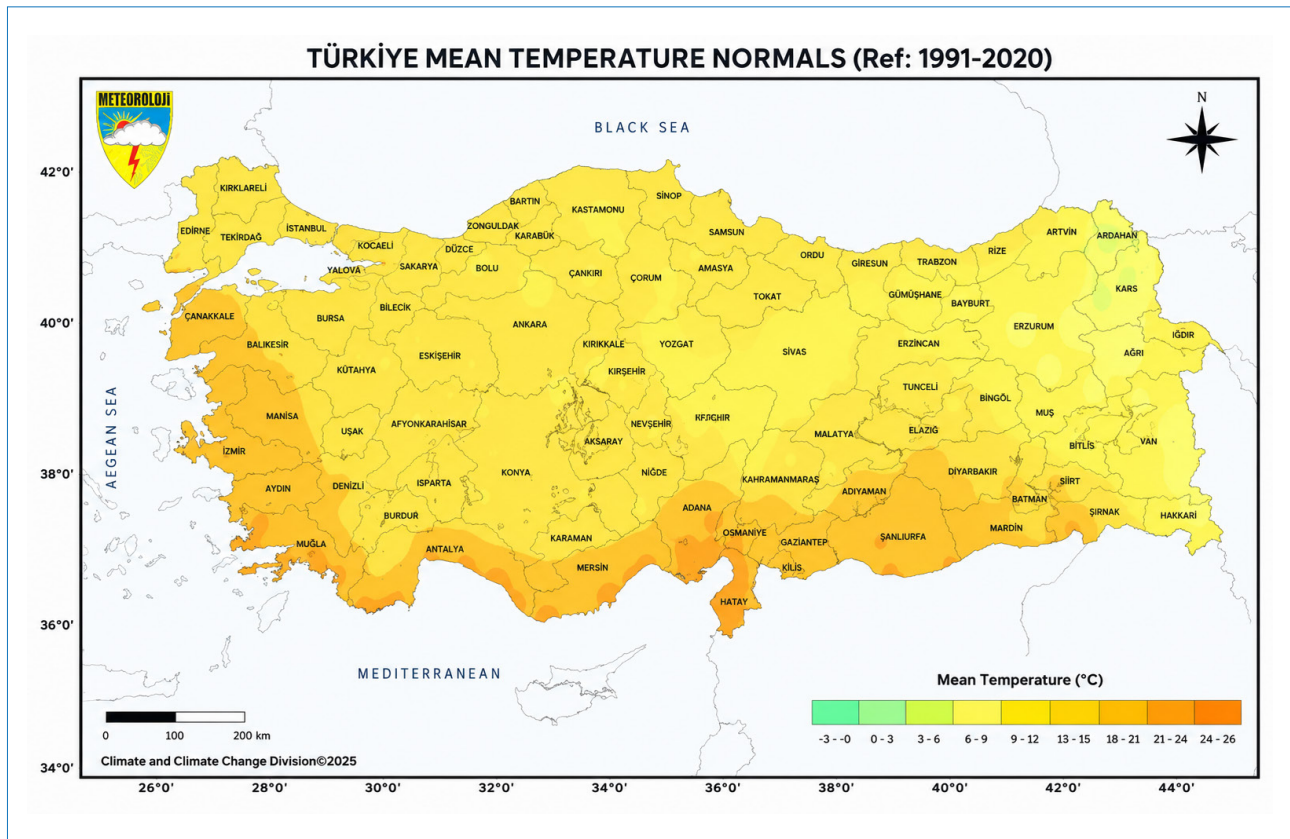


32. MoAF, 2026_b. Noah’s Ark National Biological Diversity Database



During the 1991-2020 period, the highest long-term average temperatures in Türkiye were recorded in the Mediterranean, Southeast Anatolia, and Aegean regions as given in Figure 2. Specifically, average temperature values in cities such as Adana, Hatay, and Antalya in the Mediterranean region, Muğla and Aydın in the Aegean region, and Şanlıurfa and Mardin in Southeast Anatolia reach 18-21°C. In the Marmara region, the average temperature values range between 12.9-15.6°C, and as you move eastward towards Central Anatolia, the average temperature values decrease to 7.1-12°C. The Eastern Anatolia region temperature values range between 4.3-16.4°C, particularly low temperatures are observed in Northeastern Anatolia.

Figure 2 – Long-term mean temperature distribution in Türkiye (TSMS, 2026)



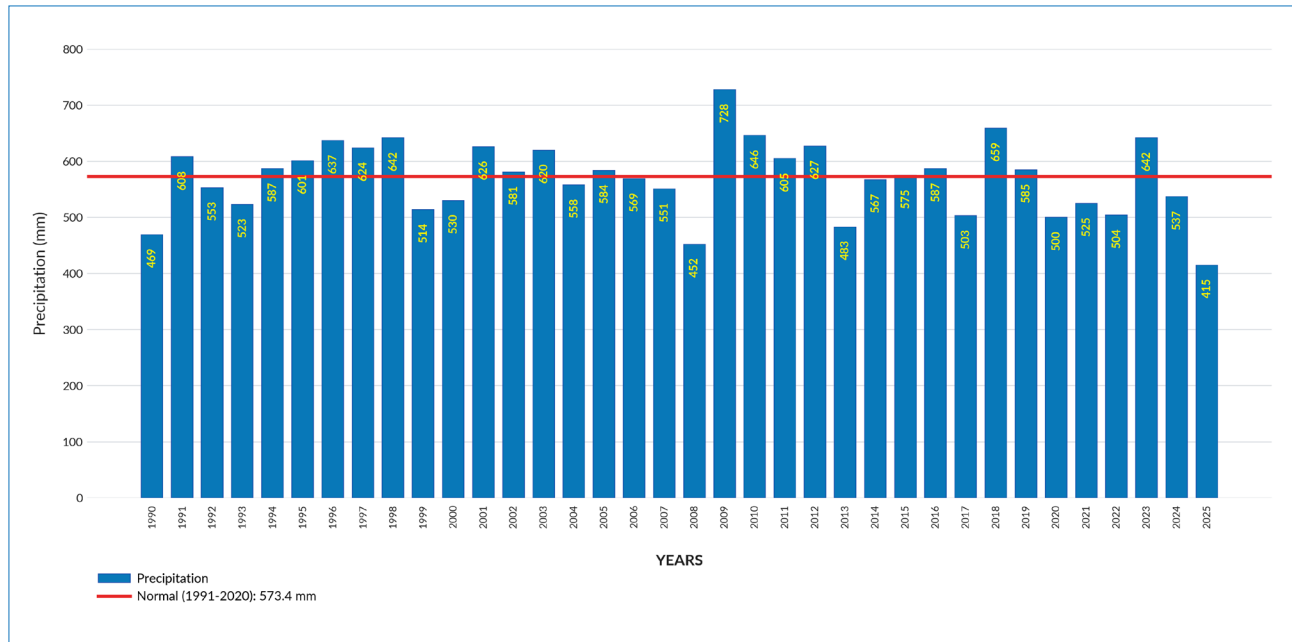
In 2025, the lowest temperature was -32.6°C in Horasan/Erzurum in February, and the highest temperature was 50.5°C in Silopi (Şırnak) in July. Türkiye has reached a new maximum temperature record of 50.5°C. In 2025, while the mean temperatures in Türkiye are below the long-term mean in 1 centers; at 219 stations, it was above the long-term mean.

2.4.2 Precipitation

According to the TSMS, the long-term annual mean areal precipitation in Türkiye between 1991 and 2020 was 573.4 mm. Analysis of the observed data indicates that the year 2009 had the highest recorded precipitation at 728.3 mm, which is 154.9 mm above the long-term average, while 2025 had the lowest recorded at 414.9 mm, which is 158.5 mm below the long-term average, as shown in Figure 3 (TSMS, 2026). The amount is approximately 27.6% below from the period of 1991-2020's normal (573.4).

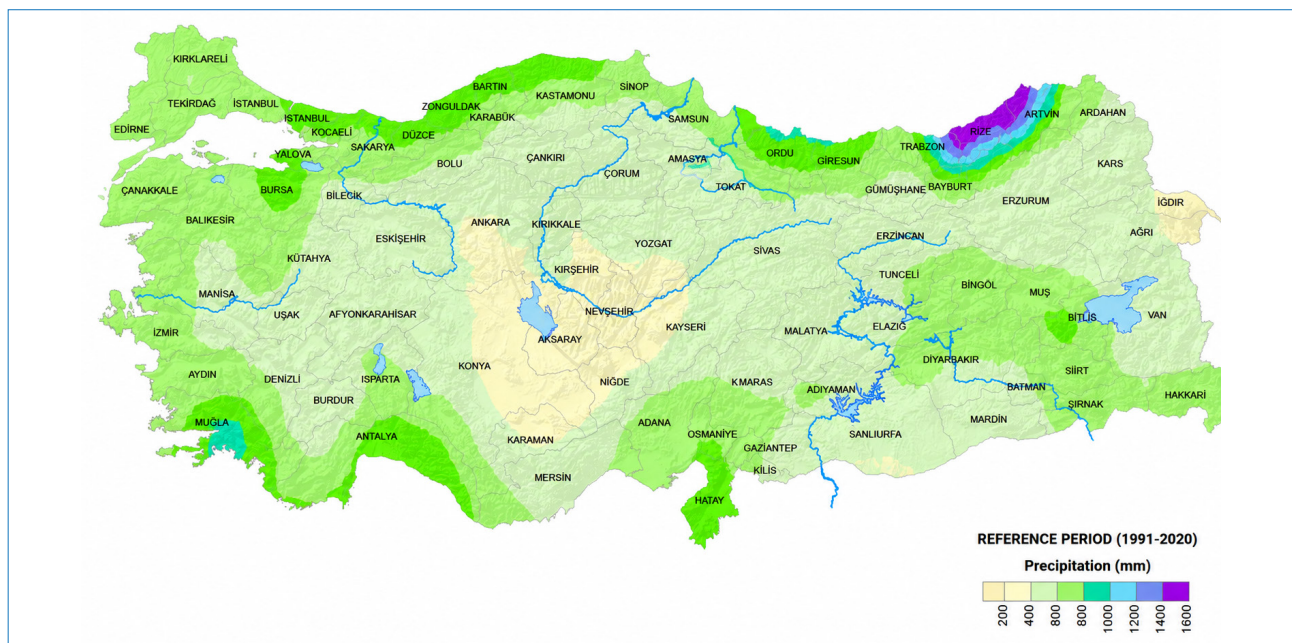


Figure 3 - Annual precipitation in Türkiye (1991-2025)



During the period of 1991-2020, the Eastern Black Sea Region had the highest total precipitation, while the lowest values were observed in the Central Anatolia and Eastern Anatolia Regions, as presented in Figure 4. Specifically, the total precipitation amount exceeding 1600 mm was observed over Artvin, Rize, and Trabzon in the Eastern Black Sea Region, while it was around 800-1000 mm following the Western and Central Black Sea and the Taurus Mountains. The Aegean Region had the highest precipitation amount, reaching around 1000 mm over Muğla Province. The lowest total precipitation in Türkiye was observed around 300 mm over Konya, Aksaray, Karaman, Iğdır, and Şanlıurfa provinces.

Figure 4 - Long-term mean total precipitation distribution in Türkiye (TSMS, 2026)



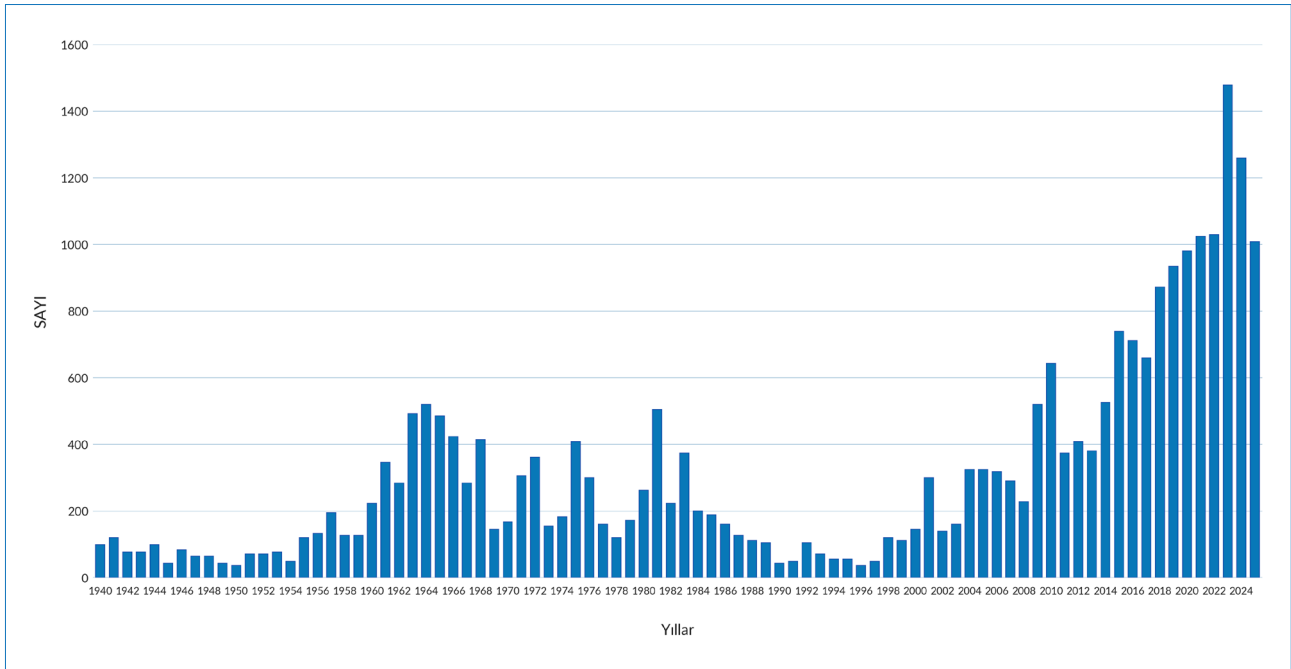


In Türkiye, the highest temperatures are generally observed in the summer season with the countrywide average reaching up to 25°C, while the lowest temperatures are typically experienced in the winter season, falling below 5°C. Türkiye receives the majority of its precipitation during the winter and spring seasons. During the summer, the amount of precipitation decreases, while the temperature and evaporation rates increase. This phenomenon results in the presence of water shortages in most parts of the country during the summer months, except for the Eastern Black Sea Region.

2.4.3 Extreme Weather Events

The frequency of meteorological extreme events in Türkiye has shown a marked increase, particularly since the early 2000s. According to the TSMS, a total of 1,257 meteorological extreme events were recorded in 2024 while 1,011 were recorded in 2025, as shown in Figure 5 The year 2023 saw the highest number of disasters since 1940 with a total of 1,475 disasters (Figure 5).

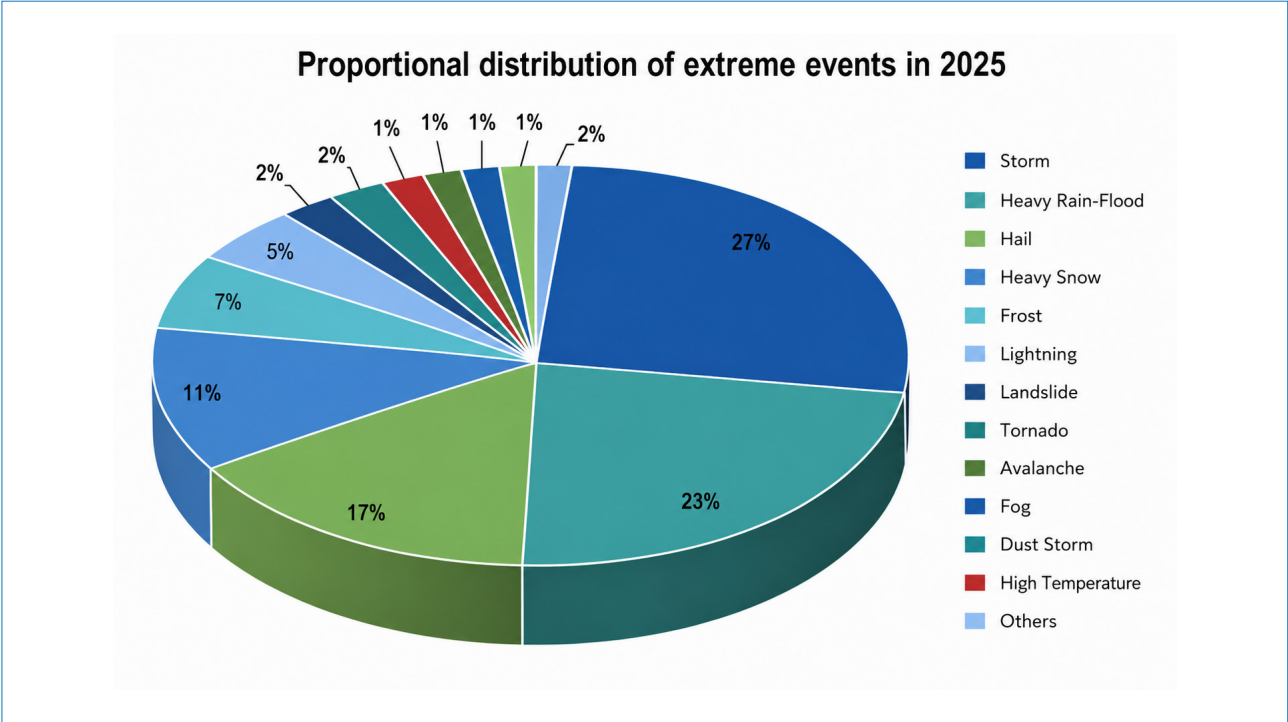
Figure 5 – Total numbers of annual extreme weather events in Türkiye (1940-2025)



In 2025, the most hazardous extreme events were storms with 27%, heavy rainfall and floods with 23%, hail with 17%, heavy snow with 11%, frost with 7%, lightning strikes with 5%, landslides with 2%, and tornadoes with 2%. Extreme events such as avalanches, wildfires, fog, and sandstorms accounted for 1% or less of the total (Figure 6).



Figure 6 – Extreme weather events in 2025



2.5 ECONOMIC PROFILE

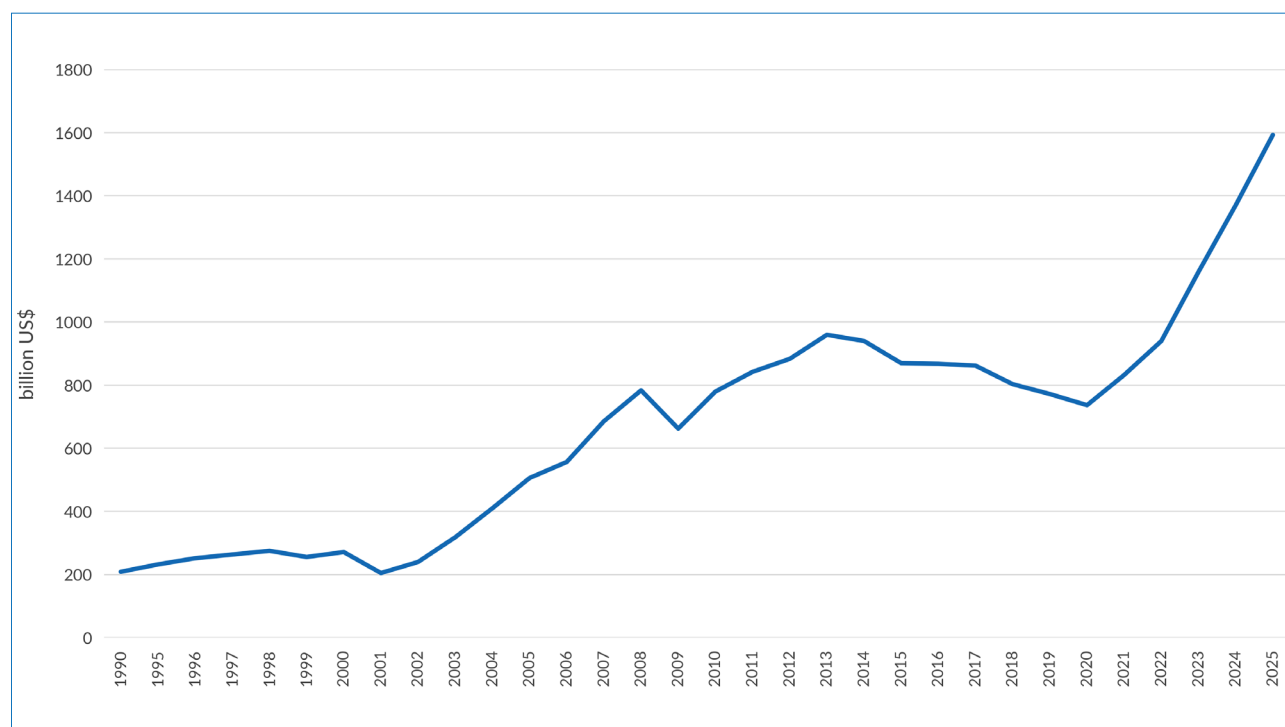
Since 1990, Türkiye’s macroeconomic landscape has experienced notable volatility driven by both regional and global headwinds. Despite several economic shocks—particularly in 1994, 2001, and 2008—the Turkish economy demonstrated a generally positive growth trajectory during the 1990–2013 period. A relative moderation in economic performance and GDP trends was observed from 2014 to 2020, followed by a strong recovery in economic activity and accelerated growth in 2021 and 2024 (Figure 7).

According to TurkStat, Türkiye’s economy continued to grow in recent years. In 2024, Türkiye’s GDP grew by 3.2% year-on-year, reaching USD 1.36 trillion in current prices, with GDP per capita climbing to USD 15,325. These metrics underscore the continuous expansion of the Turkish economy amid ongoing global uncertainties.³³

33. TurkStat, 2026_b.



Figure 7 - GDP, billion USD, 1990 - 2025³⁴



According to the targets of the Medium-Term Programme (MTP) 2026-2028, Türkiye aims to maintain stable economic growth over the medium term. The programme sets GDP growth targets of 3.8% for 2026, 4.3% for 2027 and 5.0% for 2028. These projections reflect the government's strategy to sustain economic expansion while improving macroeconomic stability, strengthening fiscal discipline, and enhancing productivity.³⁵ International organizations also provide projections for Türkiye's economic outlook. According to the Organisation for Economic Co-operation and Development (OECD)'s June 2026 Economic Outlook, Türkiye's GDP growth is projected to be 3.1% in 2026 and 3.8% in 2027, as tight financial conditions and higher energy and commodity prices continue to weigh on domestic demand.³⁶

Türkiye's foreign trade has expanded significantly over the past decades despite periodic fluctuations caused by economic crises and global economic developments. According to TurkStat, Türkiye's total foreign trade volume reached approximately 639 billion USD in 2025, consisting of 273 billion USD in exports and 365 billion USD in imports.³⁷

Between 1990 and 2013, Türkiye's foreign trade generally followed an increasing trend, although temporary declines occurred during economic crisis periods such as 1994, 2001, and 2009. Both export and import values increased considerably during this period. However, a decline in trade volumes was observed between 2014 and 2020, partly due to global economic conditions and the impacts of the COVID-19 pandemic. Following the pandemic, foreign trade recovered and expanded rapidly in the subsequent years.

³⁴. TurkStat, 2026_b.

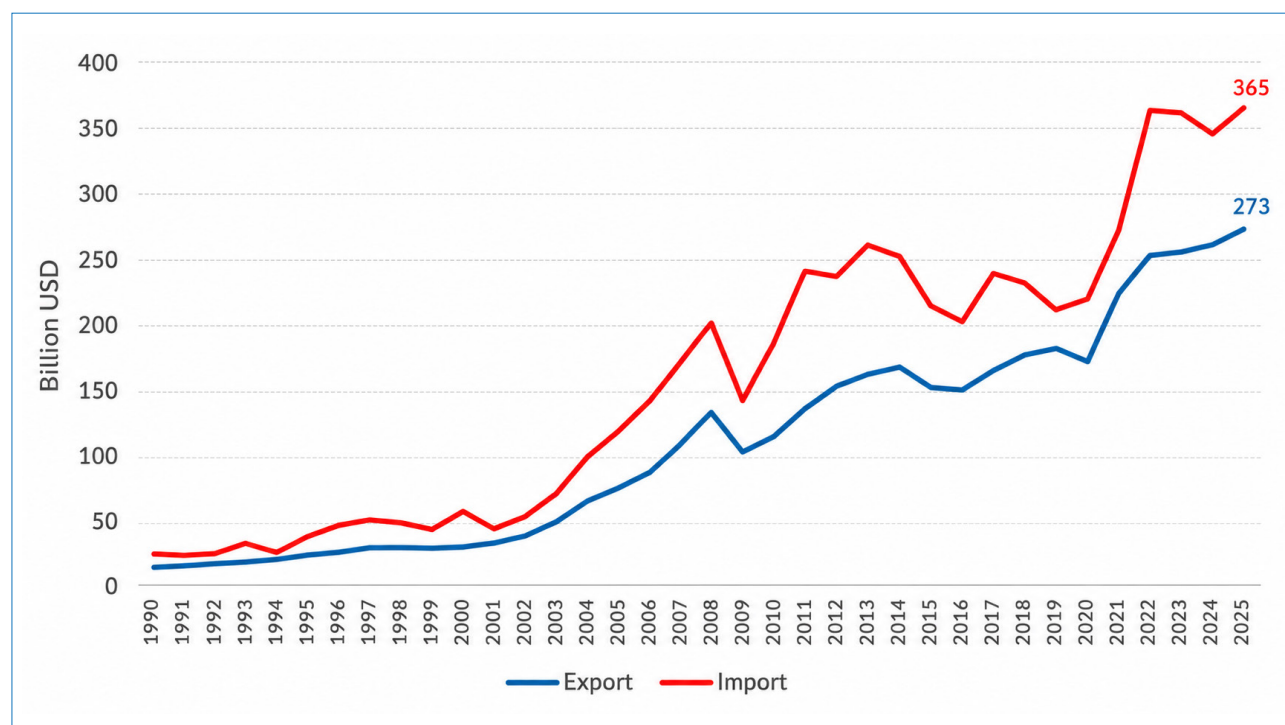
³⁵. MTP, 2025. OECD, 2026_a.

³⁶. https://www.oecd.org/content/dam/oecd/en/publications/reports/2026/06/oecd-economic-outlook-volume-2026-issue-1_8be0dba6/2d1956f0-en.pdf#page=282.05

³⁷. TurkStat, 2026_c. Trade



Figure 8 – Foreign trade, 1990-2025³⁸



Climate mitigation policies implemented by key trading partners may have economic and social implications for Türkiye. In particular, the European Union’s Carbon Border Adjustment Mechanism (CBAM) entered a transitional reporting phase on October 1, 2023, and financial obligations were introduced on January 1, 2026. Importers will be required to purchase CBAM certificates corresponding to the embedded emissions of these products. The CBAM applies to production emissions of aluminum, cement, iron and steel, electricity, fertilizers, and hydrogen. Therefore, the CBAM could affect directly or indirectly all sectors that produce and/or use these product groups as inputs.

Given the European Union’s substantial share in Türkiye’s total export volume and Türkiye’s status as a primary supplier of iron, steel, cement, and aluminum to the EU, it was initially anticipated that the country would be among those most affected by the regulation. However, despite early apprehensions among domestic producers, the actual macroeconomic impact of the CBAM on the Turkish economy³⁹ has proven manageable. In fact, the mechanism could yield a net competitive advantage for Türkiye’s steel and manufacturing exporters due to their lower carbon footprints relative to non-EU competitors.

38. TurkStat, 2026_c. Trade

39. Trade Beaufils, T., Gallé, J. 2026.



2.6 ENERGY INDUSTRIES

Population and economic growth, rapid urbanization in Türkiye, are increasing energy demand. The use of fossil fuels and the transition to electricity, particularly in key sectors such as industry, transportation, and building heating, are the primary causes of greenhouse gas emissions in the energy sector.

Electricity demand in Türkiye has shown a steady increase over the past decade, reflecting economic growth and rising energy consumption. The country's installed electricity generation capacity has expanded significantly, increasing more than threefold over the last two decades. Total installed capacity reached 116,265 megawatts (MW) in 2024.⁴⁰

As of the end of 2024, renewable energy sources constitute a large share of the installed capacity, with hydropower accounting for 27.7%, solar 17.4%, wind 11.1%, and geothermal 1.5% of the total capacity. Fossil fuel-based generation capacity, including multi-fuel-fired power plants, consists mainly of natural gas (21.2%) and coal (18.9%).⁴¹ These figures demonstrate the increasing role of renewable energy in Türkiye's electricity system and the diversification of the country's energy mix.

Türkiye's Energy Policy prioritizes reducing import dependency by strengthening energy supply security and maximizing the use of domestic and renewable energy resources in an environmentally sustainable manner. In this context, Türkiye aims to utilize its domestic and renewable energy potential more effectively while ensuring a secure, reliable, and diversified energy supply.

Accordingly, the main strategies and policies for enhancing energy supply security in Türkiye include:

- Promoting hydrogen and other low-carbon fuels to support the clean energy transition and strengthen long-term energy security,
- Expanding energy storage systems and modernizing electricity grids to integrate higher shares of renewable energy,
- Strengthening regional electricity interconnections and cross-border energy trade,
- Supporting innovation and domestic manufacturing in clean energy technologies and strategic energy equipment,
- Supporting the electrification of end-use sectors, particularly transport, buildings, and industry, to improve energy efficiency and reduce fossil fuel dependence,
- Developing critical mineral value chains to support the clean energy transition and strengthen supply chain resilience,
- Prioritizing domestic energy resources to diversify the energy supply mix,
- Increasing the share of renewable energy sources in total energy supply,
- Improving energy efficiency across all sectors,
- Introducing nuclear energy for electricity generation,
- Strengthening free market conditions and improving the investment climate in the energy sector,

40. TEİAŞ, 2026_a <https://www.teias.gov.tr/turkiye-elektrik-uretim-iletim-istatistikleri>

41. TEİAŞ, 2026_a.



- Diversifying oil and natural gas supply sources and reducing risks associated with import dependency,
- Developing Türkiye's role as a regional energy hub by effectively utilizing its geostrategic position,
- Ensuring environmentally responsible management of energy and natural resource activities,
- Increasing the contribution of natural resources to the national economy,
- Expanding the production and domestic utilization of industrial raw materials, metallic and non-metallic minerals,
- Ensuring energy accessibility for consumers in terms of cost, timing, and availability.

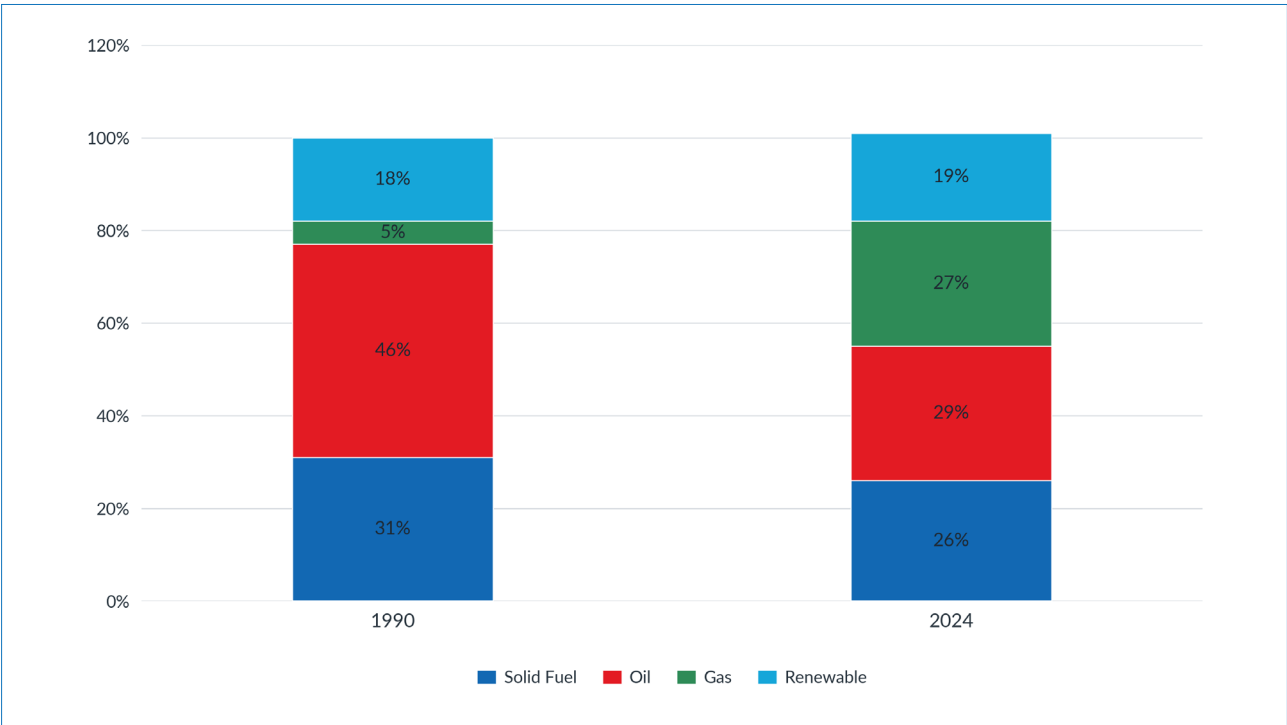
2.6.1 Primary Energy

2.6.1.1 Production from Primary Energy Resources

Türkiye has experienced one of the highest rates of energy demand growth among OECD countries over the past decades. Rapid economic growth, population increase, and urbanization have significantly increased energy demand. However, Türkiye's domestic energy resources are limited and insufficient to meet the country's growing energy needs.

Total primary energy supply was 52.5 million tons of oil equivalent (Mtoe) in 1990 and increased to 165.2 Mtoe in 2024 (a 215% increase). The share of fossil fuels in total primary energy supply was 82% in 1990, and 81% in 2024. The share of renewables, on the other hand, was 19% in 2024⁴² (Figure 9).

Figure 9 – Primary energy supply 1990 and 2024⁴³



42. MENR, 2026. National Energy Table 2024³⁹.

43. MENR, 2026.

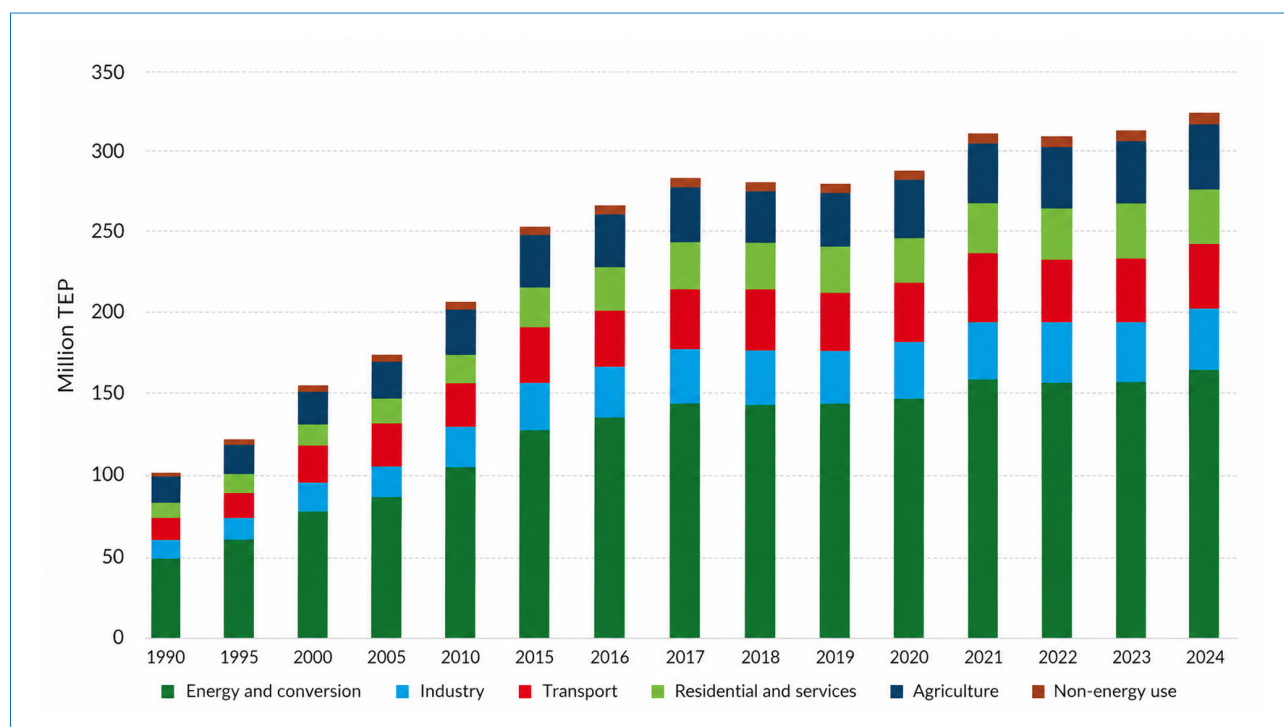


Total installed power capacity in Türkiye increased sixfold since 1990 and reached 116.3 GW in 2024, and according to the National Energy Plan, it is expected to reach 189.7 GW by 2035. The share of domestic resources in total installed power capacity was around 70% in 2024.⁴⁴

2.6.1.2 Consumption of Primary Energy Sources

Türkiye's total final energy consumption by sector from 1990 to 2024 roughly tripled over the period, rising from about 52 million TOE in 1990 to approximately 165.2 million TOE in 2024, with the fastest expansion occurring between 2000 and 2017. Residential and services remained the largest consuming segment for most of the period, reaching around 42 million TOE in 2024, followed closely by the energy and conversion sector (≈ 38 million TOE) and industry (≈ 38 million TOE). Transport recorded the most rapid growth, nearly quadrupling from about 9 million TOE in 1990 to 35 million TOE in 2024, reflecting rising mobility and vehicle ownership. Agriculture and non-energy use, by contrast, accounted for consistently small shares—together under 8% of the total. Brief declines are visible around 2018–2019 and 2022, but the long-term trajectory points to sustained growth in energy demand across all major sectors (Figure 10).

Figure 10 – Final energy consumption by sector, 1990-2024⁴⁵



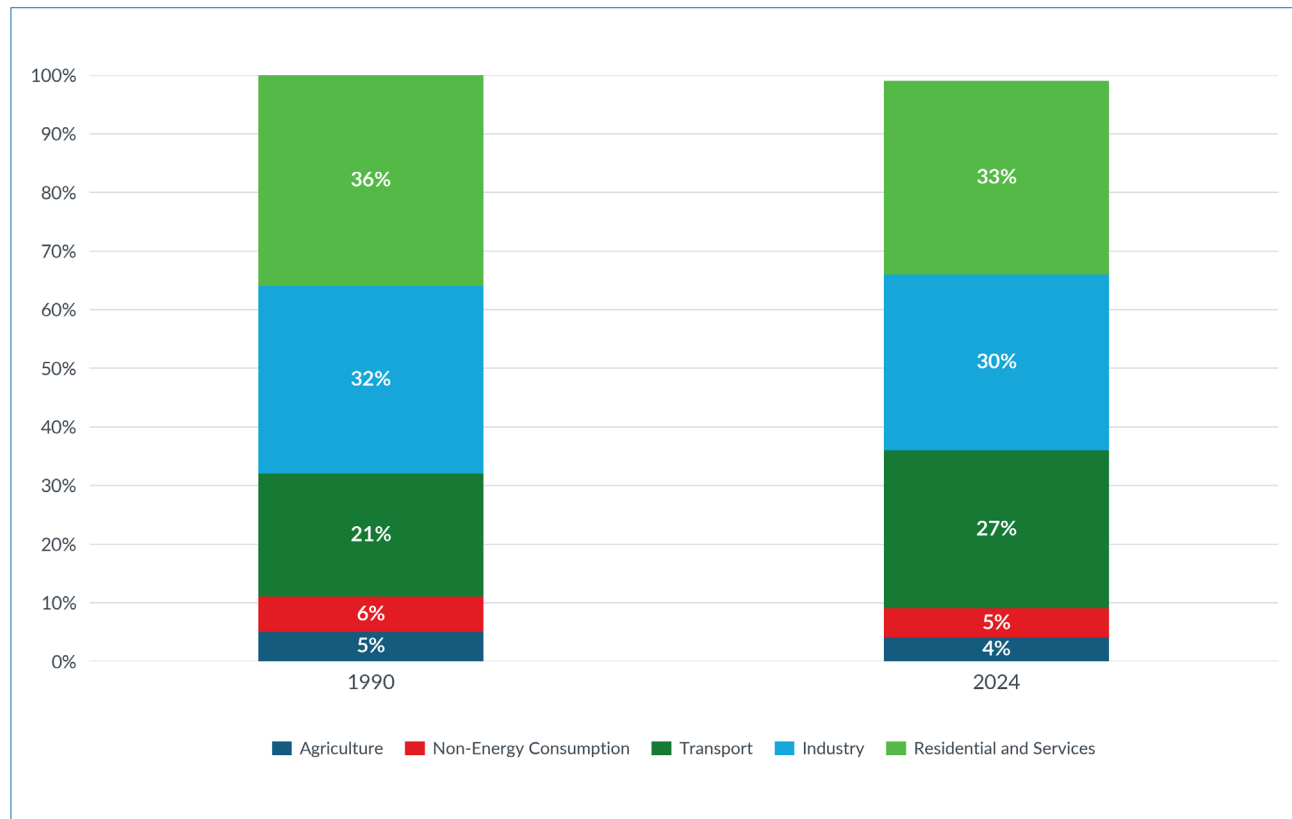
Industrial and building sectors are the highest energy-consuming sectors and account for around 60% to 70% of final energy consumption. In 2024, the industrial sector accounted for 30%, residential and services for 33%, transportation for 27%, non-energy consumption for 5%, and agriculture for 4% of the final energy consumption (Figure 11).

44. TUEP, 2026

45. MENR, 2026.



Figure 11 – Distribution of final energy consumption by sectors (%), 2024⁴⁶



Renewable Energy Sources

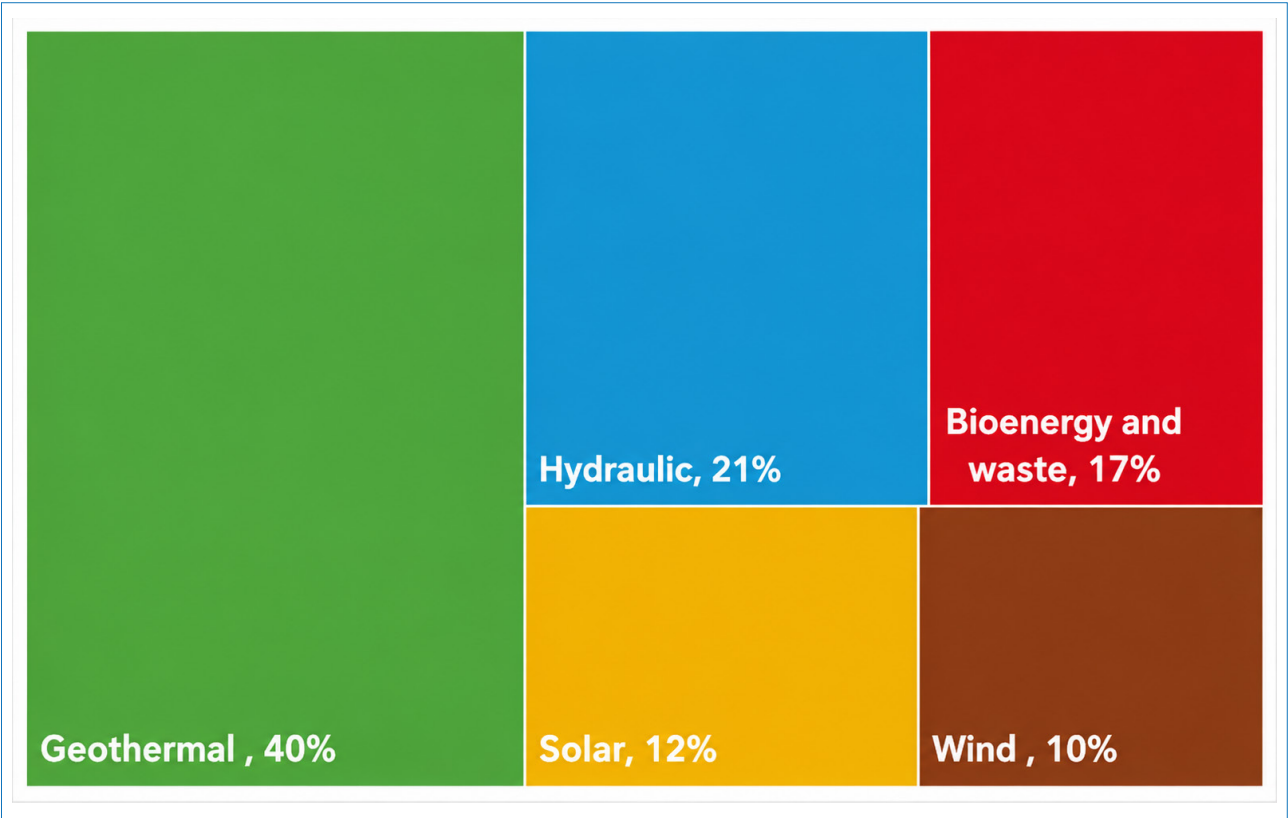
As the demand for energy grows in Türkiye, the utilization of renewables for electricity generation appears to be one of the most efficient alternatives for meeting the growing demand for electricity. The share of renewable energy in total electricity installed capacity has reached approximately 60% in Türkiye as of the end of 2024. With this ratio, Türkiye ranks 5th in Europe and 11th in the world. With 11% of the global geothermal power, Türkiye is 1st in Europe and 4th in the world. In hydraulics, it is 2nd in Europe and 8th in the world. 97% of the 9,000 MW power commissioned in 2020 and 2021 was renewable; the rest is cogeneration, which is a best practice for efficiency.

In 2024, 19% (31 Mtoe) of Türkiye's total primary energy supply was met by renewable energy sources. As of the end of 2024, 17% of the renewable energy supply in Türkiye came from biomass sources, 21% from hydraulic sources, 40% from geothermal sources, 10% from wind, and 12% from solar energy (Figure 12). Türkiye's energy policy prioritizes the use of renewable energy sources while reducing import dependency to improve supply security. Policies such as the Renewable Energy Sources Support Mechanism (YEKDEM) and Renewable Energy Resource Areas (YEKA) have significantly accelerated investments in renewable energy, especially for wind and solar power.

46. MENR, 2026



Figure 12 – The share of renewable energy by energy resources, 2024⁴⁷



2.6.1.3 Wind Energy

According to the **Türkiye Wind Energy Potential Atlas (REPA)**, the potential of Türkiye is nearly 140,000 to 150,000 MW; 20,788 MW of which is offshore.⁴⁸ Wind power-based electricity generation facilities in Türkiye have increased. The wind power plant capacity reached 12,871 MW in 2024.⁴⁹

In order to make maximum use of Türkiye’s wind power potential, to ensure the integration of more wind farms into the electricity system, and to predict the electricity power to be generated from wind, a by-law published in 2013 introduced the condition of connecting all wind power plants to the Wind Power Monitoring and Forecasting System (RITM). In this framework, 280 wind power plants with a capacity of over 10 MW have been connected to the RITM (83% of the installed power; total installed power: 10,976 MW). Power generation from operational WPPs can be simultaneously monitored, and power generation for 48 hours can be forecasted. Moreover, activities aimed at reducing the forecast error ratio for electricity generated from wind are in progress within the scope of the RITM Project.⁵⁰

47. MENR, 2026.

48. MENR, 2026.

49. TEİAŞ, 2026_a.

50. TEİAŞ, 2026_b. http://www.ritm.gov.tr/root/index_eng.php



2.6.1.4 Solar Energy

Türkiye, judging by its geographical location on the globe, is situated in one of the most advantageous regions in terms of benefiting from solar energy, which is called the solar belt. According to **Türkiye's Solar Energy Potential Atlas (GEPA)** prepared by the Ministry of Energy and Natural Resources (MENR), total annual insolation time is 2,737 hours (total of 7.5 hours per day), and total annual solar energy derived is 1,527 kWh/m² (total of 4.2 kWh/m² per day).⁵¹ The installed capacity of solar energy is 20,232 MW at the end of 2024 and is expected to increase to 52,900 MW according to TUEP.⁵²

2.6.1.5 Geothermal Energy

Türkiye has a high potential in terms of geothermal energy resources. Geothermal energy is a significant domestic and renewable energy source for the country due to its intensive tectonic movements. The geothermal potential of Türkiye is 40,000 Megawatt Thermal (MWt) and approximately 15% of this power has been utilized for heat and 4% for electricity generation.⁵³ Even though the technical potential for generating electricity from geothermal sources is estimated to be 4,000 MW, the total installed power in Türkiye reaches to 1,734 MW as of the end of 2024. Geothermal utilization in Türkiye can be represented by a remarkable increase, especially in electricity production. As of the end of 2024,⁵⁴ Türkiye had 66 operating geothermal power plants, representing a total installed capacity of 1,734 MW. By the amendment to Electricity Market Law No. 6446 on 1 July 2022, technical evaluation has been obligatory for geothermal power plants. In Türkiye, geothermal resources are mainly used for electricity generation, followed by heating purposes (greenhouses, residential areas, plants, etc.) and thermal tourism.

2.6.1.6 Hydraulic Energy

Türkiye's gross theoretical hydropower potential is 433 billion kWh. However, because it is not possible to use the full potential with existing technologies, the technically feasible potential is about half of this amount (which is 216 billion kWh). A further limitation is the fact that each facility that can technically be constructed may not be very cost-friendly. Therefore, the more realistic potential is closer to 160 billion kWh/year. Türkiye has about 2.3% of the world's economically viable hydropower potential and about 17% of Europe's total potential.⁵⁵

Of the total 360 billion kWh of electricity produced in 2025, approximately 60 billion kWh came from hydroelectric power plants. Hydroelectric power plants met approximately 16% of the electricity demand in 2025. In 2025, 72.2% of the electricity generated from hydroelectric power plants was produced in storage-type hydroelectric power plants, and 27.8% was produced in run-of-river hydroelectric power plants.⁵⁶

2.6.1.7 Biomass Energy

The **Biomass Energy Potential Atlas (BEPA)** prepared by MENR for identifying biomass potential in Türkiye. According to the Atlas, the biomass potential is identified, in theory, as 34 Mtoe. The

51. MENR, 2026.

52. TUEP, 2026.

53. MENR 2026_a. <https://enerji.gov.tr/bilgi-merkezi-enerji-jeotermal-en>

54. MENR, 2026_a.

55. MENR, 2026_b. <https://temsani.gov.tr/p/186/hidroelektrik>

56. DSI, 2025. <https://dsi.gov.tr/Haber/Detay/14826>



amount of usable biomass energy potential is approximately 3.9 Mtoe. The amendment to Electricity Market Law No. 6446, dated 1 July 2022, is undergoing technical evaluation for biomass power plants. Until 2011, there were only a few biomass plants; the number of plants generating energy from various biomass sources reached 384, with a total capacity of 1,921 Megawatt Electricity (MWe) as of the end of 2022.⁵⁷ As of the end of 2024, Türkiye had a total installed biomass capacity of 2,371 MW, including waste heat-based generation.

In order to decrease import dependency, increase the diversity of supply, and progress the approximation process to the EU Acquis, the rules and procedures for blending ethanol produced from local agricultural products into gasoline and diesel have been regulated. According to data from the Energy Market Regulatory Authority (EMRA), the installed bioethanol capacity in Türkiye is 152.0 million liters across three active facilities. The total amount of bioethanol production in the year 2023 was 65,773.04 tons. The installed biodiesel capacity in Türkiye is 239,715 tons, and the total amount of biodiesel production in the year of 2023 was 101,016,12 tons according to the data from EMRA.

The biogas production (collected gas) from landfills and wastewater treatment has increased in recent years. In total, 457 kilo tons (kt) of CH₄ was collected in 2024 from solid waste sites and wastewater facilities (see Section 2.10).

2.6.2 Waste Heat

Within the scope of the National Energy Efficiency Action Plan objectives, the **“Türkiye Waste Heat Potential Evaluation Project”**⁵⁸ has been conducted in cooperation with the World Bank in order to determine the waste heat potential of Türkiye and to prepare the necessary arguments for converting this potential into an enterprise-based investment. Studies have been carried out to assess the waste heat market in Türkiye, identify technically and financially viable waste heat recovery investments and existing barriers to the implementation of waste heat recovery investments, and develop sample/templates for energy audits within the scope of the project.

A total of 18 energy audits focusing on waste heat have been conducted in industrial enterprises, buildings, and thermal power plants. The final energy consumption information for the sectors from the database of our MENR and the chimney temperature and flow rate information of 340 industrial enterprises from the database of the MoEUCC have been used to determine the waste heat areas. In addition, information was gathered by holding consultation meetings with sector representatives and institutions. After the waste heat potential was determined using the top-down methodology in light of the collected data, it was analyzed by comparing it with the potential that emerged using the bottom-up methodology as a result of the studies carried out in the enterprises.

As a result of the studies, 66,000 TJ/year at a rate of 11% of the final consumption of the industrial sector, 29,000 TJ/year at a rate of 5% of the final consumption of the building sector, and 65,000 TJ/year at a rate of 5% of the final consumption of the thermal power plants have been identified. In total, a theoretical waste heat potential of 160,000 TJ/year has been determined. It has been calculated that an investment of 2.4 billion dollars will be needed to bring the identified potential into the economy. With the acquisition of the potential, 10 MtCO₂/year emissions corresponding to 4 million vehicles can be prevented.

57. MENR, 2026.

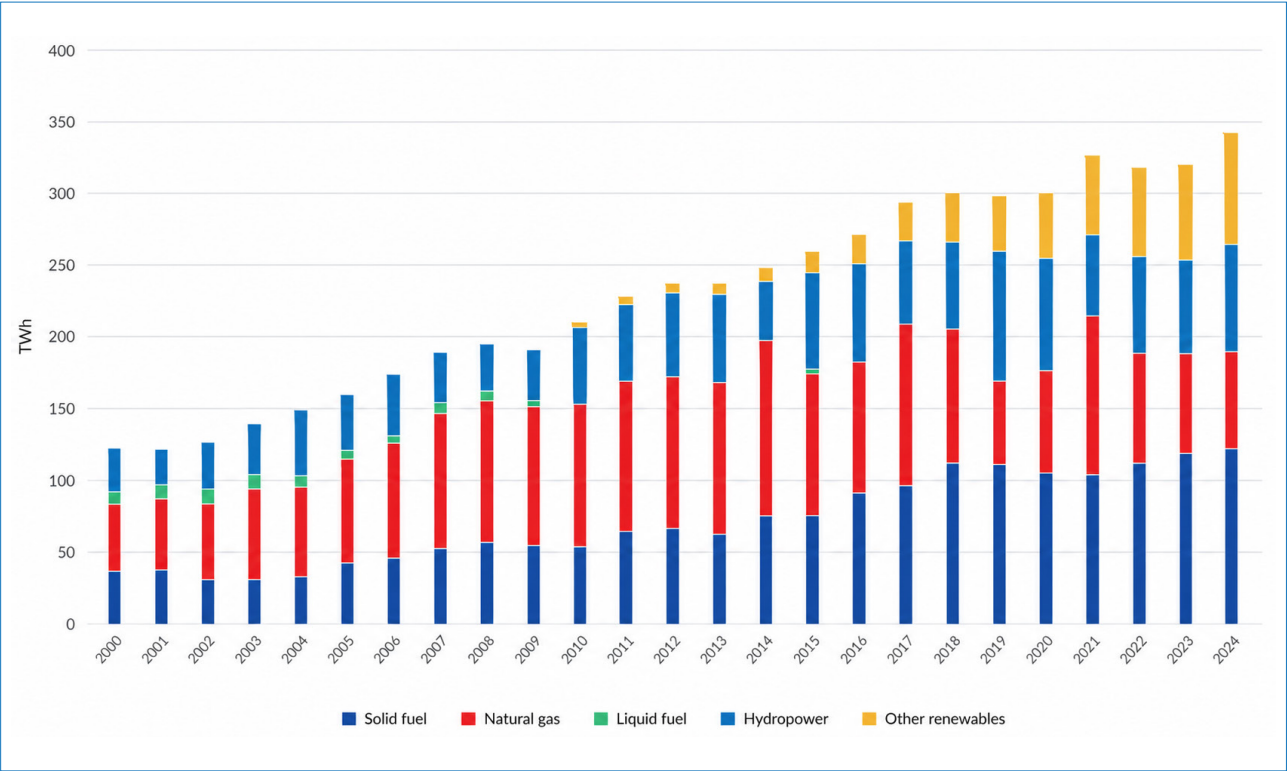
58. World Bank, 2022. <https://enerji.gov.tr/Media/Dizin/EVCED/tr/EnerjiVerimlili%C4%9FiKojenerasyonTesislerinBelgelendirilmesi/Belgeler/gorevc.pdf>



2.6.3 Electricity Sector

According to the latest national GHG inventory, the total CO₂ emissions released by the energy sector in 2024 were 419.9 Mt of CO₂ eq. and 161.35 Mt of this was attributable to the electricity sector. Installed power capacity increased from 16,318 MW in 1990 to 116,265 MW at the end of 2024. Annual electricity production grew from 57.5 terawatt-hours (TWh) to 354.6 TWh during the same period. The share of hydropower was 21.11%, other renewables were 25.24%, natural gas was 18.89%, liquid fuels were 0.07%, and the percentage of solid fuels was 34.7% in electricity production in 2024.

Figure 13 – Electricity generation by primary energy resources, 1990-2024⁵⁹

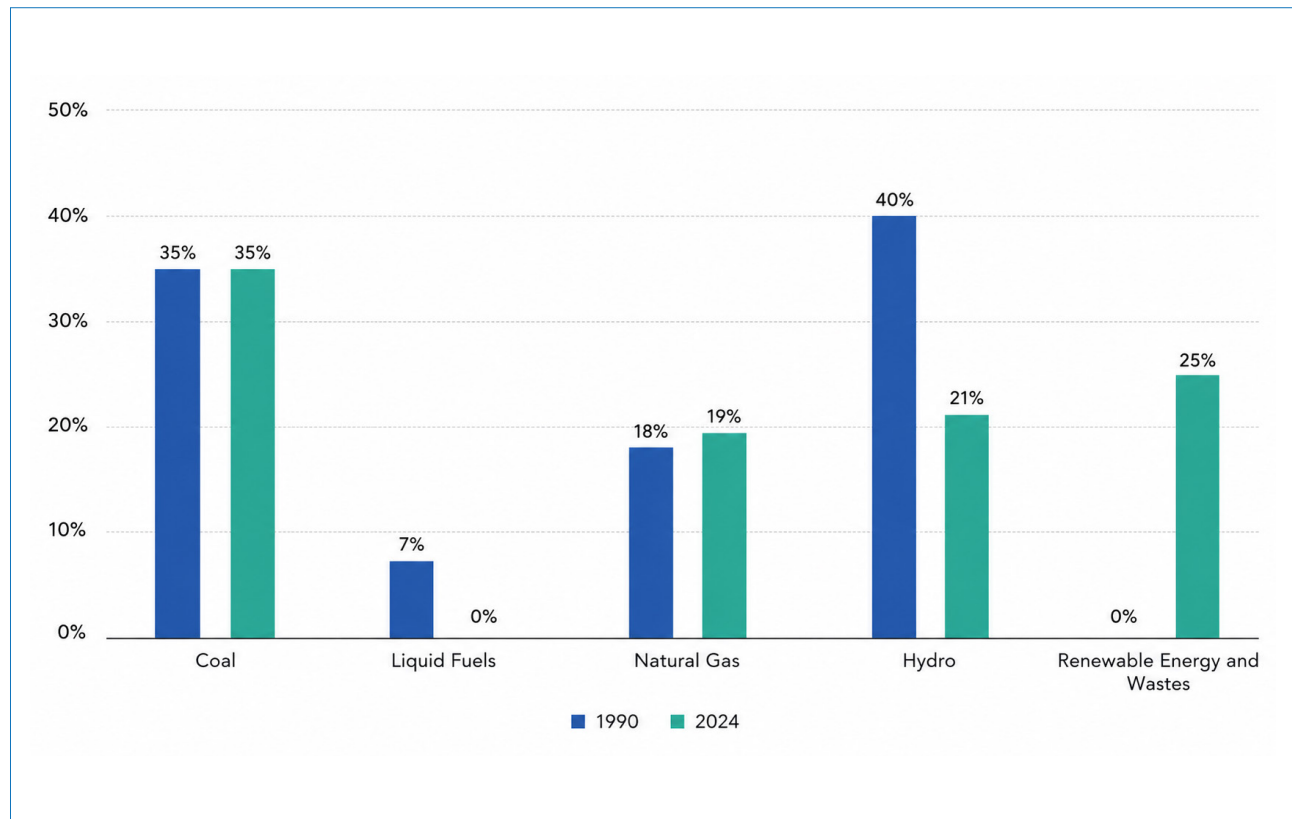


In 2024, electricity production from fossil-fueled thermal power plants accounted for 190.231 TWh of 354.570 TWh total electricity production. The fossil-fueled thermal share in electricity production significantly decreased to 53.7% in 2024.

59. MENR, 2026



Figure 14 – Electricity generation and shares by energy resources, 1990 – 2024



Renewable Law, which came into force in 2005 and was later revised in 2011, provided some supporting mechanisms for purchasing electricity from solar, biomass, geothermal, wind, and hydraulic energy. Wind installed capacity increased from 10,607 MW in 2021 to 12,871 MW in 2024. In the same year, the installed capacity of solar power plants rose to 20,232 MW, marking a 160% increase compared to 2021. Over the past five years, the installed capacity of solar power plants has nearly quadrupled.

The **National Renewable Energy Resource Guarantee System**, i.e. YEK-G System and the Organized YEK-G Market were opened in June 2021 under the operation of Energy Exchange İstanbul (EXIST/EPİAŞ). The By-Law on the Renewable Energy Resource Guarantee System (YEK-G System) was prepared by EMRA and entered into force on June 1, 2021. Moreover, the procedures and principles for the operation of the YEK-G system and the organized YEK-G market were also published in the Official Gazette on May 8, 2021. The YEK-G system and the organized YEK-G market started operation on June 21, 2021 under the operation of EXIST (market operator of Türkiye). The system enables the trade of YEK-G certificates issued for each 1 MWh of green energy generation from renewable power plants. YEK-G certificates are tradeable within licensed market players through bilateral agreements and also on the organized YEK-G market. The system framework and certificate properties were designed similarly to the EU's Guarantees of Origin system. The YEK-G system also complements the ongoing green tariff (YETA) in the matter of proofing the green electricity generation.



2.6.4 Energy Efficiency

The main framework of energy efficiency efforts in Türkiye was outlined with the Energy Efficiency Law (No. 5627), which came into effect in 2007. The first Energy Efficiency Strategy Document (2012–2023), which was published in 2012, aimed to reduce Türkiye’s energy intensity (energy consumed per unit of GDP) by at least 20% by 2023 compared to 2011. The efforts conducted within the scope of the National Energy Efficiency Action Plan (NEEAP) between 2017 and 2023 involved an investment of 8.47 billion dollars, resulting in 24.625 Mtoe of energy savings and a reduction of 68.62 Mt of CO₂ eq. emissions. Additionally, approximately 45,000 new green jobs were created in the sector.

The 2nd National Energy Efficiency Action Plan (2024–2030) was developed with the aim of achieving Türkiye’s new energy efficiency vision and strategy, and the target has been raised in the updates.

The plan establishes a comprehensive strategy across four critical sectors to maximize national energy efficiency. In the Industry and Technology sector, efficiency improvement projects (VAPs) are actively supported to modernize energy-intensive enterprises. For Buildings and Services, the focus centers on ensuring energy savings, particularly within public infrastructure, upgrading national insulation standards, and expanding green building certifications. Transportation targets focus heavily on developing electric vehicle infrastructure and on strongly promoting public transport systems to reduce urban fuel reliance. Finally, the roadmap for Agriculture and Energy Generation aims to scale up the expansion of cogeneration systems while simultaneously minimizing grid transmission and distribution losses. To reach the targets set by 2030, a total investment of 20.2 billion dollars is expected from both the public and private sectors. Over the period 2024–2030, it is projected to cumulatively achieve 37.1 Mtoe of energy savings and a reduction of 100 Mt of CO₂ eq. emissions.

2.7 BUILDING STOCKS AND URBANIZATION

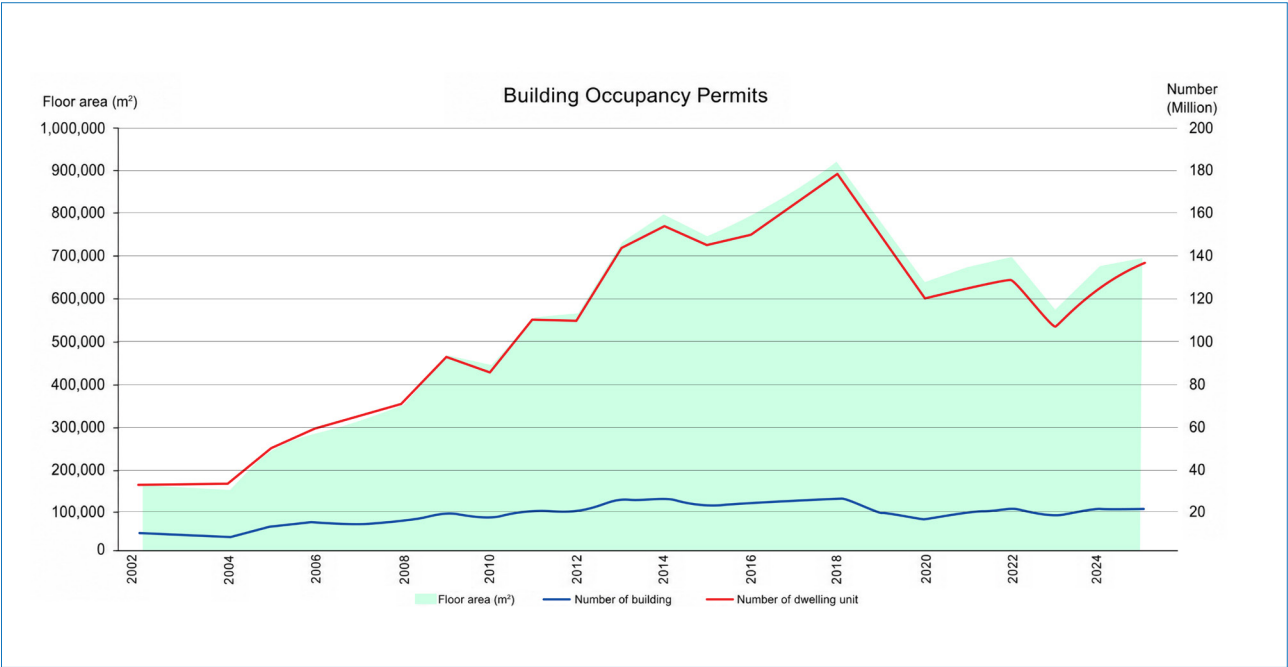
Türkiye has a high rate of urbanization, with a rapid annual increase in the urban population. The urban population increased from 32.5 million to 80.1 million during the 1990–2024 period. A high rate of urbanization leads to a fast-growing building stock and an intensive need for transportation in cities. The buildings sector in Türkiye, which includes residential, commercial, and public buildings, was responsible for 33% (42 Mtoe) of the country’s total energy consumption in 2024.⁶⁰

According to TurkStat there are approximately 15 million buildings in Türkiye, excluding industrial buildings. The construction sector has been growing rapidly. According to building permit statistics, the majority of new buildings were constructed after 2002. While 47 thousand new buildings with a total floor area of 31.7 million m² were constructed in 2002, 103 thousand new buildings with a floor area of 141.5 million m² were constructed in 2025 (Figure 15). During the 2002–2025 period, while the annual number of new buildings increased by 118%, the annual number of new dwelling units increased by 329% and the annual floor area of new buildings increased by 347%. Occupancy permits peaked in 2018 but declined during the COVID-19 pandemic. However, they have started to increase again in the past two years.

60. MENR, 2026.



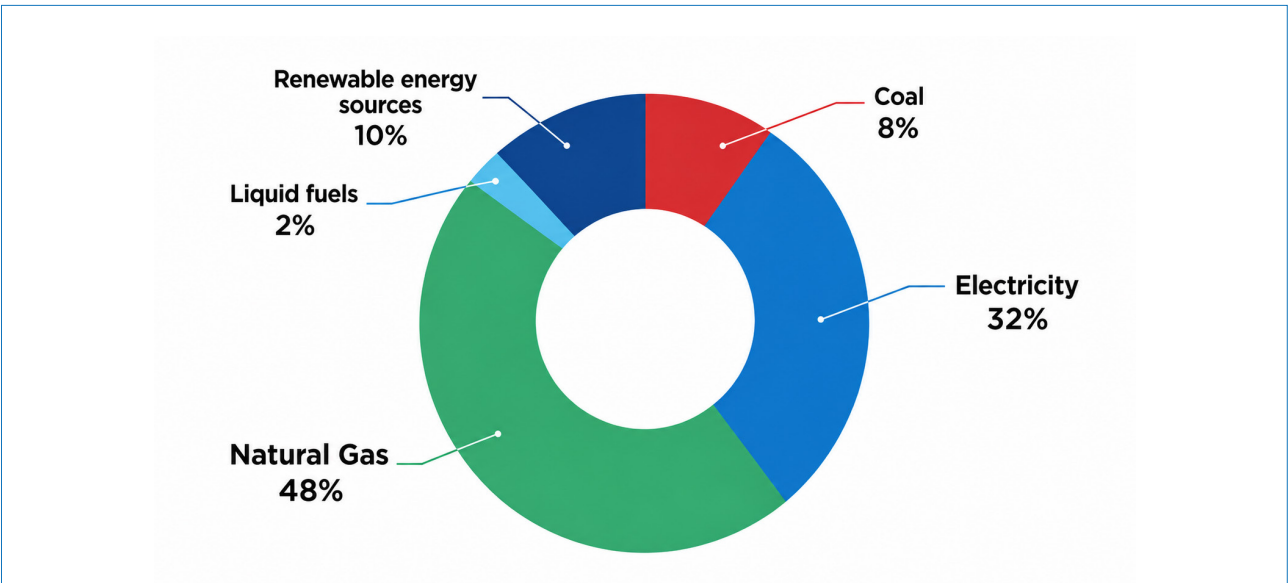
Figure 15 – Number of new buildings’ occupancy permit by year (2002-2024)⁶¹



The share of residential buildings is 86% of the total building stock, followed by commercial buildings.⁶²

In 2024, energy consumption in buildings was met by natural gas (48%), electricity (32%), coal (8%), renewable energy sources (10%), including solar, geothermal, wood and plant/animal residues, and liquid fuels (2%) (Figure 16).

Figure 16 – Energy consumption in buildings by energy resource (2024)⁶³



61. TurkStat, 2026_d. Building permits

62. TurkStat, 2026_d.

63. MENR, 2026.



The building sector is responsible for 11% of total GHG emissions in 2024. Energy consumption of buildings has been increasing by 4% per year since 1990. GHG emissions from residential, commercial, and institutional buildings rose from 27.6 Mt CO₂ eq. in 1990 to 65.9 Mt CO₂ eq. in 2024, reflecting an average annual growth rate of about 2.68%. Although energy efficiency activities lower the rate of increase in energy consumption of buildings, growing building stocks are expected to continue increasing, with a continued increase in GHG emissions in Türkiye. GHG intensity of the buildings decreased by 39% between 1990 and 2024.

Türkiye's building stock is expected to continue increasing until the projected year 2050, with the total building area anticipated to exceed 5.5 billion m².

2.8 MANUFACTURING INDUSTRIES AND CONSTRUCTION

Turkish industry is composed of many different sub-sectors with different characteristics, representing approximately 20% to 30% of GDP. Among the sectors of industry, the manufacturing industry greatly affects national economic growth. Turkish manufacturing industry⁶⁴ had 5 million jobs with a turnover of 7.5 billion TRY in 2024. Its share in GDP was 16.8% (Table 5). The food, basic metal, manufacture of motor vehicles, trailers and semi-trailers, and textile industry represent the largest contributors to manufacturing industry turnover, with shares of 16%, 10%, 9%, and 6%, respectively. Those sectors are followed by fabricated metal products except machinery and equipment, wearing apparel, manufacture of the non-metallic mineral products, rubber and plastic products, and electrical equipment.⁶⁵ The automotive industry has the highest share of Turkish exports, representing 12% of exports.⁶⁶

Table 5 – Main indicators of industry sector, 2024⁶⁷

Sub-sector	number of enterprises	number of persons employed	Turnover (Billion TRY)	Contribution to GDP (Billion TRY)	%
C- Manufacturing industry	478,004	5,033,048	23,291.0	7,509.59	16.8

The construction sector was one of the most important drivers of the Turkish economy, contributing 5.8% of GDP in 2024.⁶⁸

Primary energy consumption of industry in 2024 was 38.471 Mtoe, accounting for 30% of the total energy consumption.⁶⁹ The largest two single industries, in terms of primary energy consumption, have been the iron and steel industry with 27% (10,221 Mtoe) and the non-metallic mineral industry with 26% (9,846 Mtoe).⁷⁰

Although energy consumption of the industrial sector increased from 13.641 Mtoe to 38.471 Mtoe during the 1990-2024 period, the sector's emission intensity decreased considerably from 2.4 ton CO₂ eq./toe to 1.8 ton CO₂ eq./toe in the same period. Energy efficiency activities, an increasing

64. Activities classified under C at the Statistical Classification of Economic Activities in the European Community (NACE) Rev. 2.

65. TurkStat, 2026_e.

66. TurkStat, 2026_c.

67. 7th NC, 2019 and TurkStat, 2026_b

68. TurkStat, 2026_b.

69. MENR, 2026.

70. MENR, 2026.



share of renewables, and using waste as an alternative fuel are expected to lead to a lower rate of increase in GHG emissions from the industrial sector.

2.9 TRANSPORTATION

Türkiye's transportation sector has experienced significant development over the past two decades. Road and railway networks have expanded considerably, and new airports, seaports, tunnels, bridges, and viaducts have been constructed across the country. These infrastructure investments have improved connectivity, reduced travel times, and contributed to the modernization of the transport system.

Between 2002 and 2023, the number of tunnels increased by approximately 496%, while the number of bridges and viaducts increased by around 65%. During the same period, the railway network expanded significantly, supported by major investments in conventional and high-speed rail infrastructure.

As of 2024, Türkiye's total railway network length has exceeded approximately 14,200 km, including more than 2,600 km of high-speed railway lines. These investments aim to improve intercity connectivity, increase the share of rail transport in passenger and freight transportation, and contribute to more sustainable mobility (Table 6).

Table 6 – Selected key indicators for transportation sector⁷¹

Indicator	2002	2024	Change
Highway (km)	1,714	3,796	121%
Road Tunnel Number - (Km)	83	495	496%
Number of Road Bridges and Viaducts - (Km)	5,967	9,871	65%
Railway Network (km)	10,948	13,919	27%
Electric Railway Line Length (km)	2,082	7,274	249%
High Speed Train Line Length (km)	0	2,251	-
Number of Active Airports	26	58	123%
Port Facility	149	217	46%

The transport sector was responsible for 27% (30.473 Mtoe) of Türkiye's final energy consumption in 2024. Road transport was responsible for 94% of energy consumption in the transportation sector, and air transport was responsible for 4%. The number of road motor vehicles has been increasing since the 1990s. While there were 3.8 million road motor vehicles in 1990, this number reached approximately 31.3 million in 2024 (Figure 17). This was reflected in the rise of road motor vehicles per 1000 people from 68 in 1990 to 190 in 2024. In parallel, the total movement of passengers (passenger-km) using inland transport increased by 200% between 1990 and 2024 (Figure 18).

⁷¹ MoTI, 2022_a.



Figure 17 – Road motor vehicles, 1990-2024⁷²

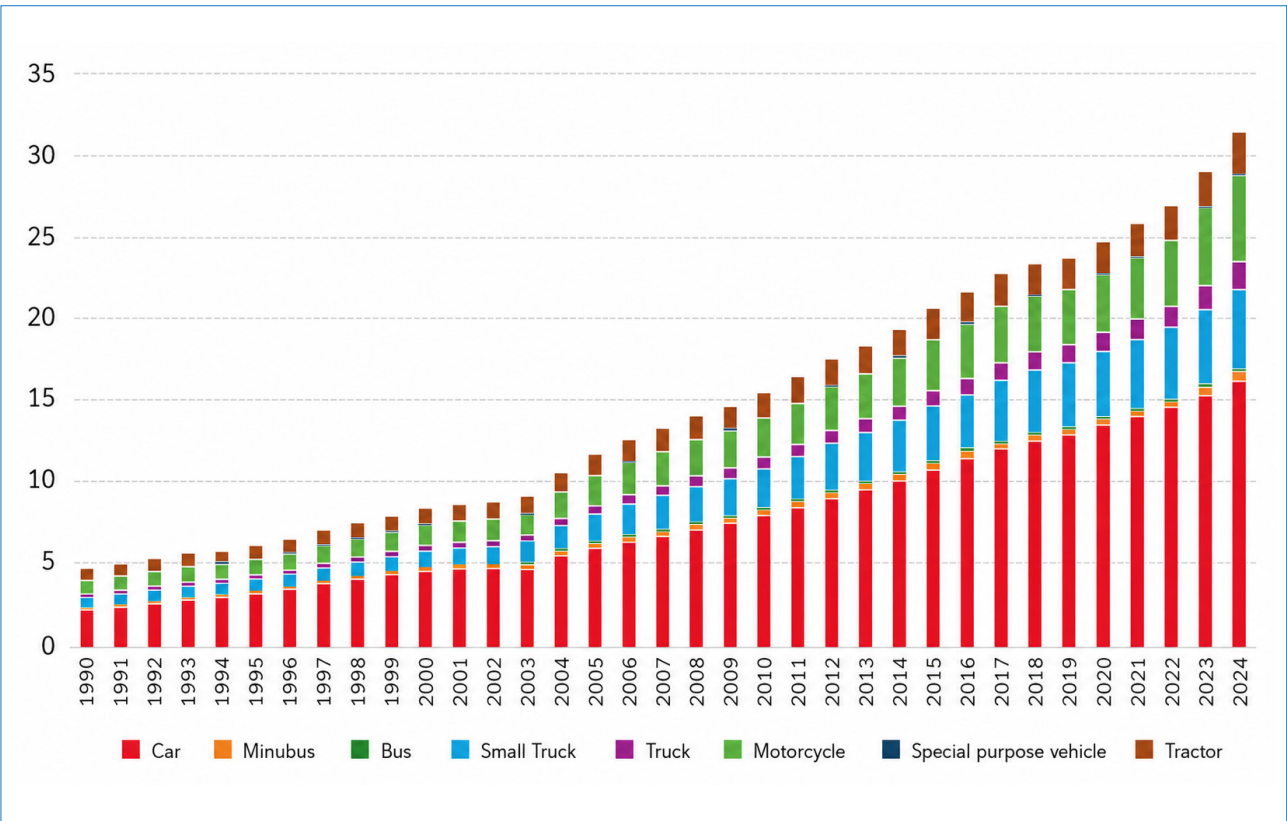
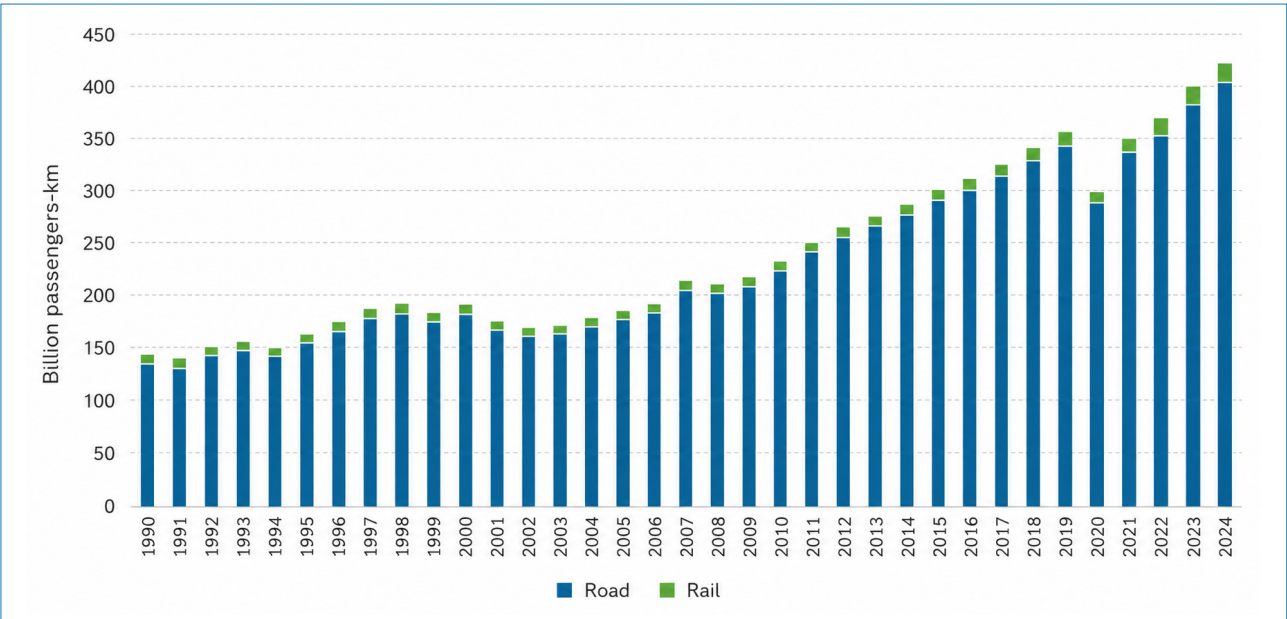


Figure 18 – Change in passenger transport in Türkiye (1990-2024)⁷³



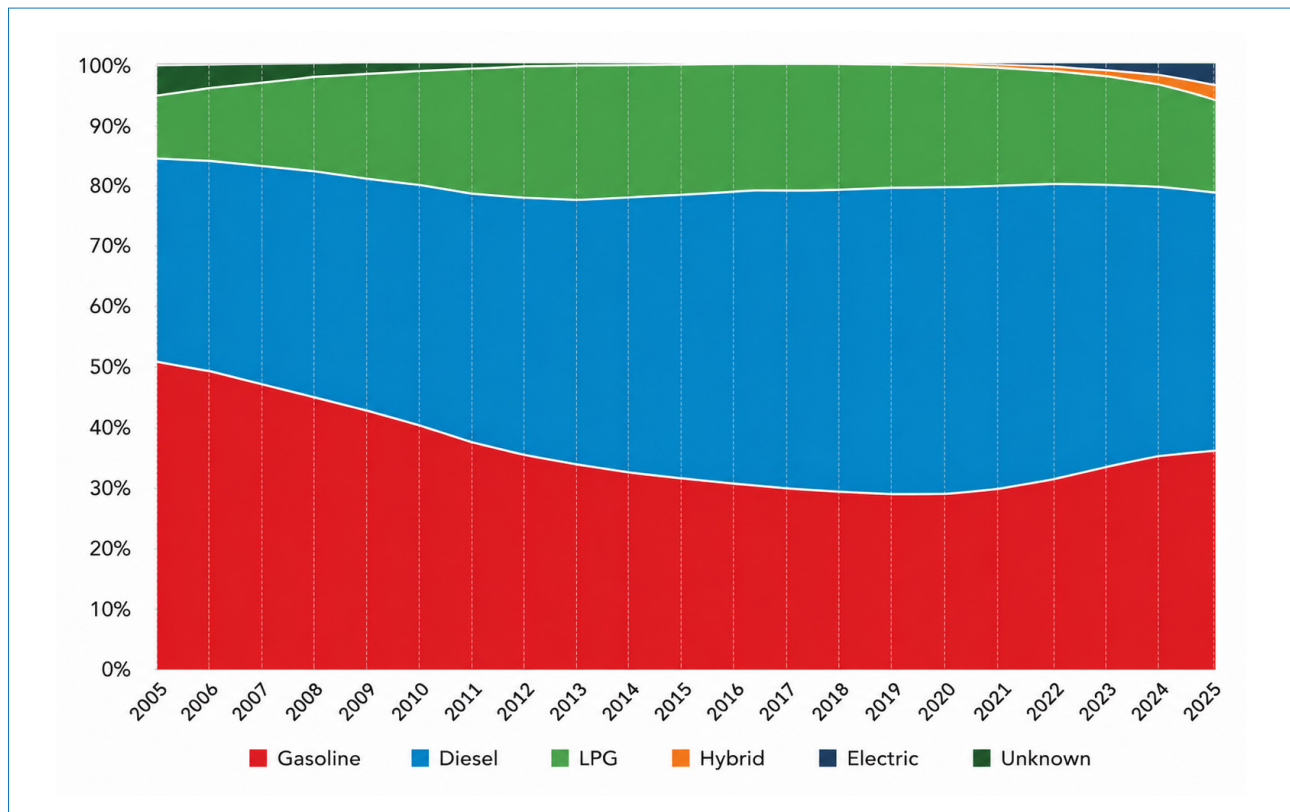
72. TurkStat, 2026_j. Transport

73. OECD, 2026_b



As a result of recent motor vehicle technology and an increase in alternative fuel use after 2003, transport efficiency has increased. LPG was introduced in road transportation after 1997, and fuel use shifted from gasoline to diesel and LPG in road transportation. Electric and hybrid vehicles have been increasing since 2022. While there were no electric or hybrid vehicles on the roads in 2005, there are 1.1 million in 2025 as a result of Türkiye's policies aimed at promoting cleaner transportation. The number of electric vehicles, which was 280 in 2011, reached 370 thousand in 2025. This demonstrates a rapid shift toward electrification. Hybrid vehicles also increased significantly. This notable rise in electric and hybrid vehicle adoption reflects both consumer preferences and the impact of Türkiye's policies that support the transition to greener energy in the automotive sector (Figure 19). As a result of this transformation, a decrease in GHG emissions from road transportation was seen.

Figure 19 - Distribution of cars registered to the traffic according to fuel type, 2005 - 2025⁷⁴

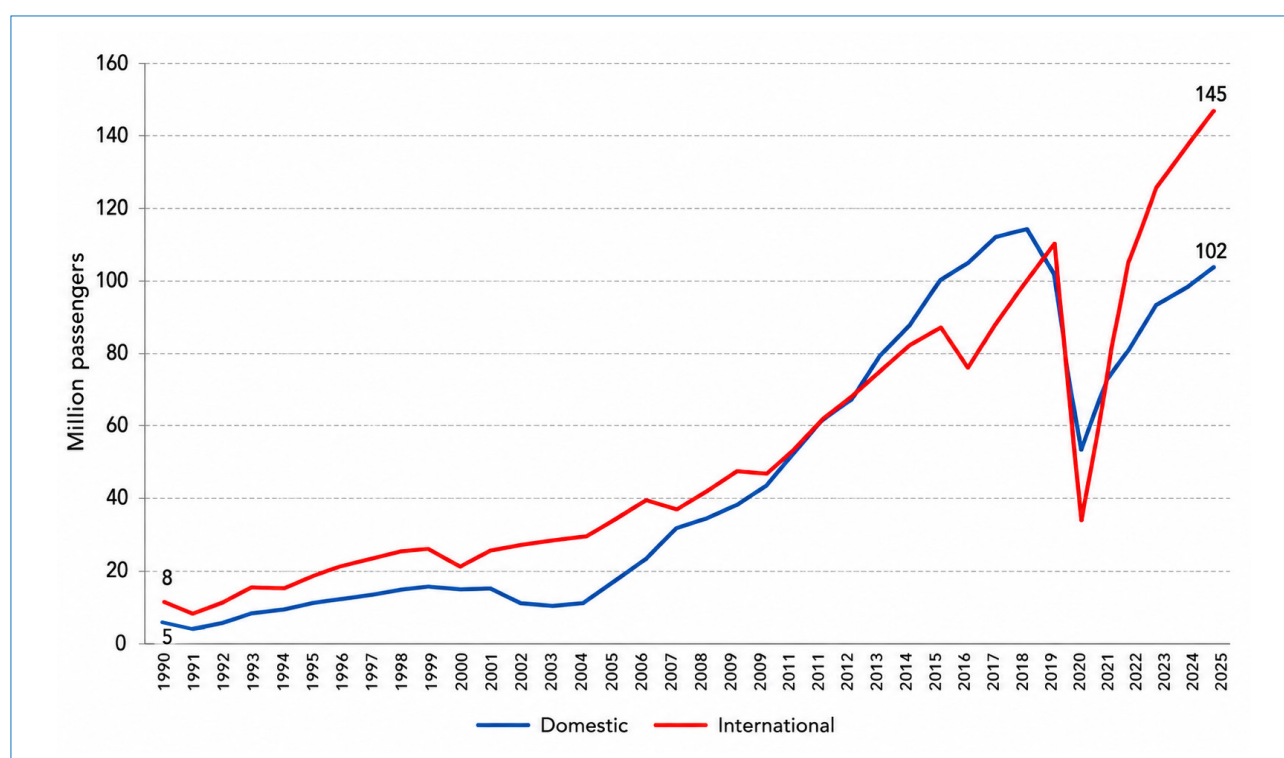


74. TurkStat, 2026_j..



Besides road and railway transport, the airline sector also rapidly expanded. The number of domestic and international passengers using airways increased nineteenfold in the last 30 years, from 13 million in 1990 to 247 million in 2025. Türkiye's plane inventory increased from 138 to 800, and the number of airports increased from 26 to 58 from 2002 to 2025.

Figure 20 – Total domestic and international travel passengers at the airports⁷⁵



2.10 WASTE

Greenhouse gas emissions originating from the waste sector in Türkiye are predominantly related to solid waste disposal and wastewater treatment. Waste generation has been growing continuously in Türkiye; for instance, according to TurkStat data, annual municipal solid waste generation increased from 21.96 Mt in 1990 to 34.4 Mt in 2024. Meanwhile, significant improvements were achieved in waste management. In 1994, by far the main disposal method for municipal waste was the open dumping of waste, nearly without the existence of any composting of waste or other biological waste recovery methods, and only 2 landfills were available. With the developments in the sector, 94 landfills were in operation by 2024, and these facilities serve 99.4% of the municipal population with waste management services⁷⁶. The recovery of CH₄ from waste disposal sites increased significantly from 2002 onward, resulting in a reduction of GHG emissions from the waste sector. The number of managed landfill sites with landfill gas recovery increased from 1 in 2002 to 74 in 2024. In addition, CH₄ was also recovered at one unmanaged solid waste site, bringing the total number of sites with CH₄ recovery to 75 in 2024. A total of 456.4 kt of CH₄ was recovered from managed landfill sites and 0.2 kt from the unmanaged site, resulting in a total CH₄ recovery of 456.6 kt in 2024⁷⁷. In 2024, 2.5% of the total primary energy consumption was covered from waste to energy applications.

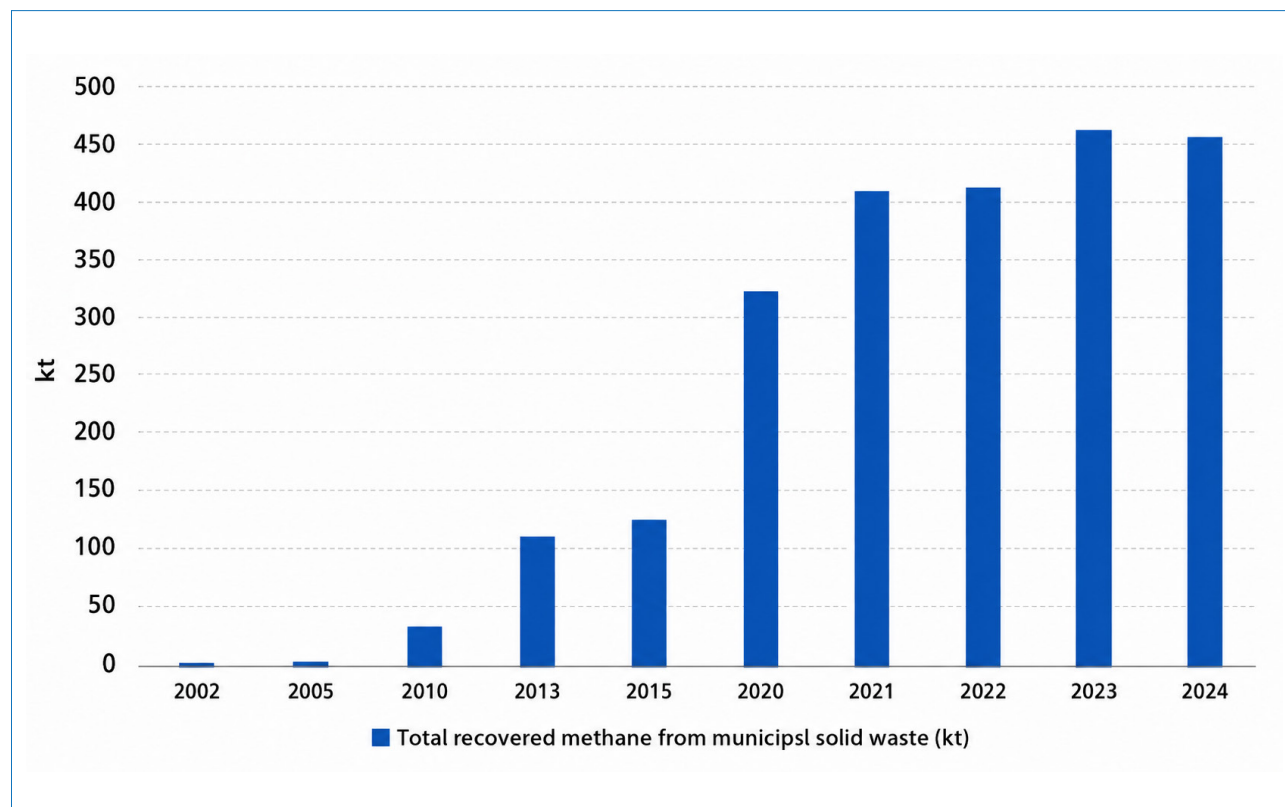
⁷⁵. TurkStat, 2026_g.

⁷⁶. MoEUCC, 2025_b.

⁷⁷. NID, 2024



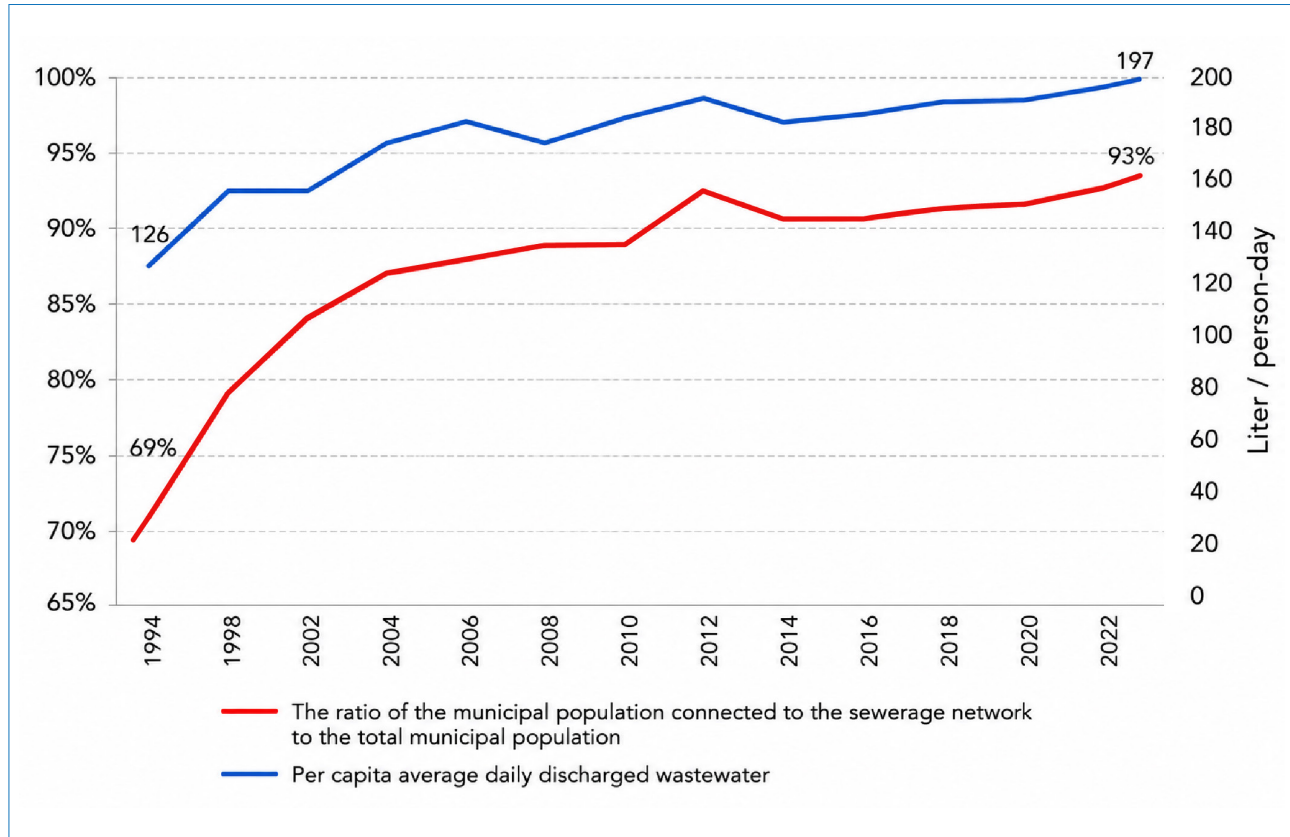
Figure 21 – Recovered methane at the solid waste disposal sites (2002-2024)



Biological treatment of waste is also on the verge of development. According to the National Waste Management Strategy and Plan, biowaste rate is 50% of municipal waste. Biological treatment of waste is also on an increasing trend; however, annual capacity is currently not satisfactory at a too-low level of 1.5 Mt. There are 40 biological waste recovery facilities (19 composting, 19 bio-methanation, 2 biodrying facilities) for municipal waste; 35 mechanical treatment facilities for mixed municipal waste and 3 incineration plants for municipal waste. Private sector has been involved in solid waste management investments supported by incentives such as the YEKDEM mechanism. The private sector generally focuses on the rehabilitation of dump sites in the form of long-term (up to 49 years) build-operate-transfer (BOT) contracts with the municipalities. These public-private partnership (PPP) projects are popular in integrated waste management for a city or a region, including landfill gas capturing, biological recovery, and waste-to-energy facilities (see Section 3.2.5)



Figure 22 - Wastewater amount and services⁷⁸



Türkiye is in the process of transitioning to a circular economy. Within this process, Türkiye's priority is to continue its work based on the Zero Waste project that Türkiye started in 2017. The National Circular Economy Strategy and Action Plan (2025-2028) was published.

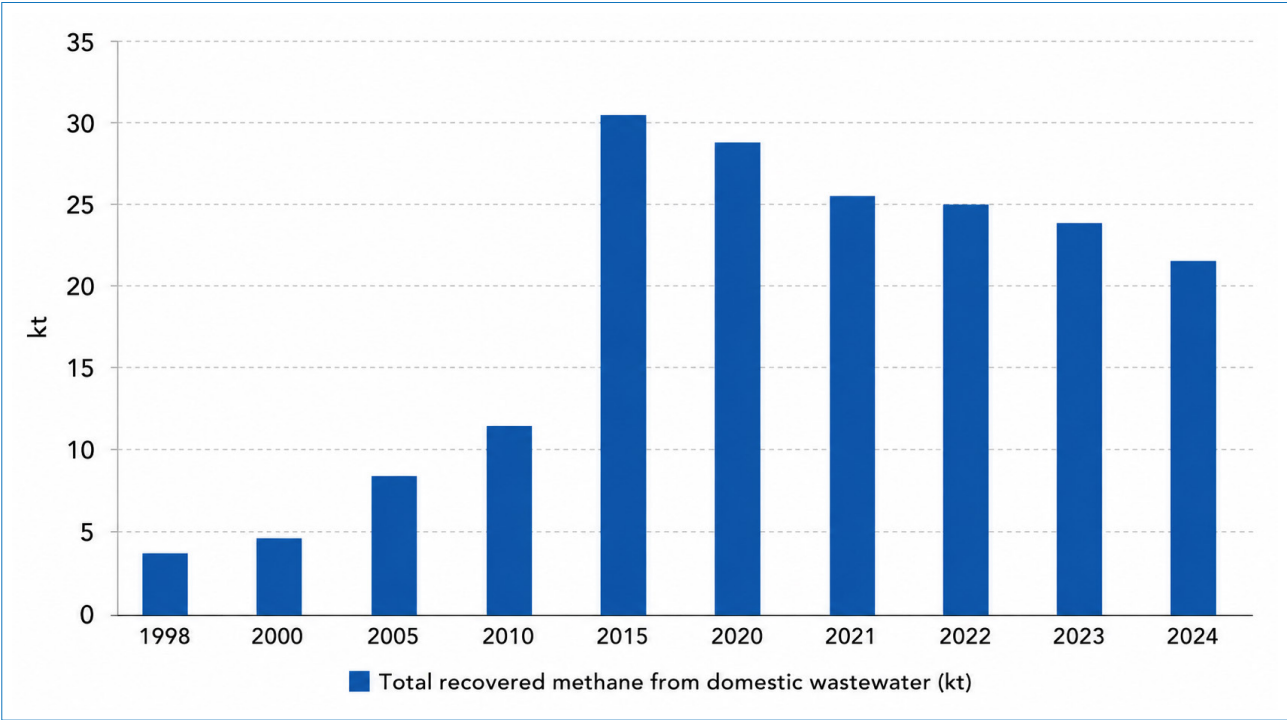
Between 1994 and 2024, both the ratio of the population connected to the municipal sewerage network and their per capita wastewater discharge increased. The percentage of the municipal population connected to sewerage rose from 69% to 93%. Per capita average daily wastewater discharged by the municipal population increased from 126 liters in 1994 to 197 liters in 2022. Within this period, the reuse ratio of treated wastewater has also increased, reaching 5.5%. The aim is to increase Türkiye's wastewater recovery ratio to 15% by 2030 for different purposes, such as agricultural irrigation, urban and recreational use, environmental/ecological use, industrial purposes, etc. Also, 100% of the municipal population is projected to be served by wastewater treatment plants by the year 2028. While increasing the treated wastewater, Türkiye also increased its capacities to utilize wastewater. Between 1998 and 2024, the number of wastewater biogas facilities with CH₄ recovery increased from 1 to 23, and the amount of CH₄ recovery increased from 3.6 kt to 21.6 kt during the same period.⁷⁹

78. MoEUCC, 2025_b.

79. NID, 2026.



Figure 23 – Recovered methane at the wastewater treatment facilities (1998-2024)⁸⁰



2.11 AGRICULTURE

The agriculture sector is among the sectors that provide a major contribution to the country’s GDP, exports, and rural development. Türkiye is an important producer and exporter of agricultural commodities in world markets and is estimated to be the world’s 7th largest agricultural producer.⁸¹ Türkiye’s agricultural vision for the year 2025 is a sustainable and secure future in agriculture, forestry, and water resources.⁸²

Türkiye’s agricultural sector accounted for 5.8% of the country’s GDP in the year 2024. The main sources of agriculture sector GHG emissions are enteric fermentation, agricultural soils, and manure management. Agricultural activities were the primary contributors of CH₄ and N₂O; 62.0% of CH₄ emissions and 77.8% of N₂O emissions originate from agricultural activities in 2024.⁸³

80. NID, 2026.

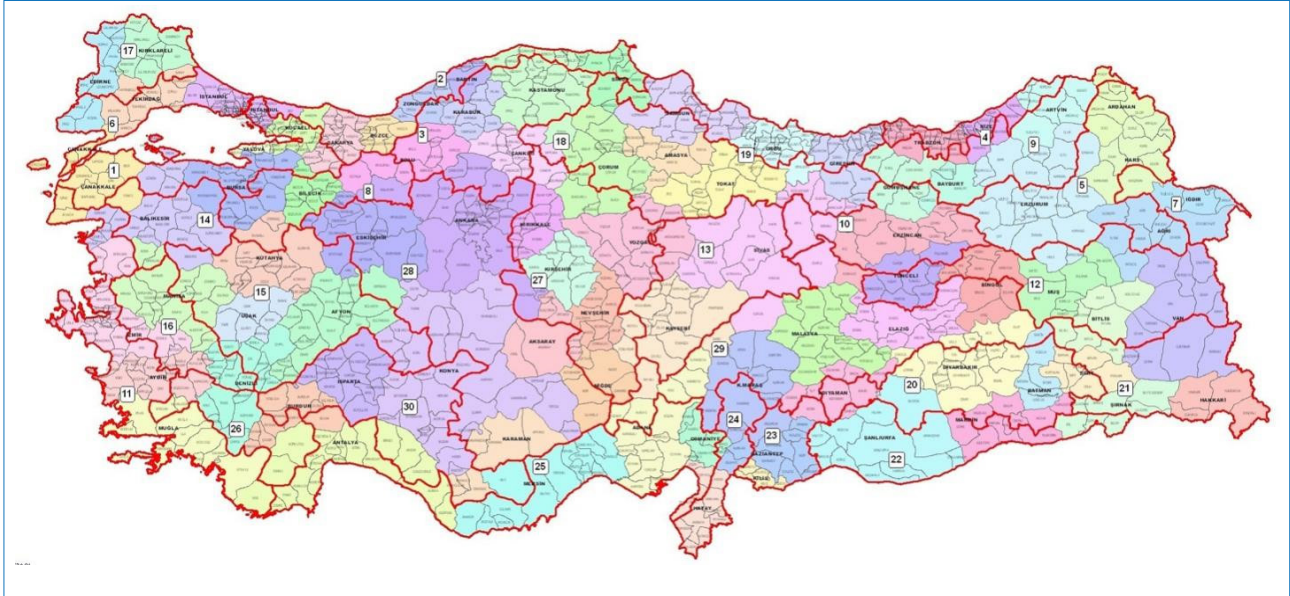
81. OECD, 2016.

82. MoAF, 2025.

83. NID, 2026.



Figure 24 - Agriculture basins of Türkiye⁸⁴



Türkiye identified 30 agricultural basins defined by climate, soil characteristics, topography, and land class criteria in 2009 (Figure 24). With the legislative amendment made in 2016, each district was organized as an agricultural basin (945 agricultural basins in total). The Agricultural Law was amended in 2023 in order to plan and manage the production of strategic agricultural products according to these basins. "Agricultural Production Planning" was implemented starting with the 2025 production year. Through this planning, 13 products and fodder crop groups were included in the planning scope nationwide, taking into account criteria such as food supply security, the strategic importance of products, their importance for human and animal nutrition, supply-demand balance, foreign trade potential, and product suitability areas, by evaluating water availability and water constraints in 945 agricultural basins.

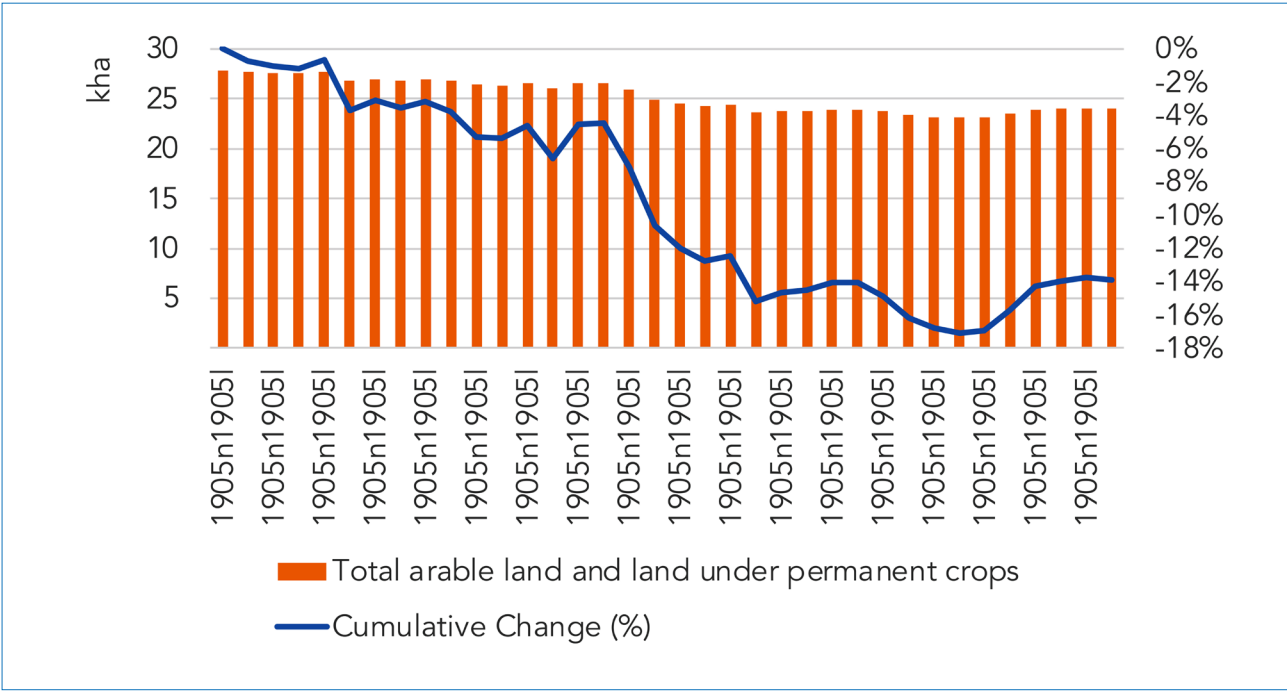
2.11.1 Agricultural Lands

There were 24.0 million hectares of arable land in 2024, while it was 27.9 million hectares in 1990 (Figure 25). In the agricultural basins above, more than 250 agricultural products are produced and marketed to national and international markets. For 2024, of the total arable land, 70% is cropland, 11% is fallow land, and the rest of them are cultivated as horticulture, vegetables, vineyards, and olive gardens.

84. MoAF, 2026_a



Figure 25 - Total arable land and land under permanent crops (1990-2024)⁸⁵



The decrease in agricultural lands in Türkiye is primarily driven by urbanization and industrial expansion. Since the 1980s, Türkiye’s share of the population living in the cities has increased dramatically. Cities expanded into areas that were previously dedicated to agriculture, reducing the amount of land available for farming. Additionally, as the cities grow, industrial facilities are also increasingly constructed on these lands, further contributing to the reduction in agricultural space.

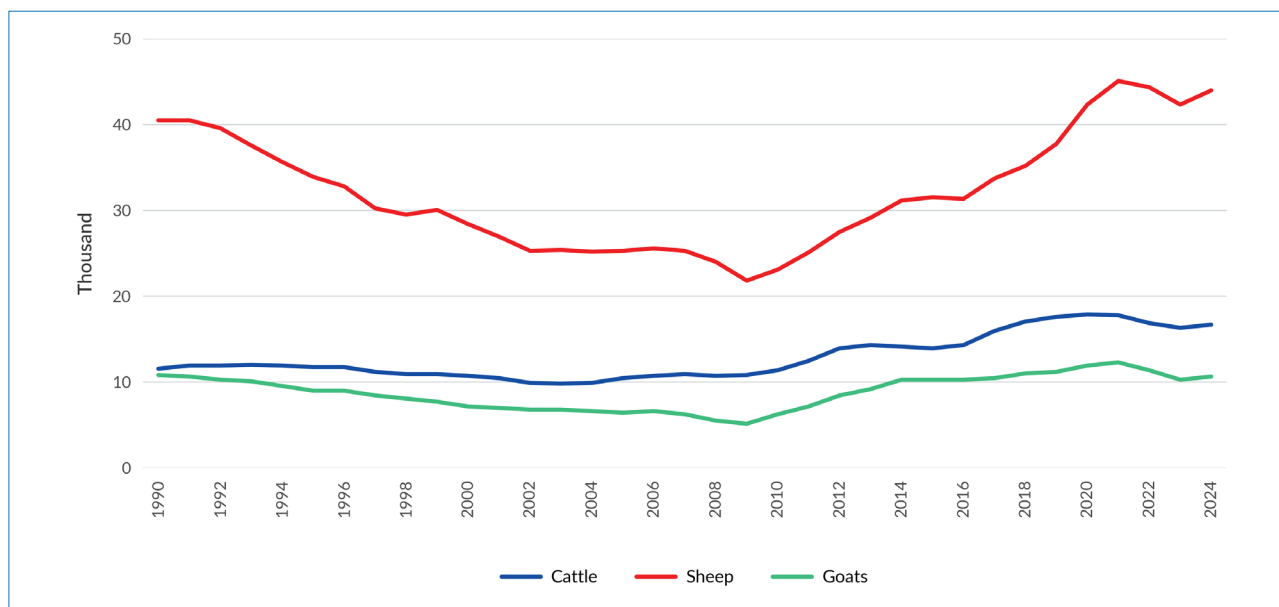
2.11.2 Livestock

Livestock has the largest share of agricultural GHG emissions and is an important part of Türkiye’s agricultural sector. In 2024, the total number of cattle was approximately 16.8 million, and for sheep and goats, it was around 44.0 and 10.8 million, respectively, while those numbers were 11.4 million, 40.6 million, and 10.9 million, respectively, in 1990. Türkiye has experienced a decline in the number of sheep and goats since 1990. Based on recent agricultural policy to increase livestock for a sustainable food supply from domestic sources, GHG emissions are expected to increase from enteric fermentation and manure management.

85. TurkStat, 2026_f. Agriculture

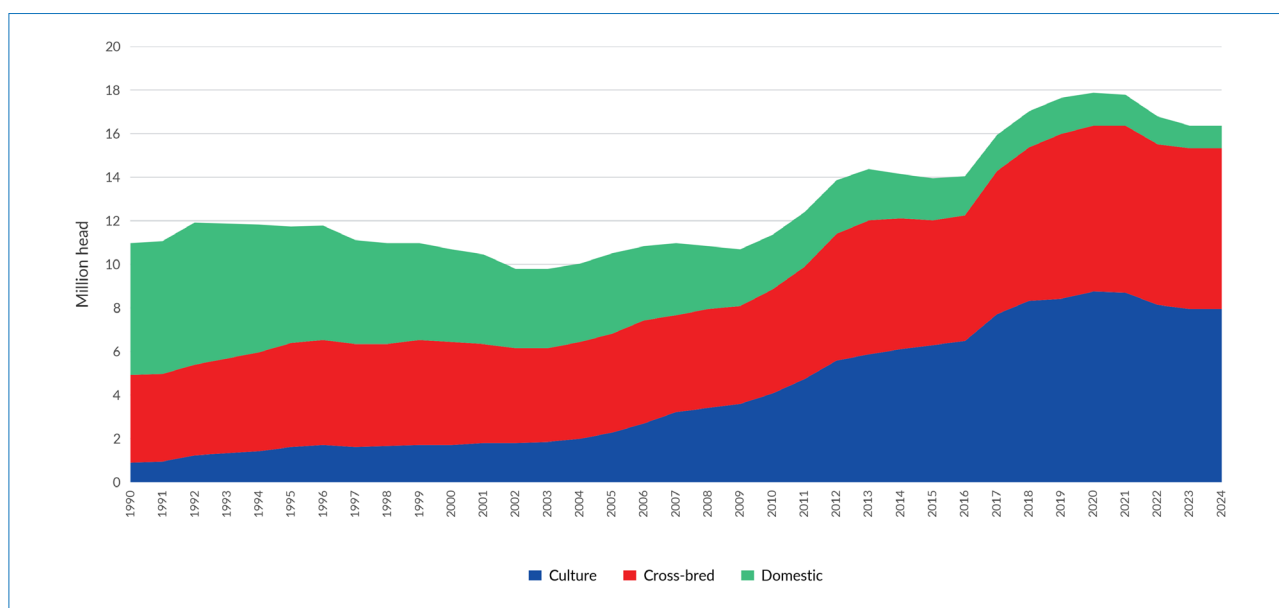


Figure 26 – Livestock population, 1990-2024⁸⁶



The change in cattle population by breed in Türkiye varies over the years. There were 16.8 million head of cattle in 2024. Of these, 49% were culture, 46% were cross- bred, and 5% were domestic breeds. The share of domestic cattle in the total population decreased from 59% to 5% between 1990-2024 period, as culture and cross-bred increased from 9% to 49% and from 32% to 46%, respectively. The number of culture and cross-bred, which have higher yields and higher live weight, is increasing year by year. Therefore, agricultural GHG emissions are also increasing, mainly in line with this rise.

Figure 27 – Population numbers for cattle categories, 1990 - 2024⁸⁷



86. TurkStat, 2026_h. Agriculture

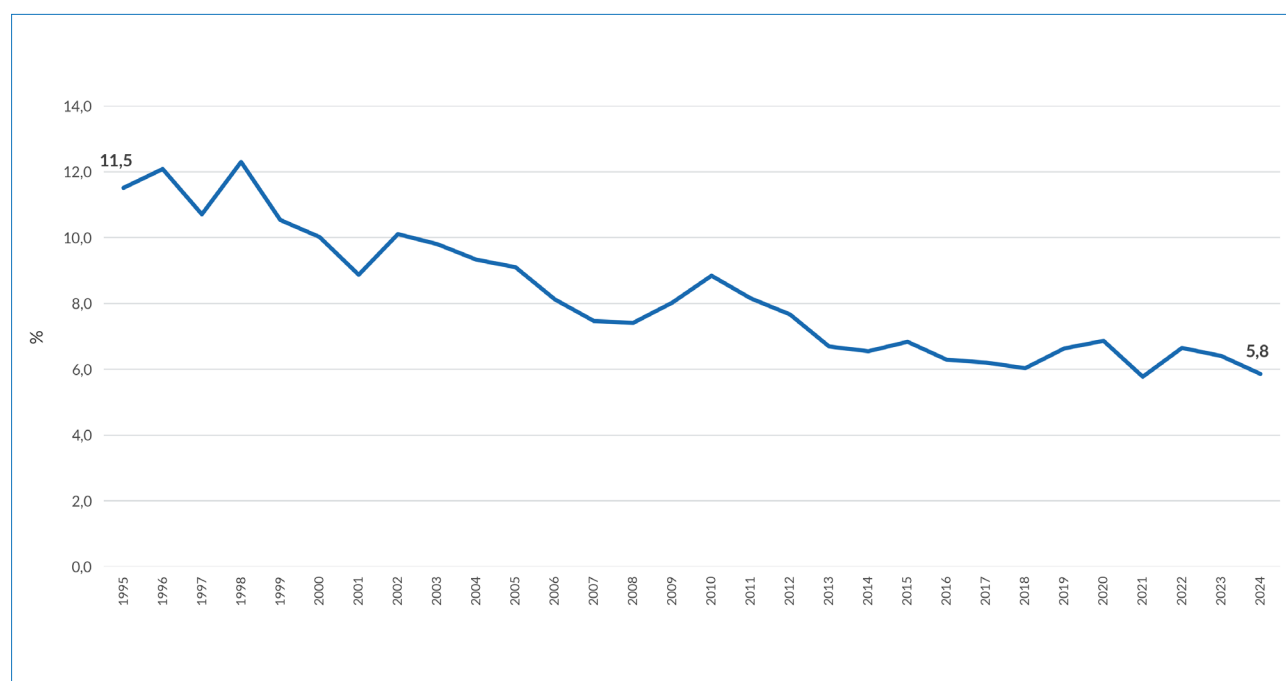
87. TurkStat, 2026_h. Agriculture



2.11.3 Value Added

The share of the agriculture sector in GDP in 1960 was 54% in Türkiye, and Türkiye was considered to be an agricultural country in those years. However, the contribution of the agricultural sector to the economy gradually decreased, and the share in GDP fell below 30% by the end of 1970, below 20% in the mid-1980s and below 10% by the 2000s. By the year 2024 the share of agriculture in GDP dropped to 5.2% (Figure 28), and the course of the ratio is expected to continue declining in the coming years.

Figure 28 – Value added of agriculture sector as % of GDP, 1960-2024⁸⁸



2.11.4 Organic Agriculture

Organic agriculture in Türkiye began as a practice in the mid-1980s. In order to improve the legal framework for organic farming, the By-Law on Production of Plant and Animal Products through Ecological Methods entered into force by 1994. The Organic Agriculture Act No. 5262 was prepared within the framework of EU laws and was enacted in 2004. Based on this law, the By-Law on the Principles and Implementation of Organic Agriculture was passed in 2010. In 2024, 1.3 million tonnes of organic products were produced on an agricultural area of 241 490 ha.⁸⁹

2.11.5 Agricultural Soils

Agricultural soils were one of the main drivers of the agricultural sector's GHG emissions. In Türkiye, around 19.6 million hectares of agricultural land are fertilized annually, and 113 kg of fertilizers per hectare is used on average. Total N-fertilizer consumption increased from 1.2 Mt N to 1.9 Mt N during 1990-2016.⁹⁰ In 2024, inputs from N fertilizers applied to cropland and grassland at the agricultural soils increased to 1.9 Mt N.

⁸⁸. World bank, 2026

⁸⁹. TURKSTAT ,2026 i. Agriculture

⁹⁰. MoAF 2026_b, Fertilizer Statistics



2.12 FORESTRY

Türkiye is broadly located in the Mediterranean climate zone. Türkiye is considered one of the richest countries in terms of biodiversity, which results from different topography and different climate zones. A large part of this biodiversity is located in forest lands. In North Anatolia and parts of the Marmara region, forest ecosystems are composed of pure and mixed forests, which include coniferous tree species such as black pine, Scots pine, fir, spruce, and juniper, as well as broad-leaved tree species such as beech, oak, hornbeam, alder, chestnut, ash, elm, poplar, maple, hazelnut, and rhododendron. In the South, West, and large parts of Marmara, the forests are pure and mixed Mediterranean forest ecosystems composed of coniferous tree species, such as red pine, black pine, Taurus fir, Taurus cedar, juniper, stone pine, Aleppo pine, maritime pine, and cypress, as well as broad-leaved tree species such as sweet gum, oak, and eucalyptus, along with maqui's elements such as sandal and laurel. Along with the steppes, Türkiye has arid and semi-arid forest ecosystems consisting especially of pine, Scots pine, cedar, juniper, and oak species. Türkiye also has forest ecosystems within the transition zone between coastal and inland regions in the Central, Eastern, and South-eastern Anatolia regions.

A large portion of Türkiye's forests are natural forests with high biodiversity values. Many of the plant species have additional values in raw material production, including wood, and the use of roots, bark, and resin for medicinal and aromatic purposes. Many of the harvested fauna species are used for the production of herbal products of animal origin.⁹¹

According to forest inventory results, forest area was 20.2 million hectares (Mha) in 1973 and increased to 23.36 Mha in 2024. Forest lands increased by nearly 3.16 Mha in the last 51 years (Figure 29) (Table 7). According to 2024 forest inventory results, of the total forest, 95% was high forest and 5% was coppice forest. Approximately 9.5 Mha of this forest (41% of the total) can be classified as degraded forests. The inventory estimates that growing stocks increased from 935 million m³ to 1.8 billion m³ during 1973-2024 periods (Table 8). The annual increment of the forests in Türkiye has been increasing and reached 51 million m³ in 2024 (Table 9). The main reason for this increment is the increase in growing stock due to silvicultural tending activities of the species.

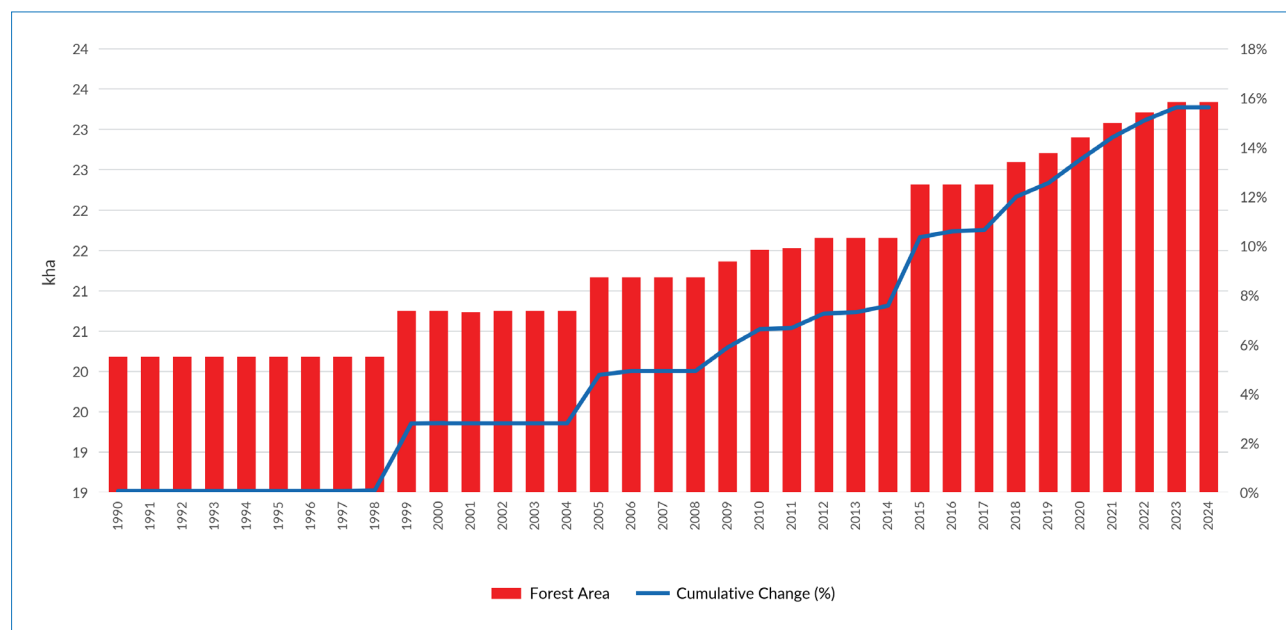
92

Pinus brutia, *Pinus nigra*, and *Pinus sylvestris* are the dominant coniferous species among the other coniferous species, such as four kinds of *Abies* spp., *Picea orientalis*, *Cedrus libani*, etc. In proportion, these three pine species is more than 52 % of the total volume of growing stock. *Fagus orientalis* and 22 *Quercus* spp. have a 68% share in the total volume of deciduous trees, such as *Tilia*, *Ulmus*, *Alnus*, and *Castanea* species.⁹³ 99% of the forests in Türkiye belong to the state. 3.64 million hectares of the total forest area (15%) are found in protected areas, and the remaining 19.3 million hectares of forest area are in managed forests.

91. UNFCCC, 2023. 8th NC

92. MoAF, 2026_c. Forestry Statistics

93. UNFCCC, 2019. 7th NC

Figure 29 - Change in forest areas of Türkiye (1990-2024)⁹⁴Table 7 - Forest inventory results of Türkiye, Area 2024⁹⁵

Forest Type	Total (ha)	Coniferous (ha)	Deciduous (ha)	Coniferous+ deciduous Mixed (ha)
Total	23 363 084	11 067 836	7 380 431	4 914 818
Productive	13 813 598	7 560 229	4 028 745	2 224 624
Degraded	9 549 486	3 507 607	3 351 686	2 690 193

Table 8 - Forest inventory results of Türkiye, Growing Stock, 2024⁹⁶

Forest Type	Total (m3)	Coniferous (m3)	Deciduous (m3)	Coniferous+ deciduous Mixed (m3)
Total	1 798 061 769	1 051 685 804	470 475 920	275 900 045
Productive	1 735 086 167	1 023 605 741	452 766 205	258 714 220
Degraded	62 975 602	28 080 062	17 709 715	17 185 825

Table 9 - Forest inventory results of Türkiye, Annual Increment, 2024⁹⁷

Forest Type	Total (m3)	Coniferous (m3)	Deciduous (m3)	Coniferous+ deciduous Mixed (m3)
Total	50 955 500	29.512.200	13.863.250	7.580.050
Productive	49 004 363	28.783.596	13.169.073	7.051.694
Degraded	1 951 137	728.603	694.177	528.356

94. TurkStat, 2026_f. Agriculture

95. MoAF, 2026_c.

96. MoAF, 2026_c.

97. MoAF, 2026_c.



Almost half of Türkiye’s forests are considered to be degraded, with less than 10% canopy cover. In addition, 13.8 million hectares of forest have a canopy cover of more than 11%. The ability of forests to regenerate declines in response to human-induced pressures, including industrialization and urbanization. However, in areas where threats have been reduced, forests have regenerated. The General Directorate of Forestry has been conducting activities for the restoration of degraded forests and reforestation since 1995. The main goal of these efforts is to develop forest structure through sink capacity and to increase the yield ratio of forests. This process also includes the maintenance of naturally regenerating forest species. Reforestation and rehabilitation have been carried out in Türkiye. In 2024, 12.032 ha was reforested and 35.298 ha was rehabilitated (Figure 30 and Figure 31).⁹⁸

Figure 30 – Reforestation activities, 1992-2024.⁹⁹

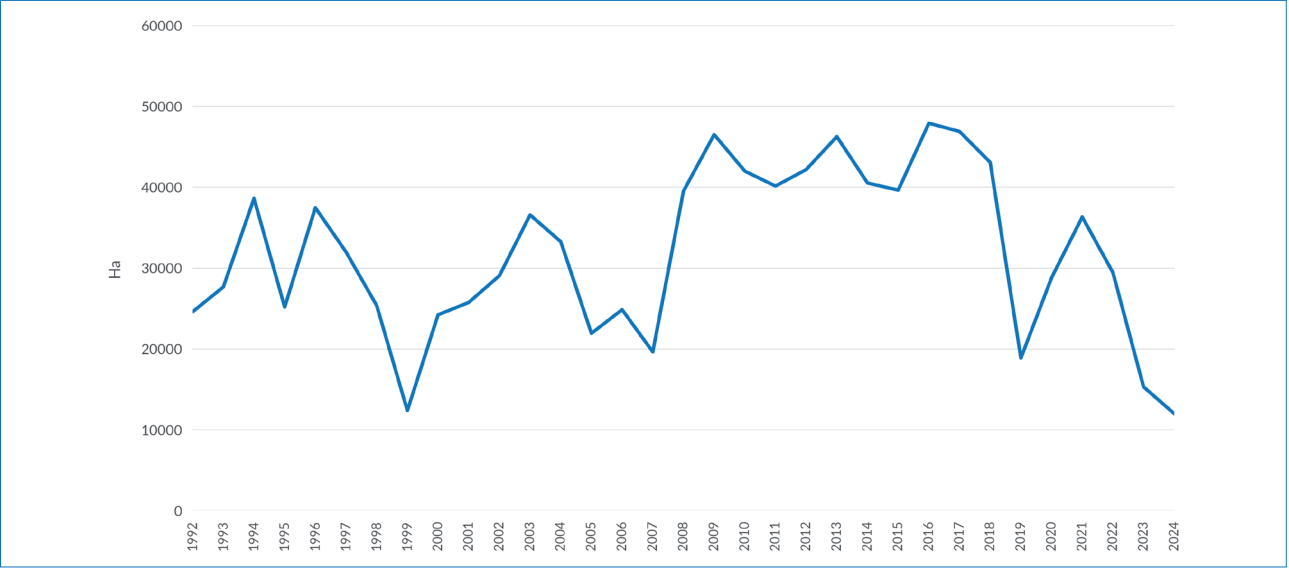
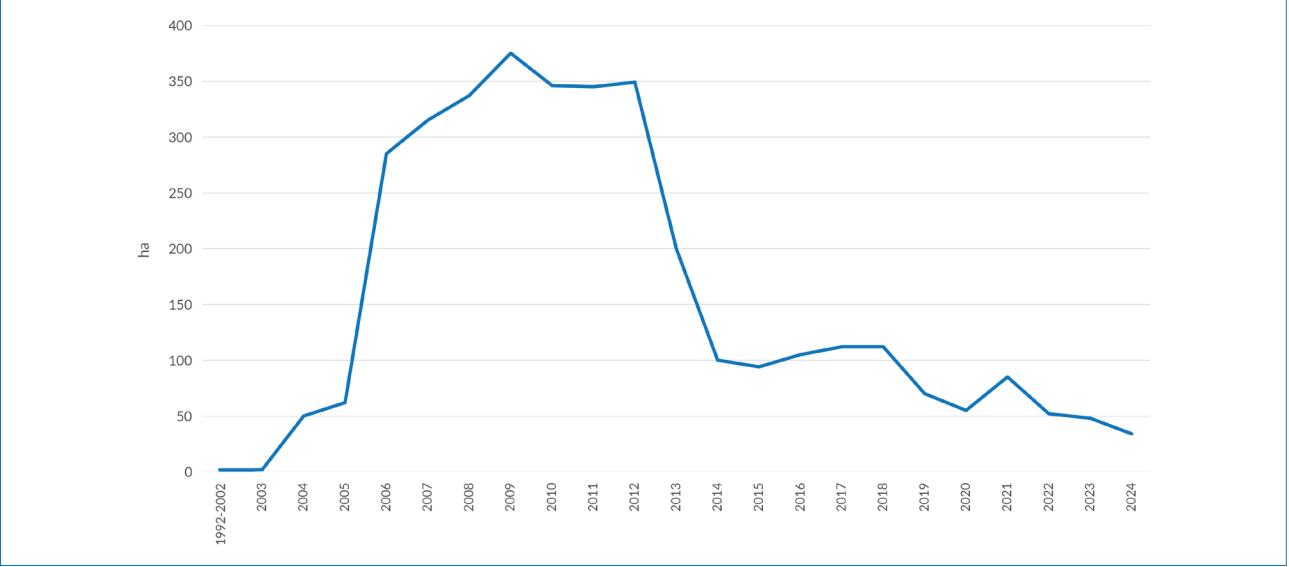


Figure 31 – Forest rehabilitation activities, 1998-2024¹⁰⁰



98. MoAF, 2026_c.

99. MoAF, 2026_c.

100. MoAF, 2026_c.



Sustainable forest management activities aim to increase forest area and growing stocks in Türkiye through reforestation, rehabilitation, and carbon removal. The carbon removal rate is expected to increase over the next decade. GDF has a target to increase growing stocks per hectare and forest area in the Strategic Plan of GDF (2019-2023).

2.13 TOURISM

Surrounded by seas on three sides, acting as a natural bridge between Asia and Europe, and with unique geopolitical importance, Türkiye has been a cradle of great civilizations throughout history. There are twenty-two World Heritage Sites in Türkiye and an additional 80 sites listed on the World Heritage Tentative List. With this wealth of cultural assets and its 8,333 km long coastline, Türkiye is a major tourist attraction. Tourism is also one of the country's main sources of foreign exchange.

Türkiye is the 4th most popular tourist destination in the world, attracting over 60 million tourists in 2025. One of the initiatives undertaken to establish a sustainable tourism policy in Türkiye is the environmentally friendly Blue Flag Programme. The Blue Flag is the world's most widely recognized international tourism eco-label and, as the only comprehensive eco-label for beaches and coastal areas, it has become an indispensable brand and marketing tool for the tourism sector.

With the support provided by our Ministry for the Blue Flag Programme and related infrastructure investments, Türkiye ranked third worldwide in 2026 among the 50 member countries of the Foundation for Environmental Education (FEE) implementing the Blue Flag Programme, with 580 Blue Flag beaches. In addition, 30 marinas, 26 individual yachts, and 18 tourism boats were awarded the Blue Flag.

Protecting environmental quality through a balanced approach between conservation and sustainable use, while increasing the number of beaches meeting the standards required to receive the Blue Flag each year, is among the priorities of MoCT. In this context, the continuous increase in the number of Blue Flag awards demonstrates Türkiye's commitment to environmental protection, strengthens its competitive position against rival tourism destinations, and contributes to improving its ranking at the global level.¹⁰¹

To strengthen the tourism infrastructure in Serik, Antalya, one of the key destinations of Türkiye's tourism industry, the Serik II Wastewater Treatment Plant, serving the Serik Region and Belek Tourism Centre, was completed and commissioned in 2021. The investment was fully financed by our Ministry. Within the scope of the project, the Boğazkent Pumping Station and Associated Pumping Works were also completed and became operational by the end of 2022.

In Antalya Province, the Kemer and Çamyuva Wastewater Treatment Plants, originally constructed in 1994, had reached the end of their economic service life, while the existing deep-sea outfall system had also completed its operational lifespan. Accordingly, these facilities were replaced with a new treatment plant. The Antalya Kemer-Çamyuva Wastewater Treatment Plant and Associated Infrastructure Facilities Project, fully financed by our Ministry, was completed and commissioned on 16 March 2024.

In Muğla Province, one of Türkiye's major tourism destinations, the investment costs of the Bodrum İçmeler-Torba Wastewater Treatment Plant and the Phase II Sewer Collector Line and Associated Infrastructure Facilities Project covering the Kızılağaç, Yalı, and Çiftlik areas were

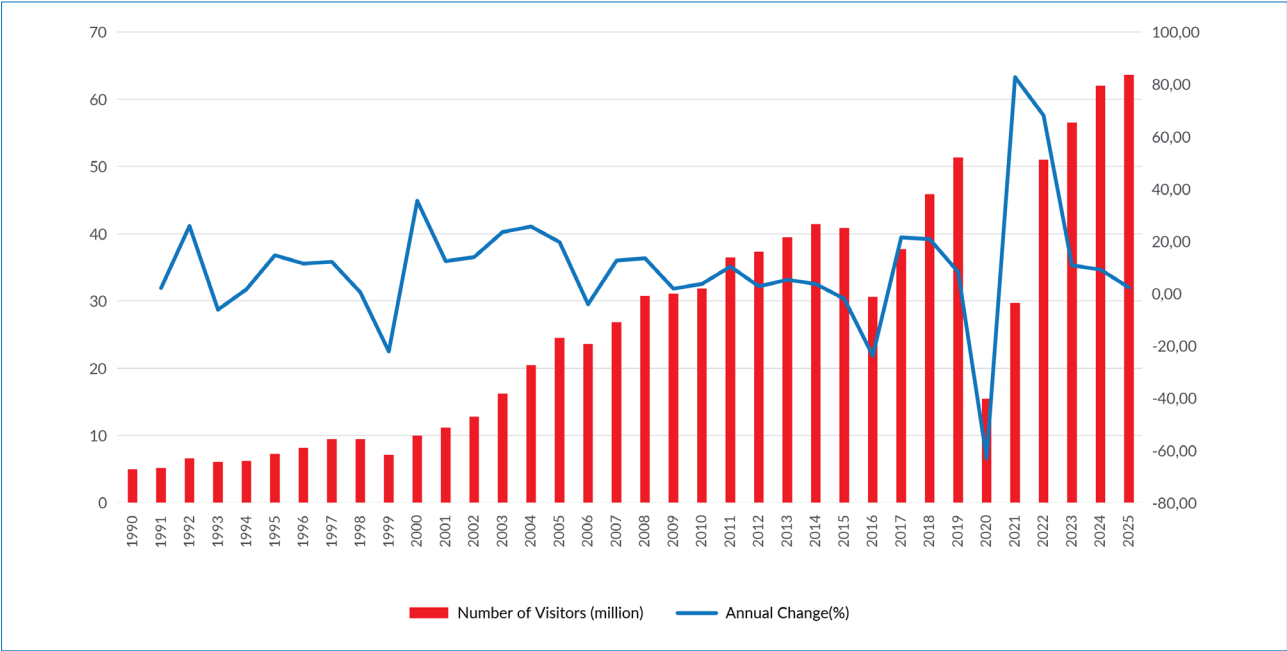
101. MoCT, 2026a. <https://yigm.ktb.gov.tr/TR-11569/mavi-bayrak.html>



financed by our Ministry. The project was completed and commissioned in May 2023. The facility collects wastewater from the Torba, Kızılağaç, Çiftlik, Yalı, and İçmeler areas, as well as the eastern neighbourhoods of Bodrum District, through an integrated sewerage and collector network. The collected wastewater is treated before being safely discharged into the receiving environment in accordance with applicable environmental standards.

The total bed capacity of accommodation establishments in Türkiye increased from approximately 900,000 in 2000 to more than 2 million by 2026, including establishments undergoing the certification process.¹⁰² There has been a rapid increase in the number of visitors coming to Türkiye (Figure 32). The annual number of tourists grew from approximately 5.4 million in 1990 to 51.4 million in 2022 and reached 63.9 million in 2025. It was low in 2020 and 2021 due to the COVID-19 pandemic. Tourism revenue worth 65.2 billion USD was generated in 2025.¹⁰³

Figure 32 – Number of visitors (1990-2025)¹⁰⁴



Türkiye places sustainability at the heart of its tourism policies. In this regard, it fosters qualitative growth in the sector and aims to increase tourism receipts by attracting high-spending visitors. As the number of tourists and revenue increases, 11.9 million residents from Türkiye traveled abroad, spending a total of 9.6 billion USD in 2025. This resulted in a tourism income balance of 55.6 billion USD (Figure 33).

Türkiye became the first country in the world to develop and implement a government-led Türkiye Environmental and Cultural Sustainability Program through a cooperation agreement signed with the Global Sustainable Tourism Council (GSTC) in 2022. The GSTC-recognized program is being implemented through a phased approach to align the tourism sector with international sustainability standards by 2030. Türkiye Sustainable Tourism Criteria (TR-I) comprise 42 criteria

102. MoCT, 2026b.

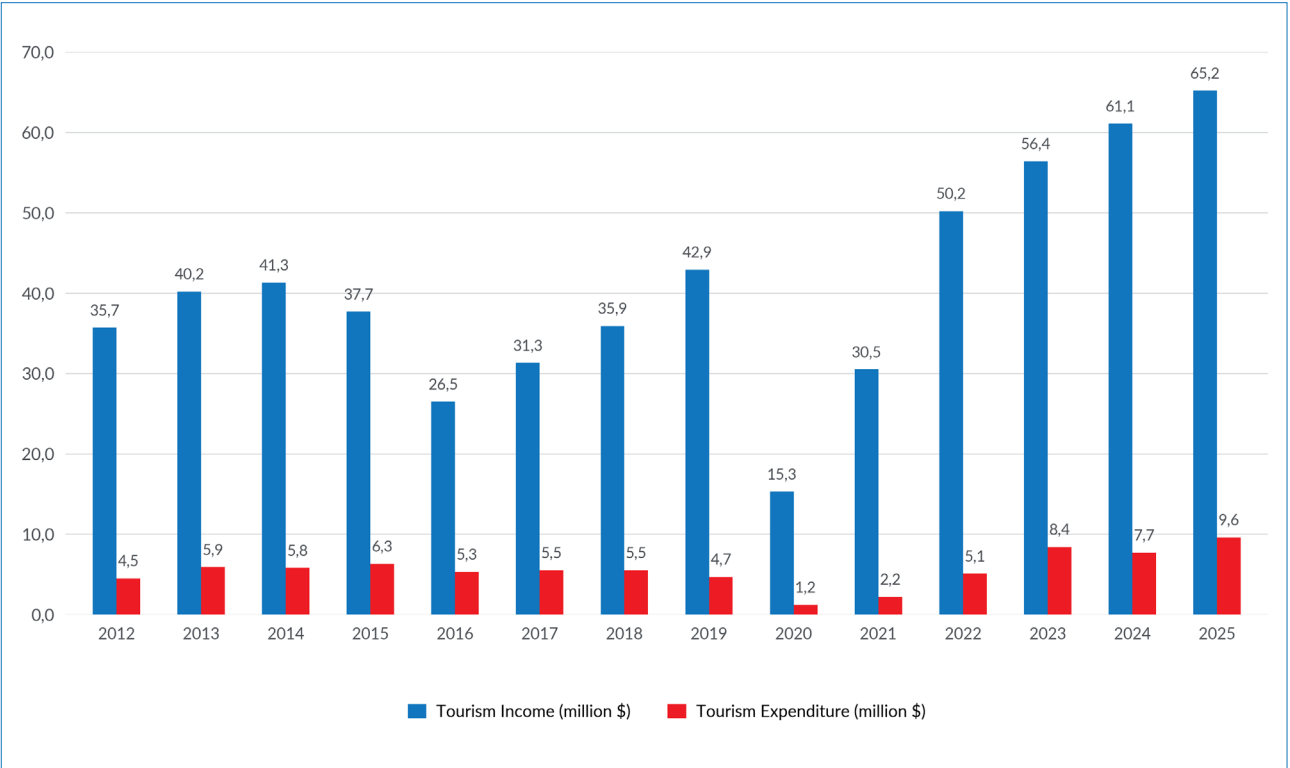
103. MoCT, 2026b

104. MoCT, 2026b



and 167 indicators covering sustainable management, cultural, socio-economic, and environmental sustainability. As of July 2026, 19,458 accommodation facilities have been verified or certified under the program, including 2,515 accommodation facilities with Stage 3 GSTC-accredited certification, 16,832 Stage 2, and 111 Stage 1 verifications. With the highest number of GSTC-certified accommodation facilities in the world, Türkiye has become a global leader in the implementation of sustainable tourism standards.

Figure 33 – Tourism income and expenditure (2012-2025)¹⁰⁵



2.14 WATER RESOURCES

Türkiye has a large variety of spatial and temporal precipitation patterns. There is strong seasonality in precipitation. Approximately 40% of the total annual rainfall occurs in winter, 27% in spring, 10% in summer, and 24% in autumn. The amount and type of precipitation in the winter and spring seasons are important for replenishing underground and surface water resources. The Black Sea and Mediterranean coastal areas and high mountain areas are the places in Türkiye with the highest precipitation. The amount of average annual rainfall is highest in the Rize region, with rainfall of about 2,300 mm. In contrast, the Central and Eastern Anatolia regions, especially in the lower plains and deep valleys and depressions of tectonic origin, have low precipitation values, with the average annual amount of precipitation falling below 350-400 mm.¹⁰⁶

River hydrological regimes in Türkiye depend heavily on the variability of precipitation and these rivers regimes are thus quite irregular. According to the General Directorate of State Hydraulic Works (DSİ), Türkiye has 25 hydrological basins. Türkiye has a hydro-meteorological observation network of 8,945 observation stations, of which 260 are snow monitoring stations, 1,355 are

¹⁰⁵. MoCT, 2026b

¹⁰⁶. MGM, 2026



flow monitoring stations, 2,812 are groundwater monitoring stations, and 578 are natural lake observation stations; all are operated by the DSI.

Türkiye's annual water volume stands at 112 billion m³ per year³, with an annual available surface water volume of 94 billion m³, including a safe groundwater reserve of 18 billion m³. Based on the results of projects developed by public institutions responsible for soil and water resources in Türkiye, total water consumption for various purposes reached 61.70 billion m³ in 2024. Of this amount, 48.73 billion m³ (79%) was used for irrigation, while 12.95 billion m³ (21%) was used to meet drinking, domestic, and industrial water needs (National Water Plan, 2026)¹⁰⁷

Annual renewable water availability estimated at approximately 1,305 m³ per capita, Türkiye is considered a water-stressed country (National Water Plan, 2026). Water demand continues to increase as a result of population growth, urbanization, industrialization, and agricultural activities, while the country's freshwater resources remain limited.¹⁰⁸

2.15 CLIMATE FINANCE FRAMEWORK

Türkiye takes ambitious actions to mitigate and adapt to climate change by funding climate activities, including national investment projects primarily from its own resources.

Türkiye signed the Paris Agreement as a developing country, which was endorsed by various international organizations, including the United Nations (UN), World Bank, International Monetary Fund, and OECD, and is reflected in their reports and practices. Türkiye is included on the OECD Development Assistance Committee's (DAC) list of countries eligible for Official Development Assistance and is classified by the World Bank as an upper middle-income country, granting it access to the Bank's financing. Türkiye has been a continuous beneficiary of the Global Environment Facility's (GEF) support, which is one of the main funding sources for the country's climate capacity-building actions. The UN's World Economic Situation and Prospects 2024 Report¹⁰⁹ lists Türkiye among developing economies and mentions Türkiye among developing countries. Furthermore, Türkiye is included on the "developing countries" list of the Montreal Protocol on Substances that Deplete the Ozone Layer.

Türkiye, aligning with its recognition as a developing country in international platforms, its economic-social circumstances and realities, and its non-Annex II status, is not responsible for assisting other developing countries under Articles 4.3, 4.4, and 4.5 of the UN Framework Convention on Climate Change (UNFCCC) and Article 11 of the Kyoto Protocol and Articles 9, 10, and 11 of the Paris Agreement. This has been noted in the country's earlier NCs and Biennial Reports.

Under the Paris Agreement, developed countries have specific responsibilities to provide financial, technological development and transfer, and capacity-building support to developing countries to help them mitigate and adapt to climate change. These responsibilities are clearly outlined in Articles 9, 10, and 11 of the Paris Agreement. As underlined in the Updated First NDC, Türkiye anticipates the delivery and mobilization of climate finance for its endeavor toward advancing and achieving a fair transition to a net-zero goal in accordance with Article 9 of the Agreement.

Despite being a developing country, Türkiye has no access to the Green Climate Fund (GCF), as a key financial mechanism under the UNFCCC and the Paris Agreement and the world's largest

107. DSI, 2026

108. DSI, 2026

109. UNCTAD, 2026



climate fund. Türkiye's access to the GCF will not only bolster its own climate initiatives but also reinforce the worldwide effort against this global challenge. Climate finance will also enhance Türkiye's climate ambitions and stimulate green investments from the private sector within the country.

Under the UNFCCC, a cooperation mechanism for technology development and transfer is created to assist developing countries. However, due to its status under the UNFCCC, Türkiye is not eligible to benefit from the Climate Technology Centre and Network, the implementing body of the Technology Mechanism. The absence of access to these mechanisms, which offer technical support, information exchange, and knowledge sharing, has led Türkiye to struggle to harness the potential of technology development and transfer, which is vital for an effective global response to climate change.

Given its significant mitigation potential and high capacity to absorb climate finance, it is crucial to secure Türkiye's access to the financial and technological mechanisms and capacity-building support under the UNFCCC and the Paris Agreement. This ensures that the country will be empowered to make significant progress toward its climate targets outlined in its NDC and various national strategies and action plans put in place over the past years.

2.16 TÜRKİYE'S SPECIAL CIRCUMSTANCES

UNFCCC established a system of annexes that divided countries into Annex I and II countries and Non-Annex countries. The Annex I countries included the industrialized countries that were members of the OECD and the former countries of the USSR as "Economies in Transition" [EIT]. Annex II included the developed and industrialized countries. Türkiye, albeit being a developing country, was included in both Annexes I and II because of its OECD membership. However, the UNFCCC does not provide a definition of "developed" or "developing" countries. Türkiye did not sign the UNFCCC when it was adopted in 1992, and in 1997 it initiated the process to be deleted from Annexes I and II.

In 2001, at the Seventh Conference of the Parties held in Marrakesh, Decision 26/CP.7 was adopted, and Türkiye was removed from the list in Annex II. Parties were also invited to recognize the "special circumstances of Türkiye, which placed Türkiye after becoming a Party, in a situation different from that of other Parties included in Annex I to the Convention." The decision took note of FCCC/CP/1997/MISC.3, submitted by Türkiye, outlining its socio-economic status as a developing country. It was explained that Türkiye's GNP was \$2,700 and that human-induced CO₂ emissions were 2.3 tons per capita in 1993, with a total of 153 Mt, which was 1/10 of the Annex II countries in the submitted document. The decision further underlined the need for all Parties to protect the climate system for present and future generations, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Türkiye's position regarding its "special circumstances" is based on the principles of equity, common but differentiated responsibilities and respective capabilities, and the right to promote sustainable development in accordance with Article 3 of the Convention. Further, unlike other Parties included in Annex I, Türkiye does not bear historical responsibility for climate change.

Türkiye subsequently became a Party to the UNFCCC in 2004 and submitted its NC1 as an Annex I Party. In accordance with the Report (FCCC/IDR.1/ TUR, 3 December 2009) of the in-depth review of the NC1 of Türkiye, it was noted that Türkiye had the lowest per capita primary energy consumption and the lowest per capita GHG emissions among Annex I Parties. In spite of Türkiye's national circumstances, which follow the typical patterns of developing countries (e.g., relatively



low per capita energy use and GHG emissions, high growth rates in population and GDP when compared with other Annex I Parties), considerable efforts have been undertaken in selected areas to contribute to GHG mitigation.”

The World Bank lists Türkiye as an upper middle-income developing country. Because of this condition, Türkiye is also eligible for official development assistance under the OECD Development Assistance Committee list. (FCCC/TP/2013/3). Moreover, according to World Bank data, Türkiye’s per capita and total carbon emissions are lower than those of many developing countries that are outside the Annex I list.

The Conference of the Parties has taken other decisions concerning Türkiye in the coming years. 16. The decision 1/CP.16 adopted by the Conference of the Parties has officially recognized that Türkiye’s national circumstances are different from Annex-I countries and has clearly approved that Türkiye is in a different position from the developed countries and countries in transition to a market economy. This decision also requested from the Long-Term Cooperative Action Ad Hoc Working Group (AWG-LCA) established under the Convention to dwell upon Türkiye in order to have better access to financing, technology, and capacity-building opportunities to develop its ability to apply the provisions of the Convention more effectively.

In Durban, decision No. 2/CP.17 was taken to continue to further develop the Cancun the decisions on Türkiye

Decision No. 2/CP.17:

“Have agreed to continue the discussion on the procedures for providing support in mitigation, adaptation, technology development and transfer, capacity-building, and financing issues to assist in the implementation of the Convention...”

Decision No. 1/CP.18 accepted in Doha reaffirmed the importance of the financial, technological and capacity-building supports to Türkiye as an Annex I Party, special circumstances of which is recognized by the Conference of the Parties so that it becomes able to implement the Convention more efficiently and encouraged the Annex II countries with appropriate conditions, to provide financial, technological, technical and capacity-building supports to the Annex I countries with special position through multilateral agencies. The purpose of these supports is that these countries implement the climate change strategies and action plans in accordance with Decision No. 1/CP.16 and develop low-emission development plans. The aforementioned multilateral agencies term contains the concerned international organizations, international financial organizations, other collaborations, bilateral agreements, private sector, and all types of institutional arrangements that may be deemed appropriate.

Decision No. 1/CP.18:

Parties included in Annex I to the Convention whose special circumstances are recognized by the Conference of the Parties,

Reaffirming decisions 26/CP.7, 1/CP.16, and 2/CP.17, which recognized that Türkiye is in a situation different from that of other Parties included in Annex I to the Convention; Recalling that deep cuts in global greenhouse gas emissions are required and that closing the ambition gap is a matter of urgency; Recognizing that various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems in accordance with the objectives of sustainable development;



Reaffirming the importance of financial, technological, and capacity-building support to Parties included in Annex I to the Convention whose special circumstances are recognized by the Conference of the Parties in order to assist these Parties in implementing the Convention,

1. Urges Parties included in Annex II to the Convention which are in a position to do so, through multilateral agencies, including the Global Environment Facility within its mandate, relevant intergovernmental organizations, international financial institutions, other partnerships and initiatives, bilateral agencies, and the private sector, or through any further arrangements, as appropriate, to provide financial, technological, technical, and capacity-building support to Parties included in Annex I to the Convention (Annex I Parties) whose special circumstances are recognized by the Conference of the Parties in order to assist them in implementing their national climate change strategies and action plans and developing their low-emission development strategies or plans in accordance with decision 1/CP.16;

2. Requests the secretariat to prepare, for consideration by the Subsidiary Body for Implementation at its thirty-eighth session, a technical paper identifying opportunities for Annex I Parties whose special circumstances are recognized by the Conference of the Parties to benefit, at least until 2020, from support from relevant bodies established under the Convention and other relevant bodies and institutions to enhance mitigation, adaptation, technology, capacity-building, and access to finance;

3. Also requests the Subsidiary Body for Implementation, on the basis of the technical paper referred to in paragraph 95 above, to develop recommendations on this matter at its thirty-ninth session for consideration by the Conference of the Parties at its nineteenth session. “

In the decision of the Conference of the Parties, UNFCCC is requested to prepare a technical report identifying the opportunities that Türkiye (Annex I Parties whose special circumstances are recognized by the Conference of the Parties) can benefit from, at least until 2020, from support from relevant bodies established under the Convention and other relevant bodies and institutions to enhance mitigation, adaptation, technology, capacity-building, and access to finance, to be evaluated by the Subsidiary Body for Implementation (SBI) at the next conference. The technical report with No. FCCC/TP/2013/3 prepared by the secretariat states clearly that Türkiye is an upper-middle-income, rapidly growing country and that it is appropriate for official development assistance under the OECD Development Assistance Committee. According to the technical report prepared by the Secretariat, 20th Lima Conference of the Parties adopted decisions similar to those adopted in Doha at the 20th Conference of the Parties on the basis of the recommendations offered by the Subsidiary Body for Implementation (FCCC/TP/2013/3) (21/CP.20). According to this decision, the support that can be received by Türkiye at least until 2020 from the bodies established under the Convention, other relevant bodies, and institutions is intended to ensure progress in areas such as mitigation, adaptation, technology, capacity-building, and finance. The Annex-II countries have been invited to help Türkiye with the implementation of national climate change strategies and action plans and the development of low-emission development plans and strategies in line with decision No. 1/CP.16 by providing financial, technological, technical, and capacity-building support through multinational agencies, including the GEF, relevant intergovernmental organizations, international financial institutions, other partnerships and initiatives, bilateral agencies, and the private sector, or through any further arrangements, as appropriate.



Decision No. 21/CP.20:

Reaffirming decisions 26/CP.7, 1/CP.16, 2/CP.17 and 1/ CP.18, which recognized that Türkiye is in a situation different from that of other Parties included in Annex I to the Convention,

Also reaffirming the importance of financial, technological, and capacity-building support to Parties included in Annex I to the Convention whose special circumstances are recognized by the Conference of the Parties in order to assist these Parties in implementing the Convention,

1. Recognizes the opportunities for Parties included in Annex I to the Convention whose special circumstances are recognized by the Conference of the Parties to benefit, at least until 2020, from support from relevant bodies established under the Convention and other relevant bodies and institutions to enhance mitigation, adaptation, technology, capacity-building, and access to finance; Encourages Parties included in Annex I to the Convention whose special circumstances are recognized by the Conference of the Parties to fully utilize those opportunities; Urges Parties included in Annex II to the Convention which are in a position to do so, through multilateral agencies, including the Global Environment Facility within its mandate, relevant intergovernmental organizations, international financial institutions, other partnerships and initiatives, bilateral agencies and the private sector, or through any further arrangements, as appropriate, to provide financial, technological, technical and capacity-building support to Parties included in Annex I to the Convention whose special circumstances are recognized by the Conference of the Parties in order to assist them in implementing their national strategies, actions and plans on climate change mitigation and adaptation, and in developing their low-emission development strategies or plans in accordance with decision1/CP.16.

The Conference of the Parties having recognized Türkiye's special circumstances acknowledges that Türkiye is an upper middle-income developing country still undergoing rapid development and in need of financial support to enable it to shift to a low emission and climate-resilient development pathways. Türkiye's access to financial support available to other upper middle-income developing Parties to the Convention fulfills the principles of equity, common but differentiated responsibilities, and the right and duty to promote sustainable development as stipulated by the decision 26/CP.7 dated 2001.

To allow countries to determine their own situation in accordance with the "self-differentiation" principle, there is no definition or classification of developed/developing countries in the Paris Agreement. Although Türkiye is among the Annex I list of countries within the scope of the UNFCCC, there is no clear provision in the Paris Agreement that legally connects the countries listed in the Annexes. Therefore, Türkiye signed the Paris Agreement as a developing country on April 22, 2016 during the signatory ceremony held in New York. Later on, Türkiye ratified on October 7, 2021 and became a party to the Agreement on November 10, 2021. The Republic of Türkiye declared its statement, on the basis of "equity, common but differentiated responsibilities and respective capabilities" as clearly and accurately recognized under the UNFCCC of 9 May 1992 and the Paris Agreement, and by recalling decisions 26/CP.7, 1/CP.16, 2/CP.17, 1/CP.18, and 21/CP.20 adopted by the Conference of the Parties to the Convention, declares that it will implement the Paris Agreement as a developing country and within the scope of its NDC statements, provided that the Agreement and its mechanisms do not prejudice its right to economic and social development.



Although this NC is a part of Türkiye's reporting obligation under the Convention, the fact that this communication was prepared and submitted will not prejudice Türkiye's ratification status of the Paris Agreement, with the declaration and the understanding of a developing country. It will not cause it to be referred to as a developed country in the global-scale exercises to be carried out within the scope of the Paris Agreement.

2.17 FLEXIBILITY PROVISIONS

In accordance with Article 13, paragraph 2, of the Paris Agreement, the ETF shall provide flexibility in the implementation of the provisions of Article 13 to those developing country Parties that need it in light of their capacities, and the Modalities, Procedures and Guidelines (MPGs) adopted under Decision 18/CMA.1 reflect such flexibility.¹¹⁰ As a developing country Party with recognized special circumstances (Section 2.16) and identified capacity constraints in emissions accounting, institutional data-collection frameworks, and projection and modelling capacity, Türkiye applies self-determined flexibility to specific reporting provisions of the MPGs, as set out below.

Türkiye's application of these flexibility provisions concerns the reporting requirements set out in Chapter 5 of this report, on progress tracking for achieving the NDC and GHG emission projections. Table 10 below summarizes the specific MPG paragraphs concerned, the nature of Türkiye's capacity constraints, and Türkiye's self-determined timeframe for progressively strengthening its reporting capacity in each area, in line with its submission to the UNFCCC on flexibility provisions.¹¹¹

110. Paris Agreement, Article 13, paragraph 2; UNFCCC. Decision 18/CMA.1. Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement, 2018.

111. UNFCCC. Flexibility Provisions for Türkiye under 18/CMA.1. 2025.



Table 10 – Flexibility provisions

MPG Paragraph	Provision	Capacity Constraints	2025–2026 (Short-term)	2027–2028 (Medium-term)
85	Reporting, to the extent possible, of expected and achieved GHG emission reductions from policies and measures (PaMs), in CTF Table 5 format.	Limited technical expertise in emissions accounting; lack of institutional frameworks for systematic data collection; insufficient financial resources for comprehensive reporting.	Initiation of basic capacity-building programmes; enhanced inter-institutional coordination.	Implementation of advanced emission monitoring systems; alignment of reporting systems with international standards.
95	Extension of GHG emission projections by at least 15 years beyond the most recent inventory year; flexibility to instead extend projections to the endpoint of the NDC.	Limited technical capacity for modelling and scenario analysis; lack of expertise in advanced projection methodologies; inadequate access to relevant software and tools; uncertainty in policy implementation and impact assessment; limited institutional coordination.	Initiation of basic capacity-building programmes; enhanced inter-institutional coordination.	Development of long-term projection strategies; achievement of the 15-year (NDC endpoint) projection requirement; long-term modelling based on policy scenarios.
93–101 (via para. 102)	Use of a less detailed methodology or coverage for projection-related reporting items under paragraphs 93–101.	Same modelling and coordination constraints as above, compounded by the absence of integrated national data systems.	Adoption of basic methodologies; addressing data gaps with low-cost solutions; strengthening of national data collection processes; capacity-building workshops; strengthened collaboration with international organizations.	Implementation of more detailed projection methodologies; implementation of advanced modelling tools; development of integrated data systems.

To progressively strengthen its capacity in these areas, Türkiye is implementing a comprehensive capacity-building project from 2025 to 2028, coordinated by the DoCC, focused primarily on improving the technical, institutional, and data infrastructure underpinning its NDC projections and PaM impact reporting.¹¹² The modeling infrastructure for Turkey’s greenhouse gas emission projections began to be established in 2025, and work on developing, updating, and building capacity for the model is still ongoing. Further development of the methodology, parameters, and assumptions will continue in 2027–2028.

112. DoCC. 2025. Capacity-Building Project for NDC Projections and Reporting, 2025–2028.



3 INVENTORY OF GREENHOUSE GAS EMISSIONS AND SINKS

3.1 GREENHOUSE GAS EMISSION TRENDS

Türkiye, as an Annex I Party to the UNFCCC, reports annually on greenhouse gas (GHG) inventories. The latest GHG inventory submission contains national GHG emission/removal estimates for the period of 1990-2024.¹¹³ The emissions presented in this document are those communicated in the 2026 submission to the UNFCCC Secretariat. A complete description of the factors underlying Turkish emission trends, the rationale for the choice of methodologies, and the emission factors and parameters used to estimate emissions for the relevant sectors is provided in the National Inventory Document and CRT tables.¹¹⁴

Türkiye's total GHG emissions were 584.5 Mt CO₂ eq. excluding LULUCF, and 517.4 Mt CO₂ eq., including LULUCF, in 2024. The energy sector was the highest contributor with 419.9 Mt CO₂ eq. followed by Industrial Processes and Product Use (IPPU) with 75.7 Mt CO₂ eq., agriculture with 73.5 Mt CO₂ eq., and waste with 15.4 Mt CO₂ eq. Regarding their shares, the energy sector has the highest percentage with 71.8%, industrial processes and other product use (IPPU) has 12.9%, agriculture has 12.6%, and waste has 2.6% (Figure 34, Table 11).

The emissions across most sectors showed notable annual changes from 2023 to 2024. Emissions in the energy sector increased by 5.6%, in IPPU by 7.0%, and in the waste sector by 3.9%, and in agriculture by 2.4%. In contrast, emissions in LULUCF decreased by 3.1%. In the long term, all sectors except LULUCF have an increasing trend from 1990 to 2024. Energy sector emissions increased by 192% compared to 1990. During the same period, IPPU sector emissions increased by 228%, agricultural sector emissions increased by 42%, and waste sector emissions increased by 50%.¹¹⁵ (Figure 35) The LULUCF emissions increased 1%. The main reasons for the increase in all sectors were population growth, a growing economy, and an increase in energy demand.

¹¹³. NID, 2026.

¹¹⁴. NID, 2026 and CRT, 2026.

¹¹⁵. NID, 2026



Figure 34 – Greenhouse gas emissions/removals, Mt CO₂ eq., 1990-2024¹¹⁶

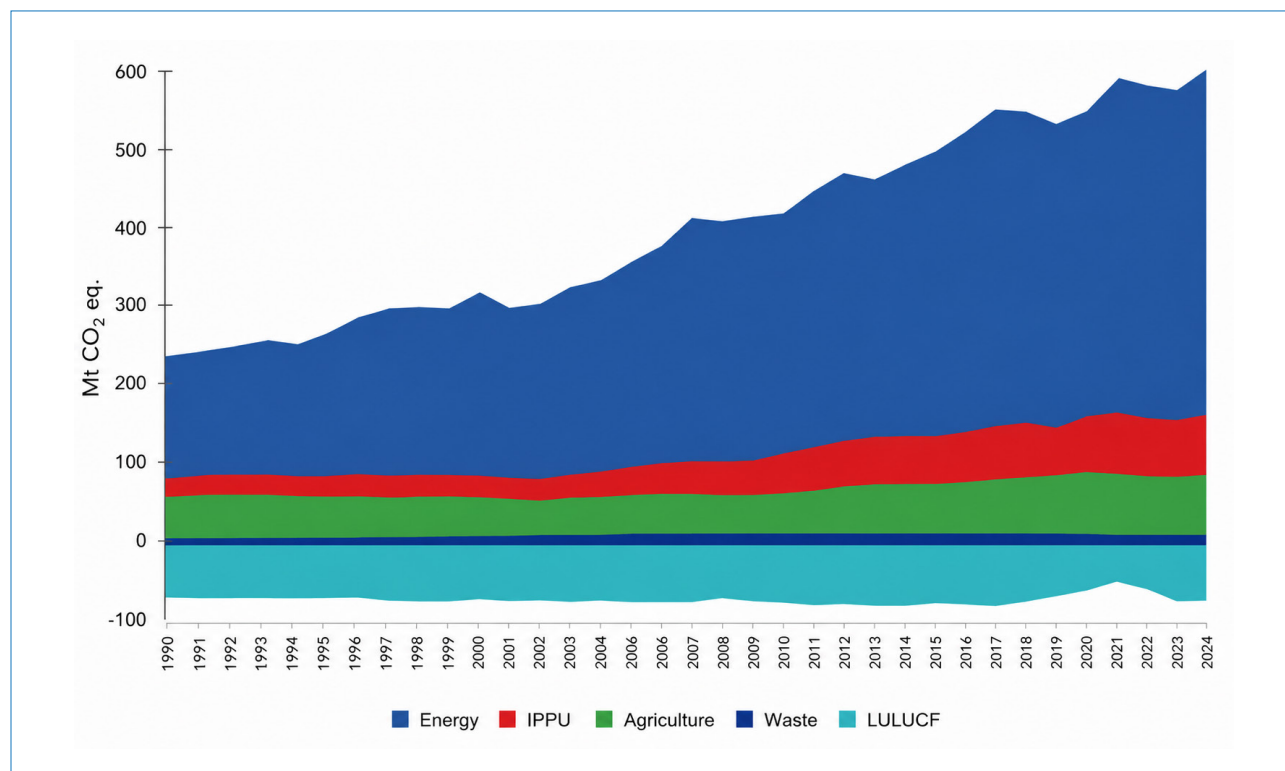
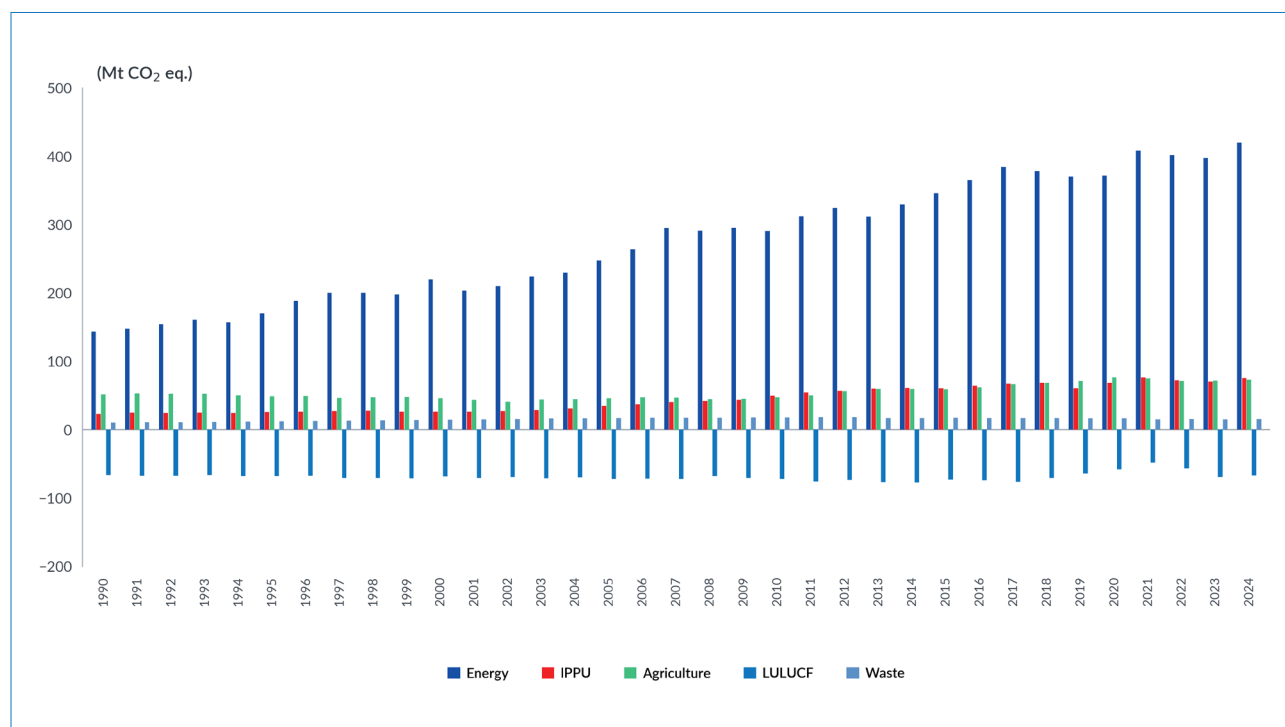


Figure 35 – GHG emission trend by sectors, Mt CO₂ eq., 1990-2024¹¹⁷



116. CRT, 2026.

117. CRT, 2026.

**Table 11 – Greenhouse gas emissions/removals, Mt CO₂ eq., 1990-2024**

Year	Energy	IPPU	Agriculture	LULUCF	Waste	Total (without LULUCF)	Total (with LULUCF)
1990	143.7	23.1	51.8	-66.4	10.3	228.9	162.5
1995	170.3	25.9	49.0	-67.9	12.1	257.4	189.5
2000	220.2	26.6	46.0	-68.2	14.6	307.5	239.3
2005	247.8	34.7	46.3	-72.2	17.0	345.8	273.5
2010	290.8	49.7	47.7	-72.1	18.2	406.4	334.3
2015	346.5	60.4	59.2	-73.0	17.9	483.9	411.0
2016	365.1	64.1	61.7	-73.8	17.4	508.3	434.5
2017	384.6	67.2	66.3	-76.1	17.0	535.2	459.0
2018	378.6	68.6	68.9	-70.5	17.3	533.5	463.0
2019	370.4	60.3	71.5	-64.4	16.6	518.7	454.3
2020	372.0	68.9	76.4	-57.7	16.6	534.0	476.2
2021	408.3	76.5	75.4	-48.0	15.1	575.3	527.3
2022	401.9	72.3	71.5	-56.3	15.6	561.3	505.0
2023	397.8	70.7	71.8	-69.2	14.9	555.2	485.9
2024	419.9	75.7	73.5	-67.1	15.4	584.5	517.4
Change (%) from base to latest reported year	192%	228%	42%	1%	50%	155%	218%

3.1.1 General Factors Underlying Emission Trends

Türkiye's GHG emission trends are highly correlated with GDP growth rate. The total and net GHG emissions trends are similar to the trend in GDP for 1990-2024 periods. There is an increasing trend in total emissions over the period of 1990-2024. However, for years 1994, 1999, 2001, 2008, 2018 and 2019 the GHG emissions decreased due to economic slowdown. The GHG emissions decreased by 2.5%, 0.9%, 6.1%, 1%, 0.3% and 2.8% respectively as compared with the previous years in these mentioned years.

The fluctuations in the emission trends are mainly due to the trends in economic activities. Therefore, GDP can be thought as the main driver of the GHG emissions in Türkiye. It has nearly the same pattern as total GHG emissions for the period 1990-2024. It reached 1.4 trillion USD in 2024 from 149 billion USD in 1990.

Population is another driver of the emission trends in national inventories. The mid-year population of Türkiye increased by about 55% for the period 1990-2024. While it was 55 million in 1990, it reached 85.5 million in 2024. Türkiye's per capita GHG emissions were 4.2 t CO₂ eq. in 1990 and increased to 6.8 t CO₂ eq. in 2024.¹¹⁸ Despite both Türkiye's GDP and GHG emissions increasing, the rate of increase in GHG emissions is significantly lower than that of GDP growth. The primary reasons for this decoupling of GHG emissions from GDP growth relate to two main factors. Firstly, it is primarily due to strategic policies and measures implemented in the energy sector, which have

118. NID, 2026



led to an increased share of non-fossil fuel electricity production and improvements in energy efficiency. Secondly, external factors such as the cumulative impact of annual inflation of the US dollar from 1990 to 2024. Decoupling effects due to policy developments indicate a promising trend in which economic growth does not correspond with proportional increases in GHG emissions. This pattern is expected to become more pronounced in the years to come.

Figure 36 – Trends in emissions per capita and dollar of GDP relative to 1990¹¹⁹

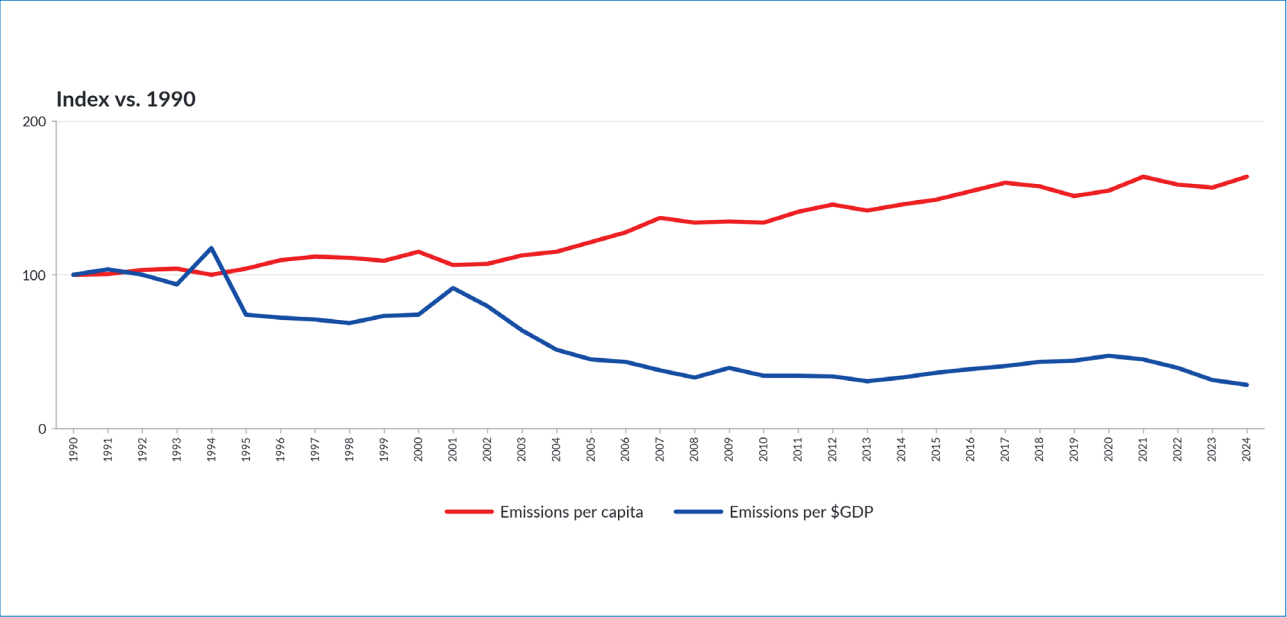


Figure 36 shows trends on various statistics related to Turkish greenhouse gas emissions normalized to 1990 as a baseline year. The direction of the emissions per \$ of GDP trend started to change after 2002, when GDP (in current prices) began to peak, while emissions per capita continued to increase slightly.

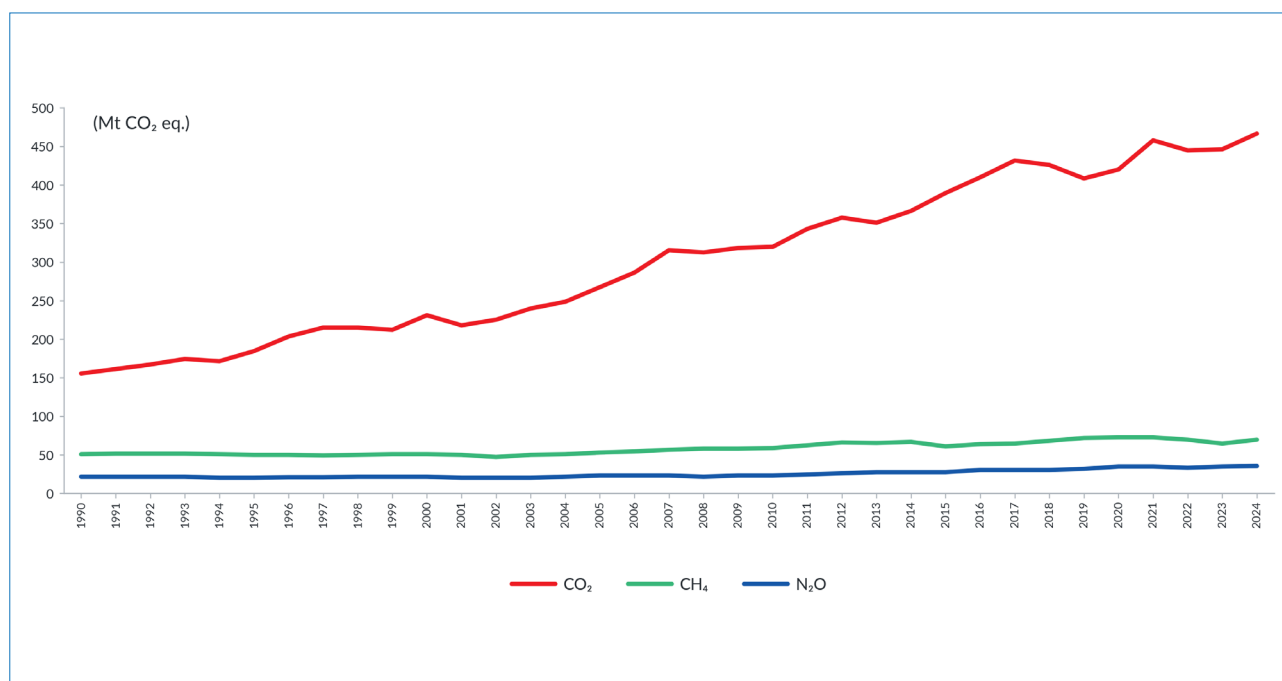
3.1.2 GHG Emission Trends by Gas

2024 GHG inventory indicates that, out of the total greenhouse gas emissions, CO₂ contributed the highest share of 80.0%, followed by methane (CH₄) with 12.1%, nitrous oxide (N₂O) with 6.2%, and fluorinated gases (F-gases) with 1.7%. Total CO₂ emissions (excluding LULUCF) increased by 202% from 1990 to 2024. CH₄ emissions (excluding LULUCF) increased by 38% and N₂O emissions (excluding LULUCF) increased by 63%. Total CO₂ emissions (including LULUCF) increased by 353% from 1990 to 2024. 1990-2024 change rates in CH₄ and N₂O, for figures including LULUCF are not significantly different from those for figures excluding LULUCF. CH₄ emissions (including LULUCF) increased by 38% and N₂O emissions (including LULUCF) increased by 63%.

In terms of the evaluation of each main GHGs, CO₂ emissions show a general increasing trend, while N₂O and CH₄ emissions were not changing considerably compared with CO₂. (Figure 37)¹²⁰

¹¹⁹. CRT, 2026; TurkStat, 2025_a

¹²⁰. NID, 2026

Figure 37 - Emission trend of main GHGs, 1990-2024¹²¹Table 12 - Aggregated GHG emissions excluding LULUCF, Mt CO₂ eq., 1990-2024¹²²

Gas	1990	2000	2005	2010	2015	2020	2021	2022	2023	2024	Change (%) from base to latest reported year
Total	228.9	307.5	345.8	406.4	483.9	534.0	575.3	561.3	555.2	584.5	156%
CO ₂	155.1	233.4	267.9	318.6	389.9	418.5	458.9	445.1	445.1	467.8	202%
CH ₄	51.3	51.6	53.4	60.2	60.8	73.1	73.6	71.5	65.0	70.9	38%
N ₂ O	22.2	22.0	23.1	24.4	28.7	36.1	35.8	34.2	35.2	36.1	63%
HFCs	NA,NO	0.1	1.0	2.8	4.4	6.0	6.7	10.2	9.7	9.5	N/A
PFCs	0.4	0.4	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	-97%
SF ₆	NA,NO	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	N/A

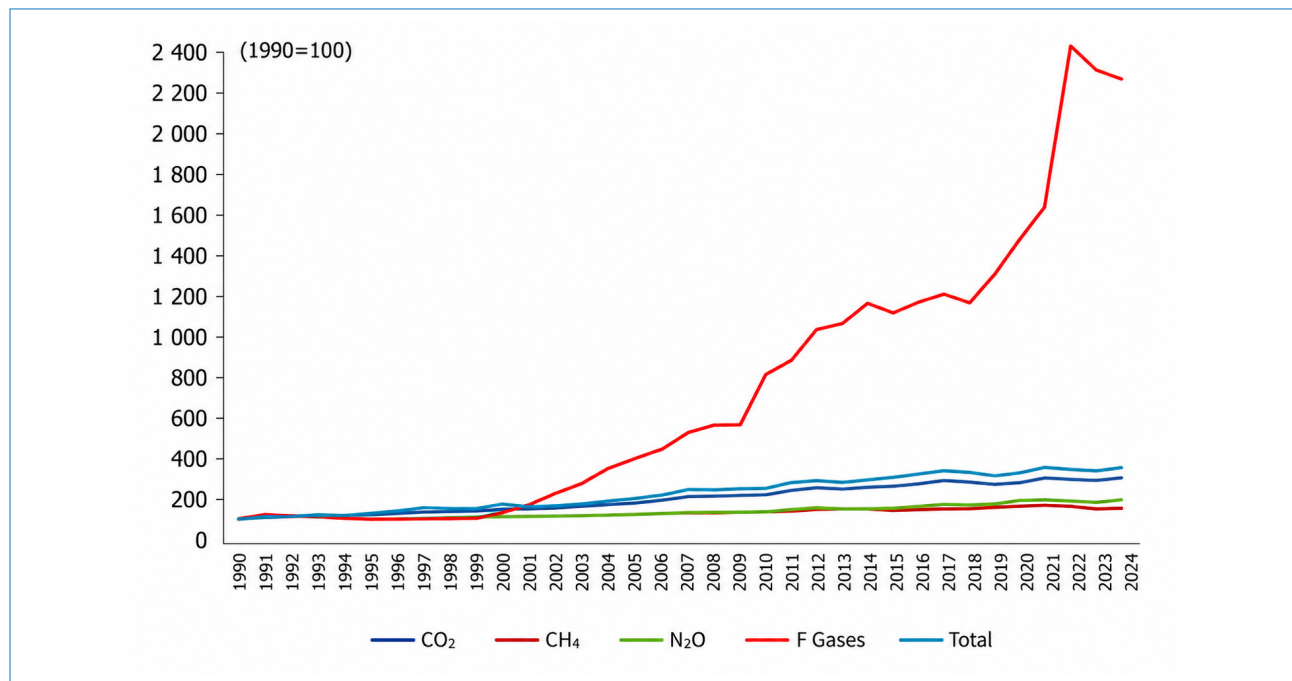
Figure 38 shows trends in the index for each year compared to previous year by gas for the 1990-2024 period. 1990 is assumed to be “100” for indexing. All gases were showing an increasing trend compared with 1990 and also with previous years in general. The sharpest trend belongs to F-gases since they increased almost 23 times compared to 1990. However, their total share in overall greenhouse gas (GHG) emissions was only 1.7% in 2024.

121. CRT, 2026

122. NID, 2026



Figure 38 – Trends in emissions by gas relative to 1990¹²³



3.1.3 Indirect GHG Emissions

Emission trends of NO_x, CO, NMVOC, NH₃ and sulphur dioxide (SO₂) from 1990 to 2024 are given in below Table 13. While four indirect gases increased from 1990 to 2024 including NO_x (671.5%), SO_x (334.3%), NMVOC (58.4%) and CO (87.3%), one indirect gas has decreased which is NH₃ (68.5 %).¹²⁴

Table 13 – Total emissions for indirect greenhouse gases, kt, 1990-2024¹²⁵

Gas	1990	2000	2010	2015	2020	2021	2022	2023	2024	Change (%) from base to latest reported year
NO _x	132	1 274	979	961	956	981	983	964	1 021	671.5
CO	874	7 672	3 404	2 372	1 942	1 934	1 632	1 617	1 638	87.3
NMVOC	728	1 448	1 104	1 095	1 177	1 174	1 142	1 127	1 153	58.4
NH ₃	88	96	62	50	46	39	27	33	28	-68.5
SO _x	572	727	2 473	1 959	2 310	2 700	2 738	2 339	2 483	334.3

¹²³. CRT, 2026.

¹²⁴. NID, 2026.

¹²⁵. NID, 2026.



In terms of annual changes from 2023 to 2024, while one indirect gas has decreased, which is NH_3 (-16.5%), four indirect gases have increased, namely SO_x (6.2 %), NO_x (5.9 %), NMVOC (2.3 %) and CO (1.3 %).¹²⁶ Türkiye, as an Annex I party to the UNFCCC, reports annually on greenhouse gas (GHG) inventories. The latest GHG inventory submission contains national GHG emission/removal estimates for the period of 1990-2024.¹²⁷ The emissions presented in this document are those communicated in the 2026 submission to the UNFCCC Secretariat. A complete description of the factors underlying the Turkish emission trends, the rationale for the choice of methodologies, the emission factors and parameters used to estimate emissions for the relevant sectors is provided in the National Inventory Document and CRT tables.¹²⁸

Figure 39 – Trends in emissions per capita and dollar of GDP relative to 1990¹²⁹

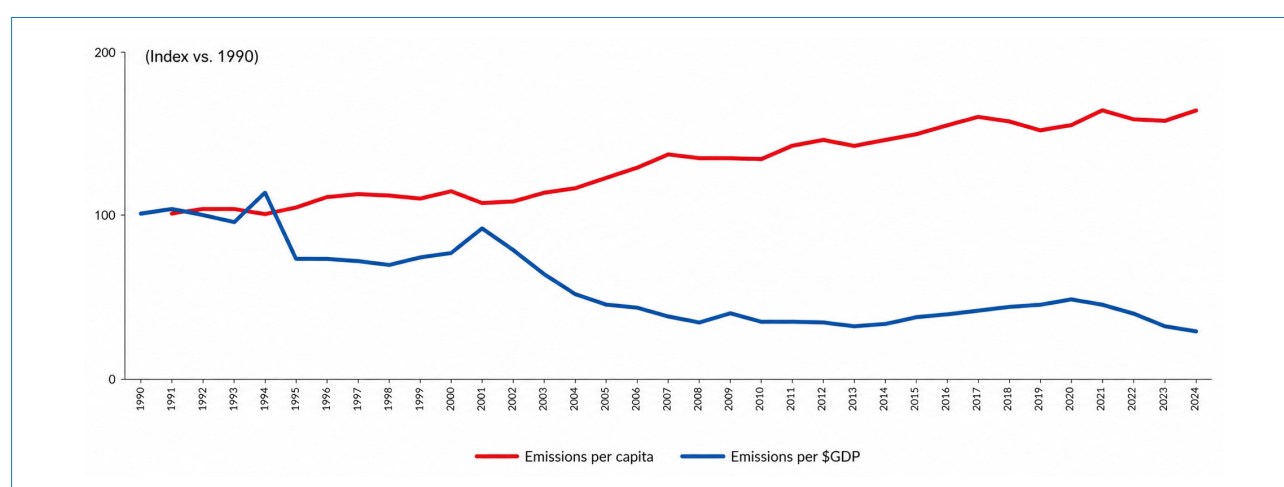


Figure 39 shows trends on various statistics related to Turkish greenhouse gas emissions normalized to 1990 as a baseline year. The direction of the emission intensity trend started to change after 2002. GDP (in current price) peaked in 2013 and began to decline, while population and emissions per capita continued to increase. After COVID-19, GDP per capita (in current price) began to increase again.

In Türkiye, within the scope of the Regulation on the Monitoring of Greenhouse Gas Emissions and related communiqués, greenhouse gases originating from thermal power plants and industrial sectors have been monitored at the operation/facility level since 2015

¹²⁶. NID, 2026.

¹²⁷. NID, 2026.

¹²⁸. NID, 2026 and CRT, 2026.

¹²⁹. CRT, 2026; TurkStat, 2021_a

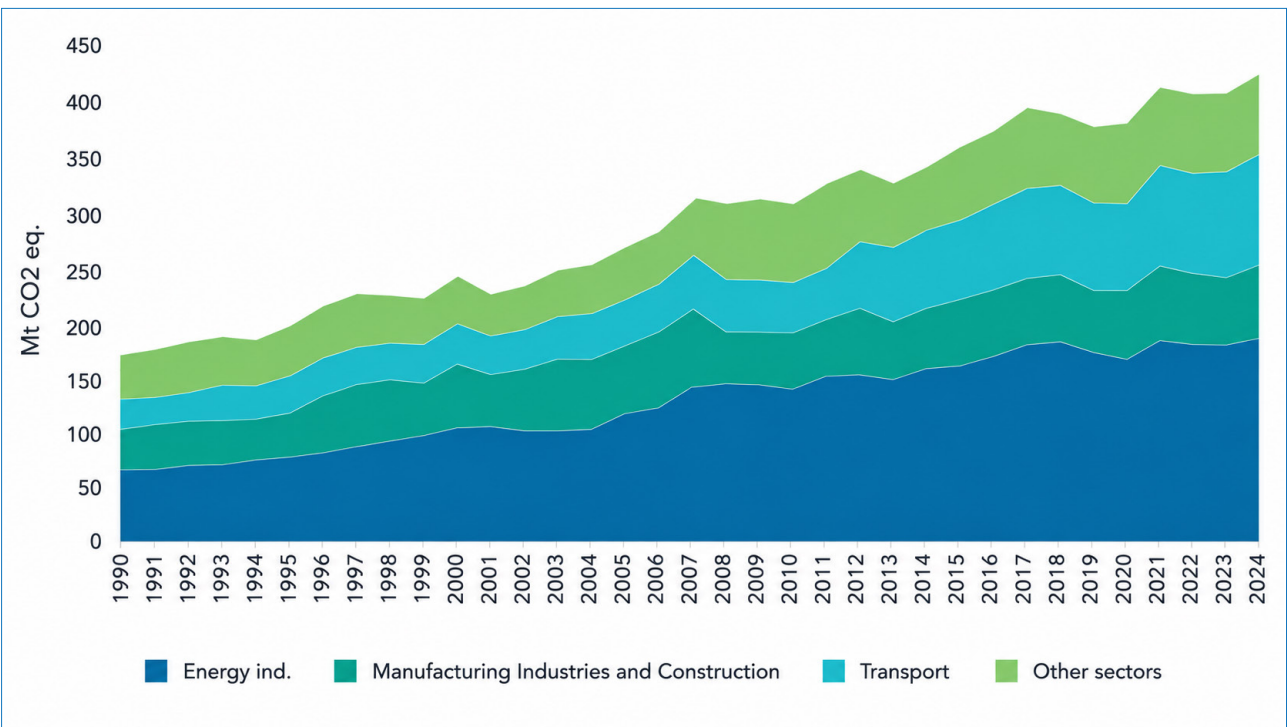


3.2 GREENHOUSE GAS EMISSIONS BY SECTOR

3.2.1 Energy

Energy sector is the major source of Turkish anthropogenic GHG emissions. In overall 2024 GHG emissions (excluding LULUCF), the energy sector had the largest share at 71.8%. Energy sector CO₂ emissions constituted 85.9% of total CO₂ emissions in 2024. The non-CO₂ emissions from energy-related activities represented a rather small portion of the total national emissions. Energy sector CH₄ emissions were 19.5% of total national CH₄ emissions, and its N₂O emissions were 11.4% of total N₂O emissions in 2024.¹²⁵

Figure 40 – Energy sector emissions, 1990-2024¹³⁰



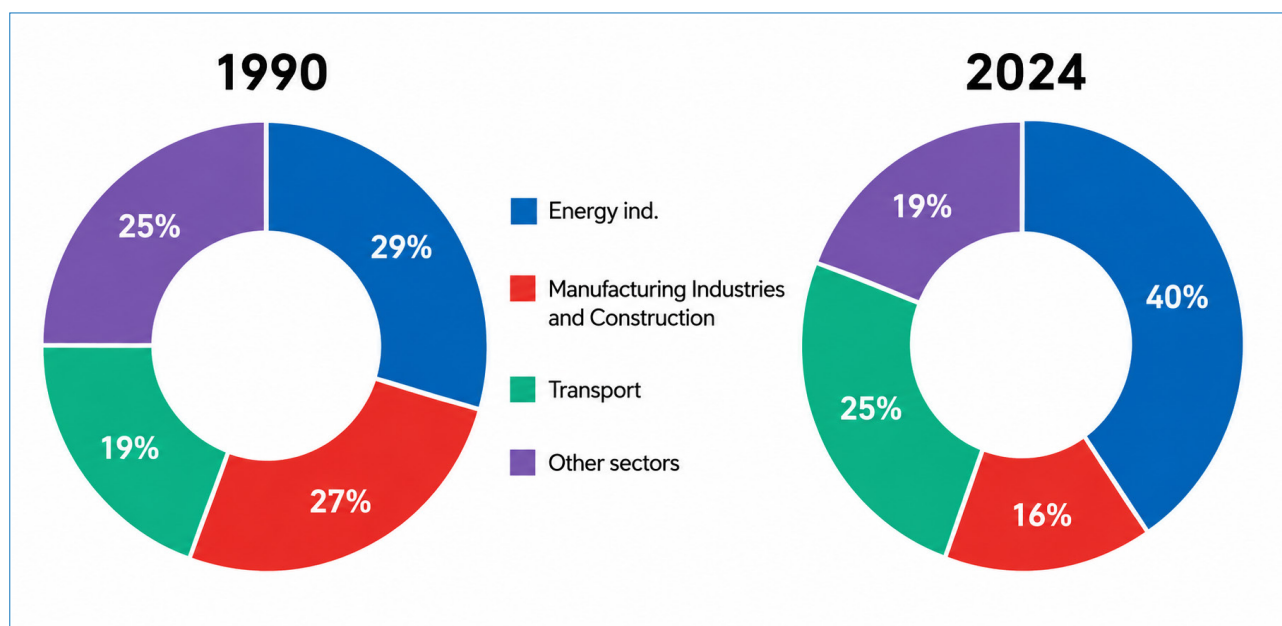
Total emissions from the energy sector for 2024 were estimated to be 419.9 Mt CO₂ eq. Energy industries were the main contributor, accounting for 38.4% of emissions from the energy sector. It was followed by the transport sector with 24.5%, other sectors with 18.4%, and manufacturing industries and construction with 15.9%.¹³¹

130. CRT, 2026.

131. NID, 2026.



Figure 41 – Fuel combustion CO₂ eq. emissions by sectors, 1990 and 2024¹³²



Energy sector GHG emissions increased by 192.3% between 1990 and 2024, whereas annual emissions from 2023 to 2024 increased by 5.6% (22,105 kt CO₂ eq.). Energy sector GHG emissions mainly came from stationary combustion. Total emissions from stationary combustion were 305 Mt CO₂ eq. in 2024, equal to 52.2% of total national GHG emissions (excluding LULUCF).¹³³

Between 2023 and 2024, energy industries, manufacturing industries and construction, transport sector, and other sectors showed increases of 4.6%, 8%, 3.6%, and 3.5%, respectively.¹³⁴

Table 14 – Total emissions from fuel combustion by sectors, kt CO₂ eq., 1990-2024¹³⁵

Year	Energy	Fuel Combustion Total	Energy Industries	Manufacturing Industries and Construction	Transport	Other sectors
1990	143 668	138 273	40 222	37 157	26 912	33 982
1995	170 350	165 559	53 571	39 990	34 041	37 957
2000	220 242	212 867	80 594	57 928	36 408	37 936
2005	247 829	240 999	93 170	62 996	41 980	42 853
2010	290 791	280 931	115 231	52 335	45 346	68 020
2015	346 460	340 059	136 130	59 581	75 713	68 635
2020	371 996	361 819	141 934	62 182	80 585	77 117
2021	408 264	396 182	159 386	68 880	91 087	76 829
2022	401 879	389 701	155 973	65 535	91 866	76 326
2023	397 784	390 098	154 263	61 866	99 334	74 635
2024	419 889	408 247	161 355	66 753	102 871	77 267

¹³². CRT, 2026.

¹³³. NID, 2026.

¹³⁴. NID, 2026.

¹³⁵. NID, 2026.



Between 2023 and 2024, Türkiye's energy sector emissions increased. As a long-term trend, between 1990 and 2024, Türkiye's energy industries sector emissions continued to increase. This increase is mainly a result of increased energy demand. In 2024, gross consumption was 354,570.21 gigawatt-hours (GWh); meanwhile, in 2023, this figure was realized as 331,148.9 GWh. However, while demand continues to grow, Türkiye has managed to keep the rate of GHG emission growth well below the rate of demand growth, underscoring the effectiveness of the transition to renewable energy sources.

3.2.1.1 Energy Industries

In the energy industry sector, emissions were 40.22 Mt CO₂ eq. in 1990, rising to 154.26 Mt CO₂ eq. in 2023 and further increasing to 161.35 Mt CO₂ eq. in 2024. This reflects a 301% increase from 1990 to 2024, with a 4.6% increase compared to the previous year. Although there was an increase to 161.35 Mt CO₂ eq. in 2024, the overall trend over recent years suggests that GHG emissions are being moderated by the growing share of renewable energy in electricity generation, despite the continuous rise in electricity demand.

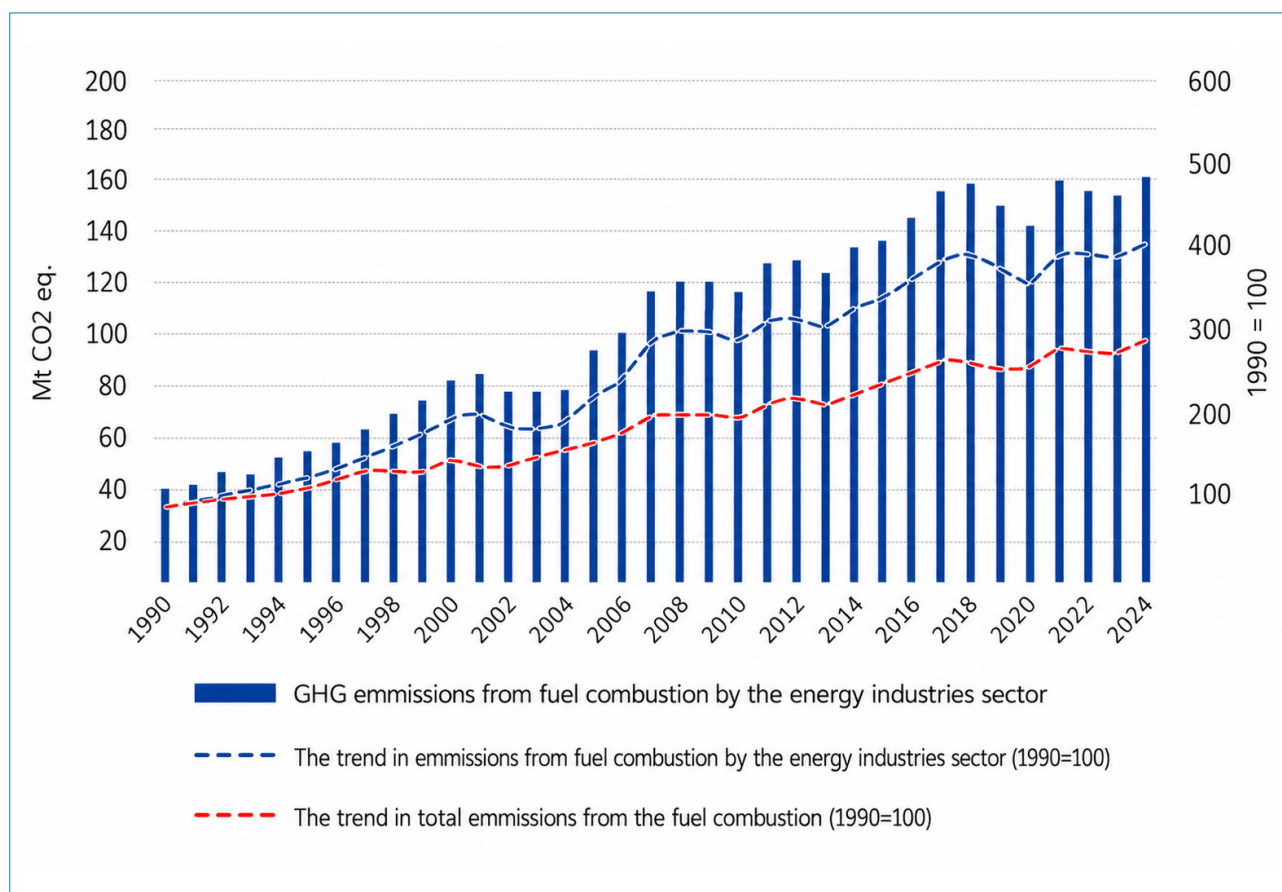
However, the increase in emissions within the energy industry sector remains higher than the overall trend for the entire fuel combustion sector. Using 1990 levels as a baseline (100), total emissions from fuel combustion increased to 295, while emissions specifically from the energy industry sector increased to 401. In other words, the share of energy industries in total fuel combustion increased from 29.1% in 1990 to 39.5% in 2024.

Energy industries' main sub sector is the public electricity and heat production category, which includes electricity and heat production from all electricity generation installations in operation, including auto producers. Auto producers were facilities that produce electricity for their own purposes. By the end of 2024, total installed capacity reached 116,265 MW in 2024 with a 4.82% increase from the previous year and nearly 11.75 times higher than the 1990 values. The total gross electricity consumption increased by 7.07% in 2024 compared with the previous year. In 2024, gross consumption was 354,570.21 GWh; meanwhile, in 2023, this figure was realized as 331,148.9 GWh.¹³⁶ The details on energy industries have been provided in the Electricity Section within the National Circumstances Chapter.

¹³⁶. NID, 2026



Figure 42 - The trend in the emissions from fuel combustion by the energy industries sector (1990-2024)¹³⁷



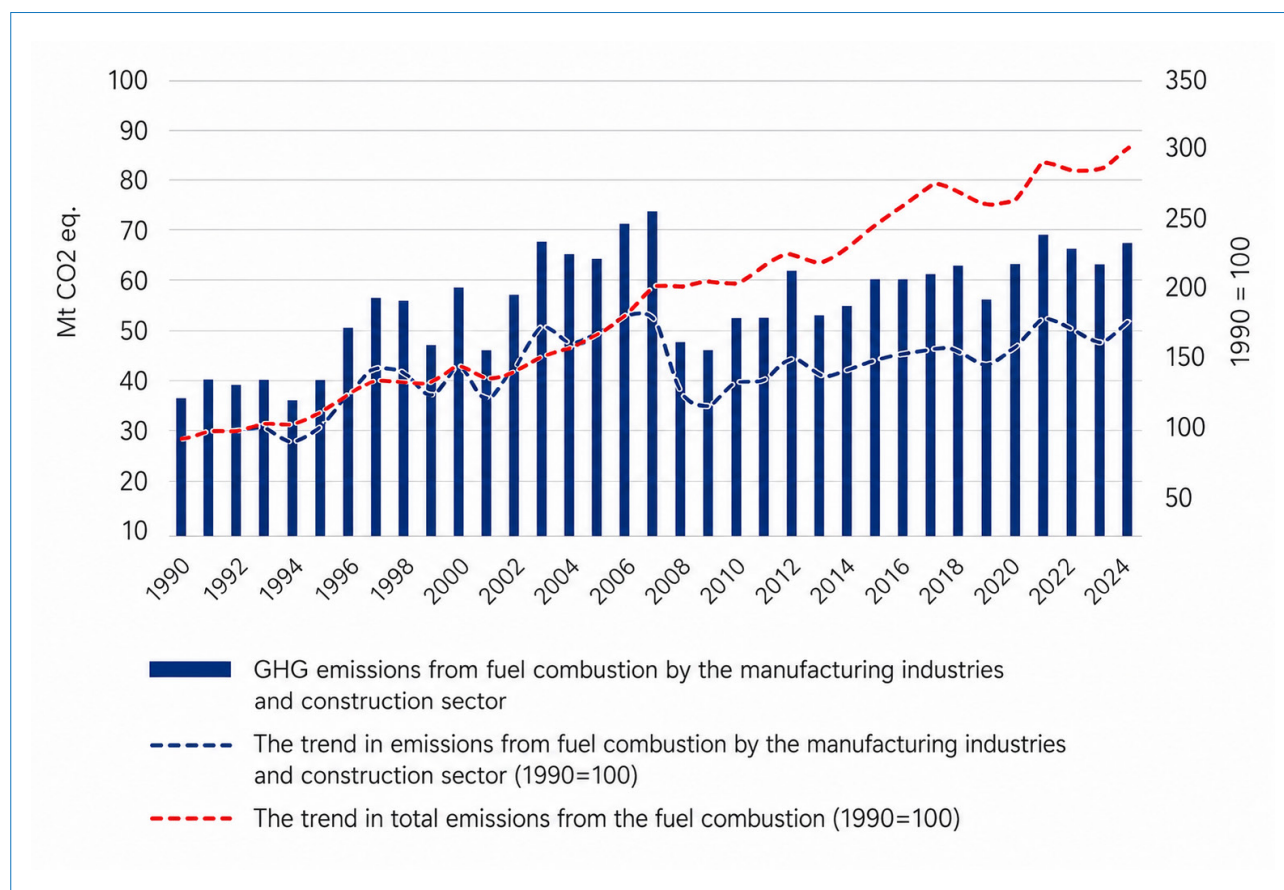
3.2.1.2 Manufacturing Industries and Construction Sector

In 2024, the manufacturing industries and construction sector contributed to 66.8 Mt CO₂ eq. emissions (Figure 43). The increasing trend in emissions from fuel combustion by manufacturing industries and the construction sector was lower than the increasing trend in emissions from fuel combustion by all sectors. As a result, GHG emissions (in CO₂ eq.) from the manufacturing industries and the construction sector, as a share of total emissions from fuel combustion, decreased from 26.9% in 1990 to 16.4% in 2024.

¹³⁷. CRT, 2026.



Figure 43 – The trend in the emissions from fuel combustion by the manufacturing industries and construction sector (1990-2024)

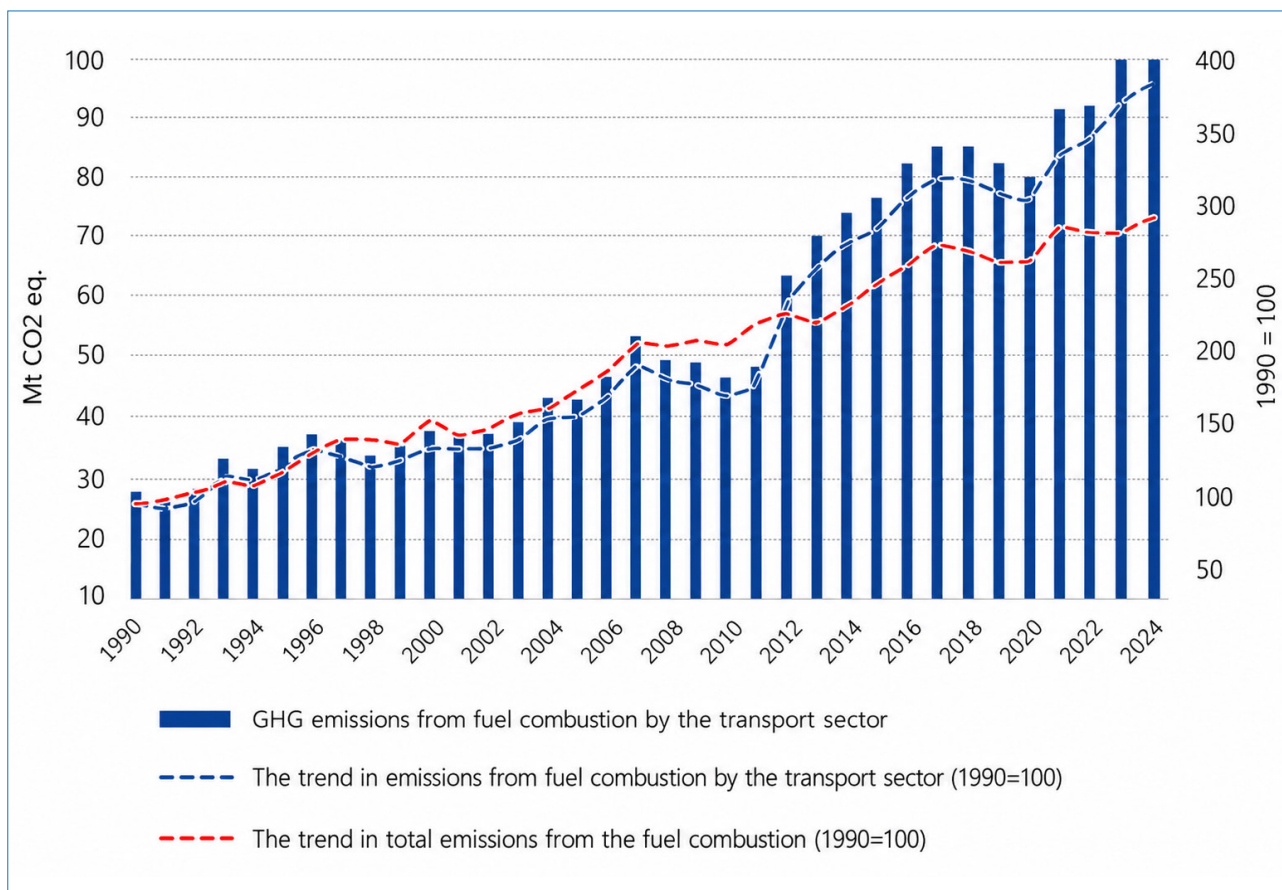


3.2.1.3 Transport

In 2024, the transport sector contributed 102.87 Mt CO₂ eq. to emissions (Figure 44). Increase trend in emissions from fuel combustion by the transport sector was higher than the increase trend of emissions from fuel combustion by all sectors. As a result, GHG emissions (in CO₂ eq.) from transport sector, as a share of total emissions from fuel combustion, increased from 19.5% in 1990 to 25.2% in 2024.



Figure 44 – The trend in the emissions from fuel combustion by the transport sector (1990-2024)¹³⁹



As shown in Figure 45 below, road transportation was the major CO₂ source contributing to 94.4% of transport emissions in 2024. Contribution of domestic aviation was 3.7%, domestic water-borne navigation was 1.1%, and railways was 0.4% in 2024. The share of pipeline transportation was 0.3%.

139. CRT, 2026.



Figure 45 - GHG emission by transport mode, 1990-2024¹⁴⁰

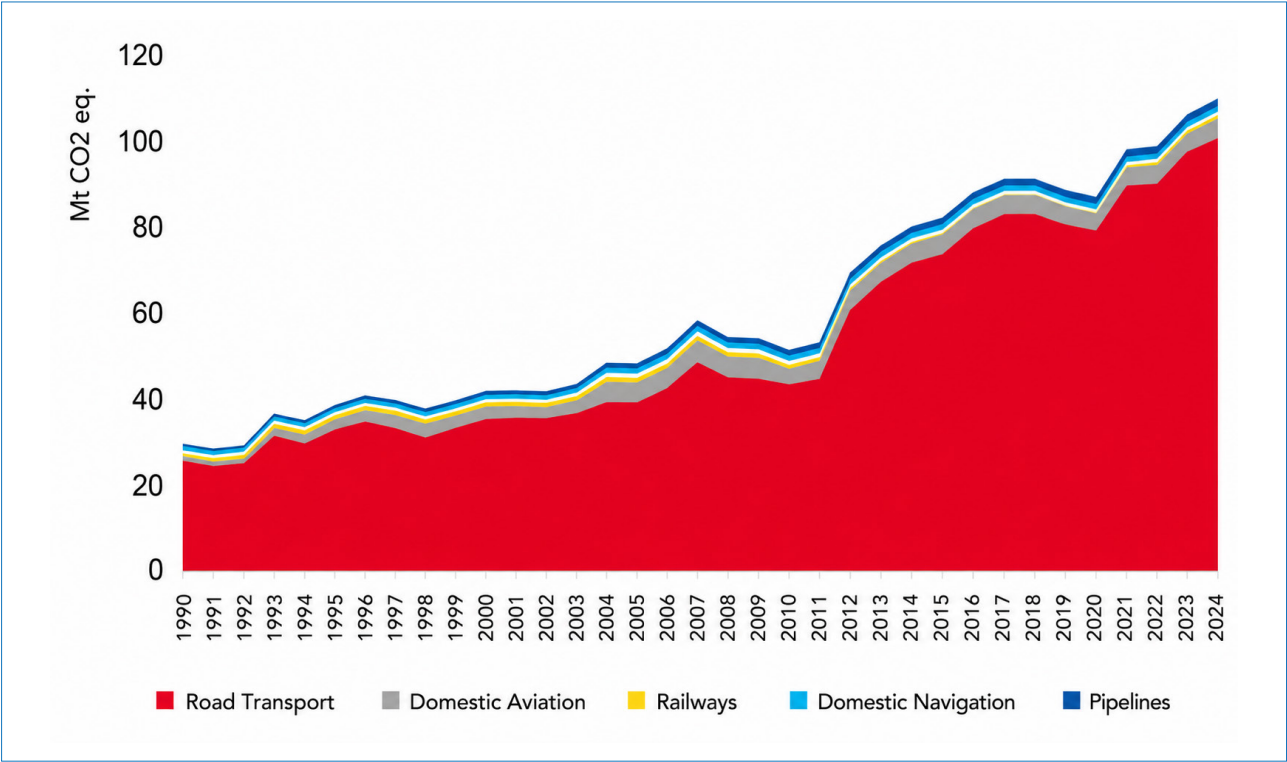
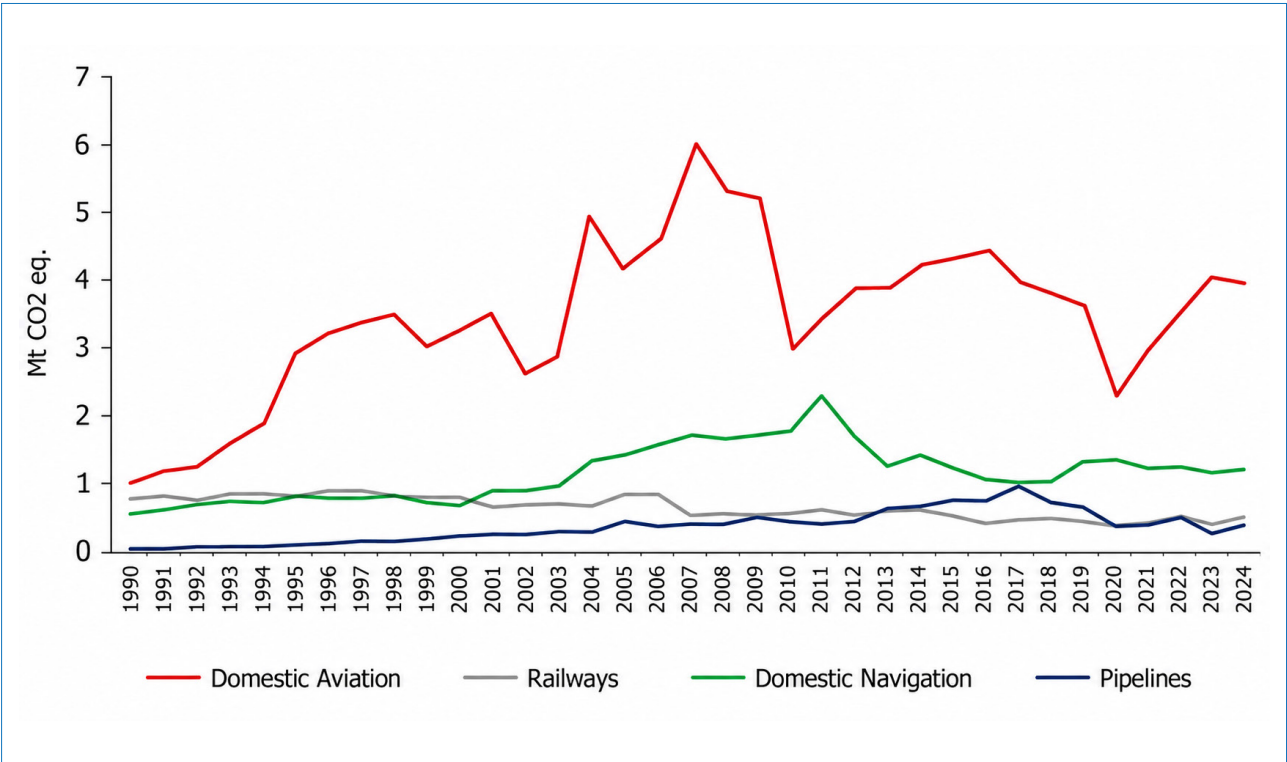


Figure 46 - GHG emission trend by transport mode except road transportation, 1990-2024¹⁴¹



140. CRT, 2026.

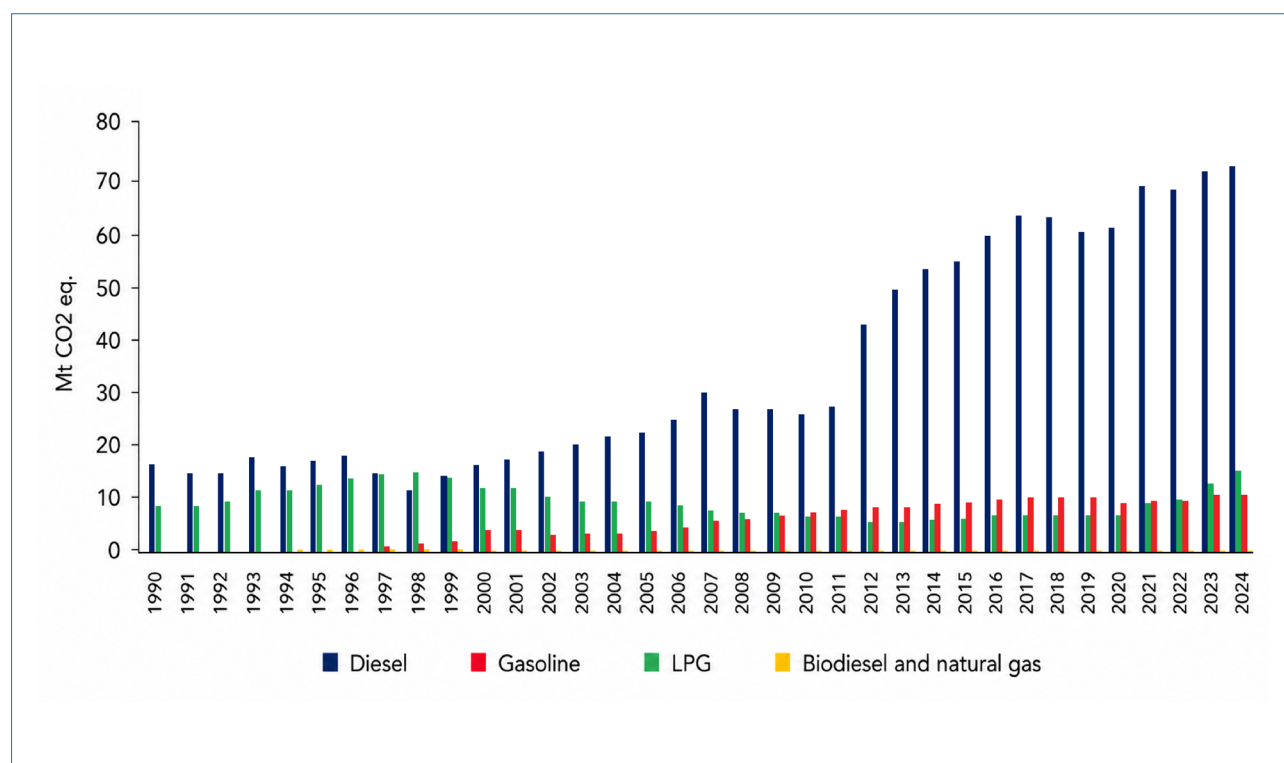
141. CRT, 2026.



In road transportation until the year 1997, only diesel oil and gasoline were used. Utilization of LPG started in 1997, and consumption increased steadily. Then, diesel consumption and LPG consumption increased while gasoline consumption declined. From 2007 to 2010, diesel consumption decreased because of the global economic crisis. After that, there was a remarkable rise in diesel consumption.

When analyzed in detail, before 2011, diesel fuel used in the agriculture sector was accounted for separately from the transport sector. However, since 2011, this distinction has not been made, and diesel consumption in agriculture has been included in the transport sector's data. As a result, the reported greenhouse gas emissions from diesel fuel in the transport sector increased from 26 993 kt CO₂ eq. in 2011 to 41 970 kt CO₂ eq. in 2012. Therefore, the overall increase in the use of diesel fuel should not be attributed to the transportation sector.

Figure 47 - Emission distributions by fuel types in road transportation (1990-2024)¹⁴²

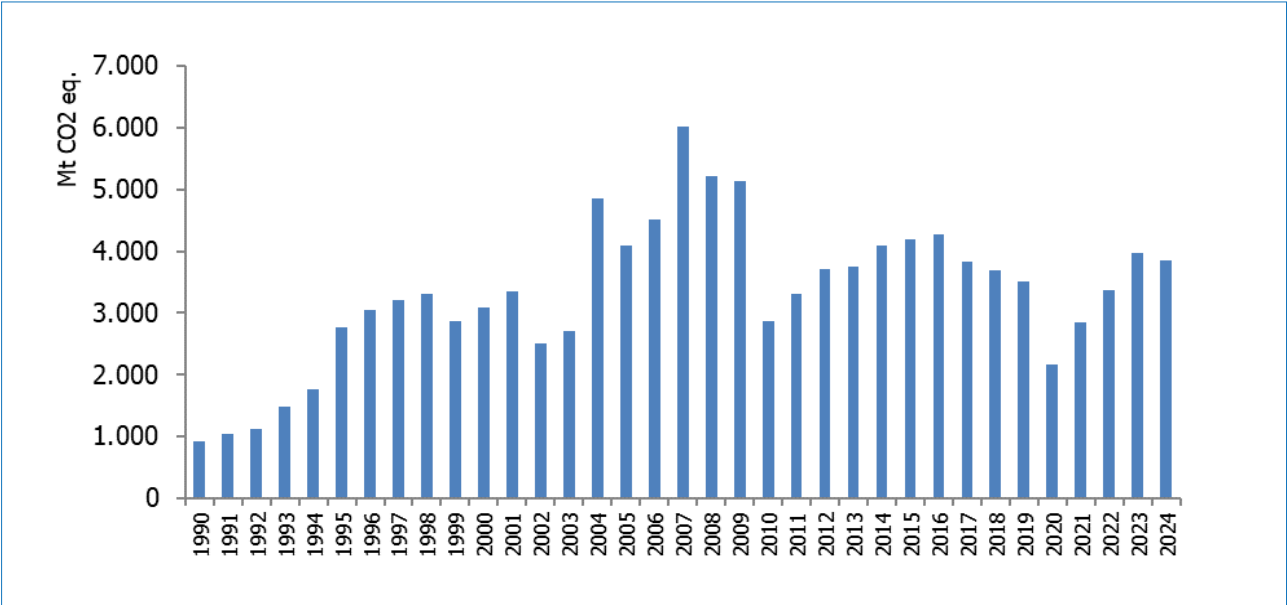


The domestic aviation source category was a key category in 2024, in terms of both the level and trend analysis of CO₂ emissions from jet fuel. In domestic aviation, only jet fuel was consumed. The total emissions and the emissions of CH₄ and N₂O show increasing trends, as CO₂ eq. emissions have increased approximately 330% since 1990 and reached 3.85 Mt CO₂ in 2024. The calculated amounts of CH₄ and N₂O emissions were 2.17 kt CO₂ eq. and 35.20 kt CO₂ eq. in 2024, respectively. There was a relatively large decrease in CO₂ emissions observed between 2009 and 2010 (44% decline) owing to the global economic crisis. Additionally, there was a significant decline due to COVID in 2020. However, an overall increase is observed between 2021 and 2023.

142. CRT, 2026.



Figure 48 – GHG emissions for domestic aviation, Mt CO₂ eq., 1990-2024¹⁴³



3.2.1.4 Other Sectors

In 2024, the other sectors category, which consists of emissions from fuel consumption at residential, commercial, and institutional buildings and from agriculture, contributed 77.3 Mt CO₂ eq. to emissions (Figure 49). The emissions included in this category mainly arise from fuel consumption at residential buildings, which accounted for 68.3% of the total for the category. Emissions from fuel consumption at commercial/institutional buildings were 17%, and fuel consumption in agriculture was 14.7% in the total of other sectors’ emissions.

Figure 49 – GHG emissions by sub-sectors within the other sectors category (2024)¹⁴⁴



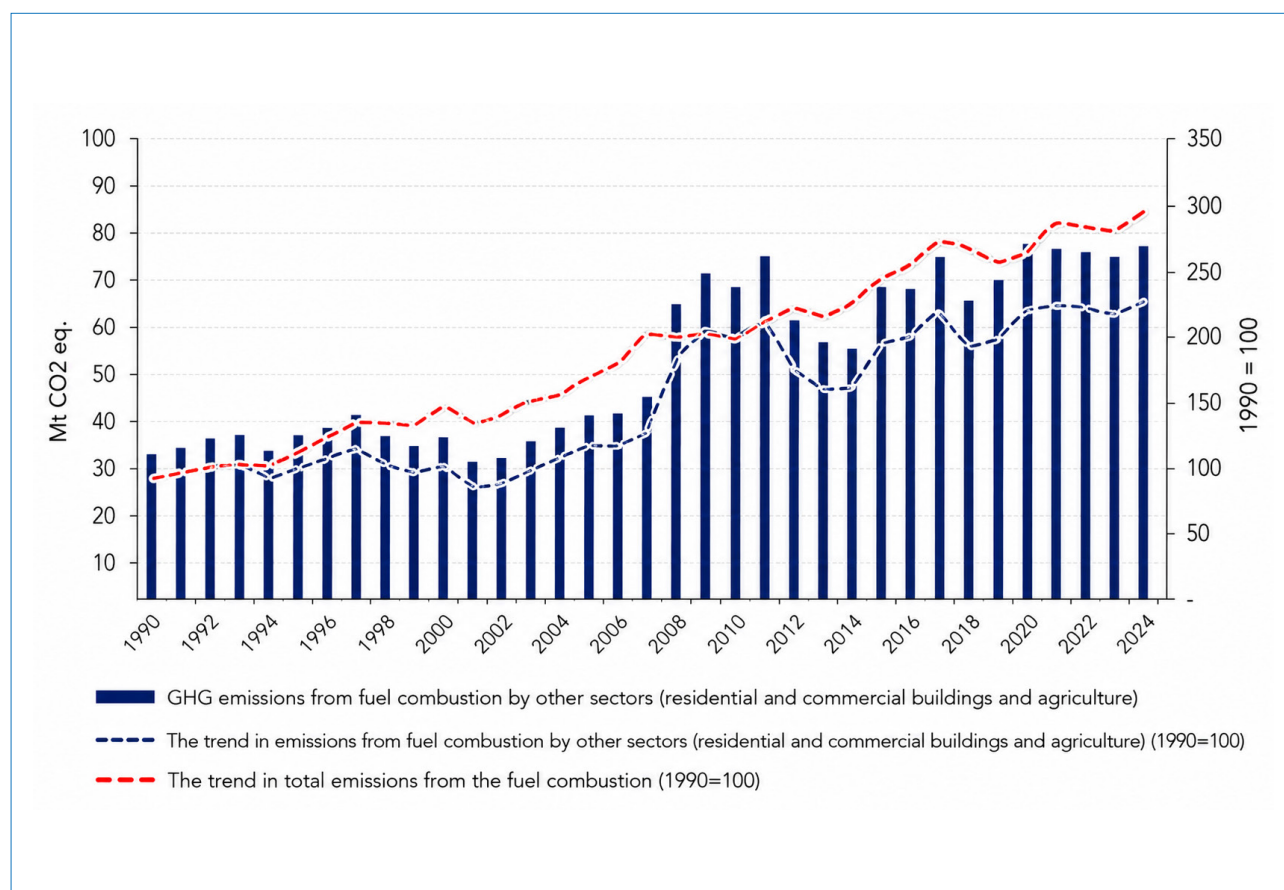
143. NID, 2026.

144. CRT, 2026.



Increase in emissions from fuel consumption in the other sectors category was lower than the increase in emissions from fuel consumption across all sectors (Figure 50). As a result, GHG emissions (in CO₂ eq.) from the other sectors category as a share of total emissions from fuel combustion decreased from 24.6% in 1990 to 18.9% in 2024.

Figure 50 - The trend in the emissions from fuel combustion by the other sectors (1990-2024)¹⁴⁵



3.2.1.5 Fugitive Emissions

Fugitive emissions include fugitive emissions from the extraction, processing, storage, and transport of fossil fuels. CH₄ emissions from coal mining, and CH₄, CO₂, N₂O, and NMVOC emissions from exploration, production/processing, transport/transmission, refining, and storage of oil and natural gas were covered.

¹⁴⁵ CRT, 2026.



Table 15 – Fugitive emissions from fuels, kt, 1990-2024¹⁴⁶

Year	CO ₂	CH ₄	N ₂ O	CO ₂ eq.
1990	220	185	0.0031	5 395
1995	209	164	0.0029	4 791
2000	168	257	0.0023	7 376
2005	142	239	0.0019	6 829
2010	156	347	0.0021	9 860
2015	155	223	0.0021	6 401
2020	195	356	0.0027	10 177
2021	210	424	0.0029	12 082
2022	218	427	0.0030	12 178
2023	250	266	0.0034	7 686
2024	326	404	0.0045	11 643

CO₂ and CH₄ were the main fugitive emissions in this category. CH₄ was emitted mainly from coal mining, while CO₂ was emitted from venting and flaring. Fugitive emissions as CO₂ eq. have become 11,643 kt in 2024.

Table 16 – Fugitive emissions from fuels by subcategory, 1990-2024 (kt CO₂ eq.)¹⁴⁷

Year	Total	Solid Fuels	Oil and Natural Gas
1990	5 395	4 401	994
1995	4 791	3 654	1 137
2000	7 376	5 930	1 446
2005	6 829	4 818	2 012
2010	9 860	7 554	2 306
2015	6 401	3 324	3 076
2020	10 177	6 814	3 362
2021	12 082	7 969	4 113
2022	12 178	8 332	3 846
2023	7 686	3 947	3 739
2024	11 643	7 282	4 361

Total fugitive emissions for 2024 were 11.64 Mt CO₂ eq., representing 2% of total GHG emissions (excluding LULUCF). Solid fuels contributed 62.5%, and oil and natural gas systems accounted for the remaining 37.5% of fugitive emissions. Overall fugitive emissions increased by 115.8% between 1990 and 2024. In 2014, a serious mining accident occurred, and many underground mines were closed in the following year as a precaution; therefore, in 2015, fugitive emissions were decreased remarkably compared to the previous year. In overall, from 1990 to 2024, fugitive emissions from oil and natural gas systems increased by 338.5%. Emissions from solid fuels in the fugitive sector increased by 65.5% in the same period.

146. NID, 2026.

147. NID, 2026.



3.2.2 Industrial Processes and Product Use

The GHG emissions from industrial processes and product use (IPPU) were released as a result of manufacturing processes. This category includes only emissions from processes and not from fuel combustion used to supply energy for carrying out the processes. For that reason, emissions from industrial processes are referred to as non-combustion.

The total GHG emissions from IPPU were 75.65 Mt CO₂ eq. for the year 2024 which was 12.9% of the total emissions excluding the LULUCF sector and 14.6% of all emissions including LULUCF in Türkiye. The most important GHG emission sources of IPPU in 2024 were cement production with 7.7%, iron and steel production 1.9% and Product Uses as Substitutes for ODS 1.6% shares of the total national GHG emissions excluding LULUCF. The main gas emitted by the IPPU sector in 2024 was CO₂, contributing 85%, reaching 64.31 Mt CO₂ eq. of the sector emissions in 2024. HFCs, PFCs, and SF6 contributed 12.8%, reaching 9.71 Mt CO₂ eq.¹⁴⁸

Table 17 – Industrial processes and product use sector emissions, (kt CO₂ eq.), 2024¹⁴⁹

GHG sources and sink categories	CO ₂	CH ₄	N ₂ O	HFCs/ PFCs/SF6	Total
Industrial processes and product use	64 314	19	1 610	9 709	75 652
Mineral industry	50 255	NA	NA	NA	50 255
Chemical industry	2 296	NA,NO	1 610	NA,NO	3 907
Metal industry	11 670	19	NO	37	11 726
Non-energy products from fuels and solvent use	92	NA	NA	NA	92
Electronic Industry	-	-	NO	76	76
Product uses as ODS substitutes	-	-	-	9 510	9 510
Other product manufacture and use	NA	NA	NA, NO,NE	85	85
Other	NA	NA	NA	NA	NA

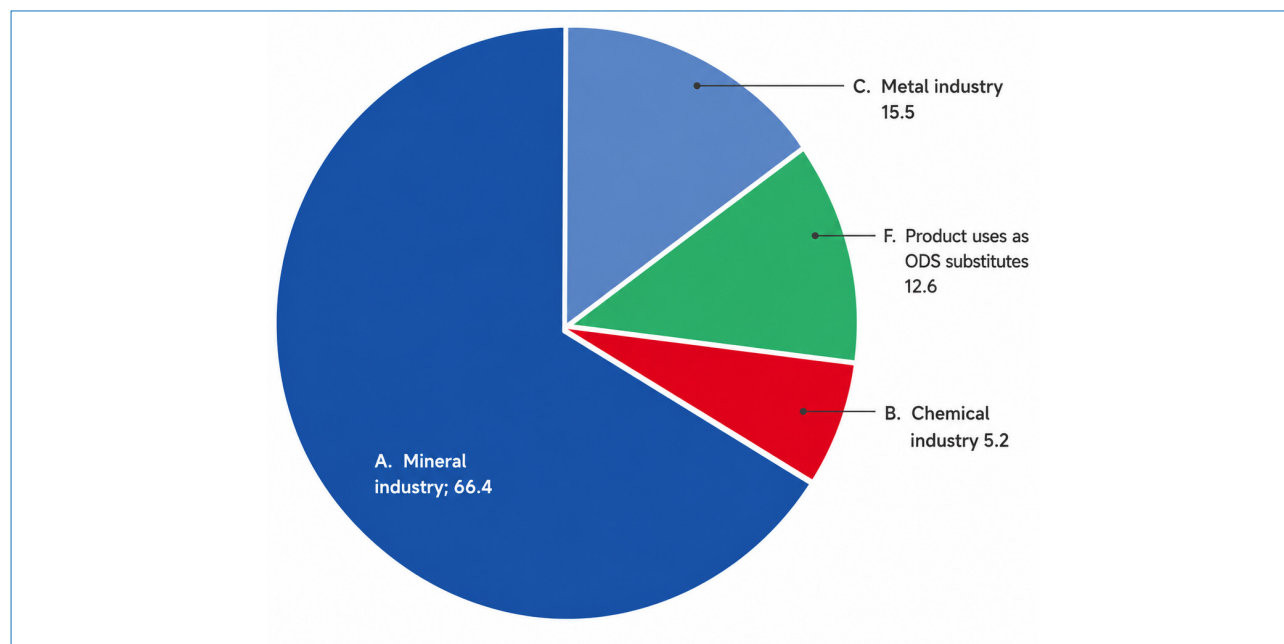
The mineral industry contributed 66.4% of the IPPU sector's emissions, the metal industry contributed 15.5%, product uses as ODS substitutes contributed 12.6%, while the chemical industry contributed 5.2% in 2024.

¹⁴⁸. NID, 2026.

¹⁴⁹. NID, 2026.

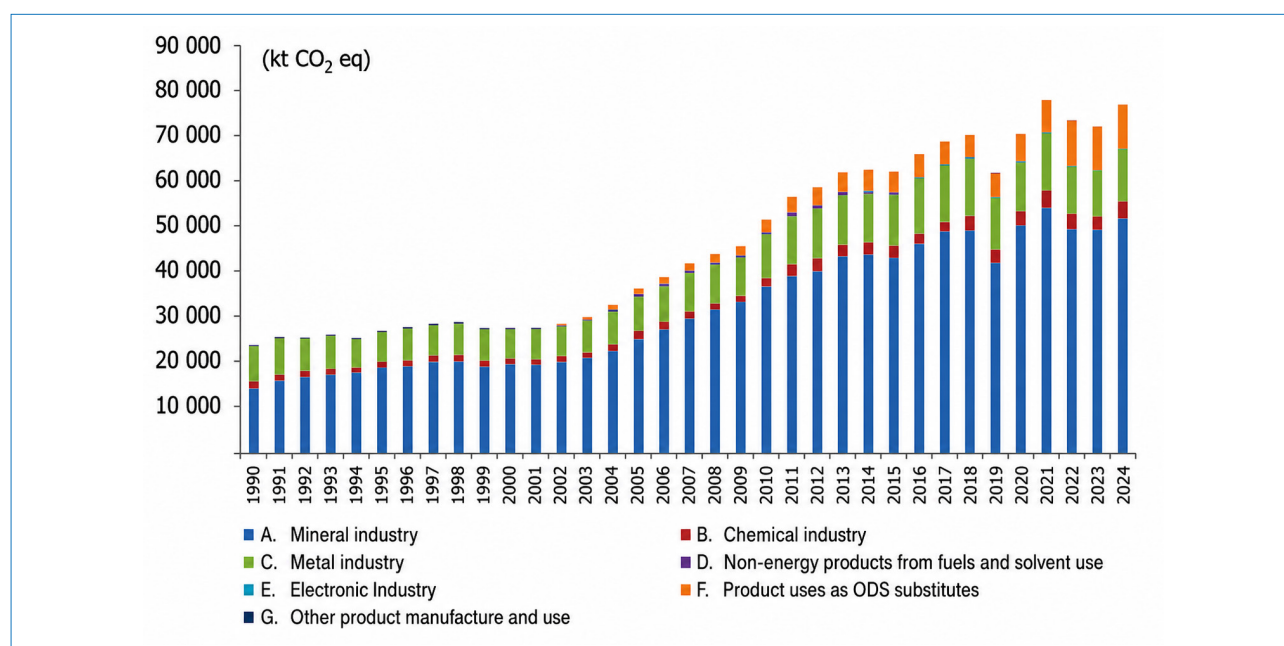


Figure 51 – Emissions from industrial processes and product use by subsector, 2024¹⁵⁰



The increases in sectoral emissions observed over the long term are primarily due to the growth in emissions associated with the mineral industry, specifically cement production, and the metal industry, particularly iron and steel production. These emissions have increased as a result of industrial growth and the rising demand for construction materials. Each source category's contribution to total emissions and to sectoral trends within the IPPU sector between 1990 and 2024 is shown in below Figure 53.¹⁵¹

Figure 52 – Emissions from industrial processes and product use by subsector, 1990–2024



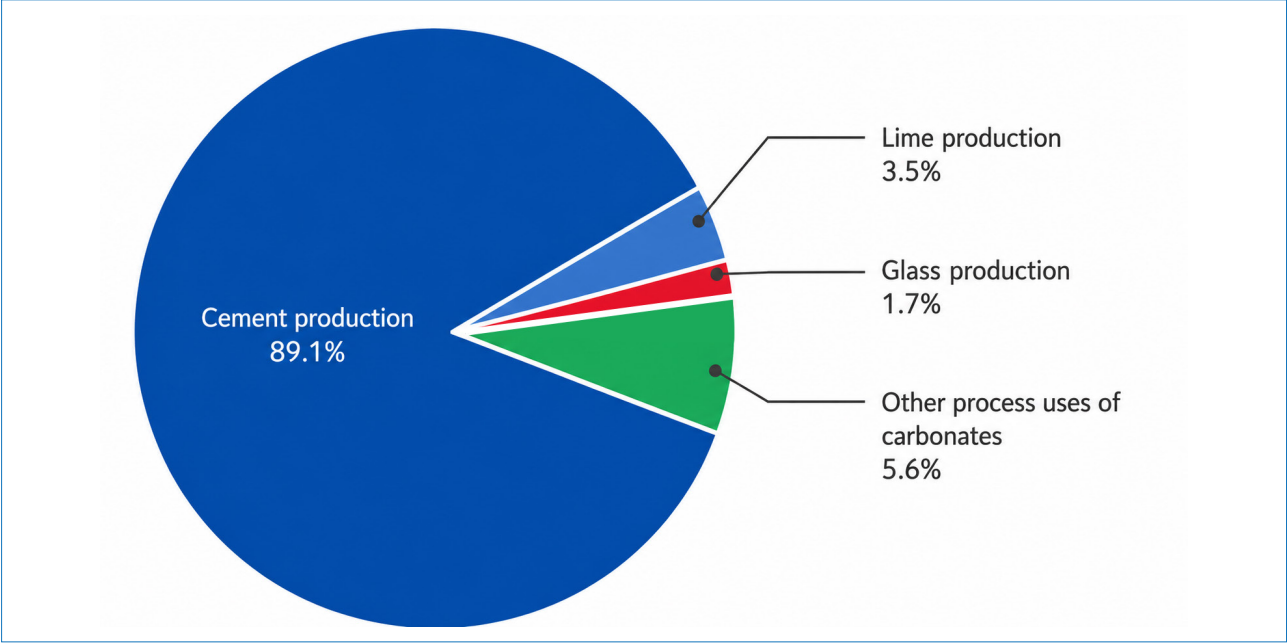
150. NID, 2026.

151. NID, 2026.



Non-fuel CO₂ emissions from cement and lime production, and from limestone and dolomite use, glass production, as well as emissions from ceramics production, soda ash use, and non-metallurgical magnesia production were reported in the mineral industry category. Figure 54 presents the share of CO₂ emissions in this category for the year 2024. The dominant sector was cement production having a 89.1% share of CO₂ emissions in the mineral industry. The second and third sectors were other process uses of carbonates, with a 5.6% share, and lime production, with a 3.5% share of CO₂ emissions. Glass production was responsible for 1.7% of emissions in the mineral industry.

Figure 53 – Share of CO₂ emissions from mineral production, 2024¹⁵²

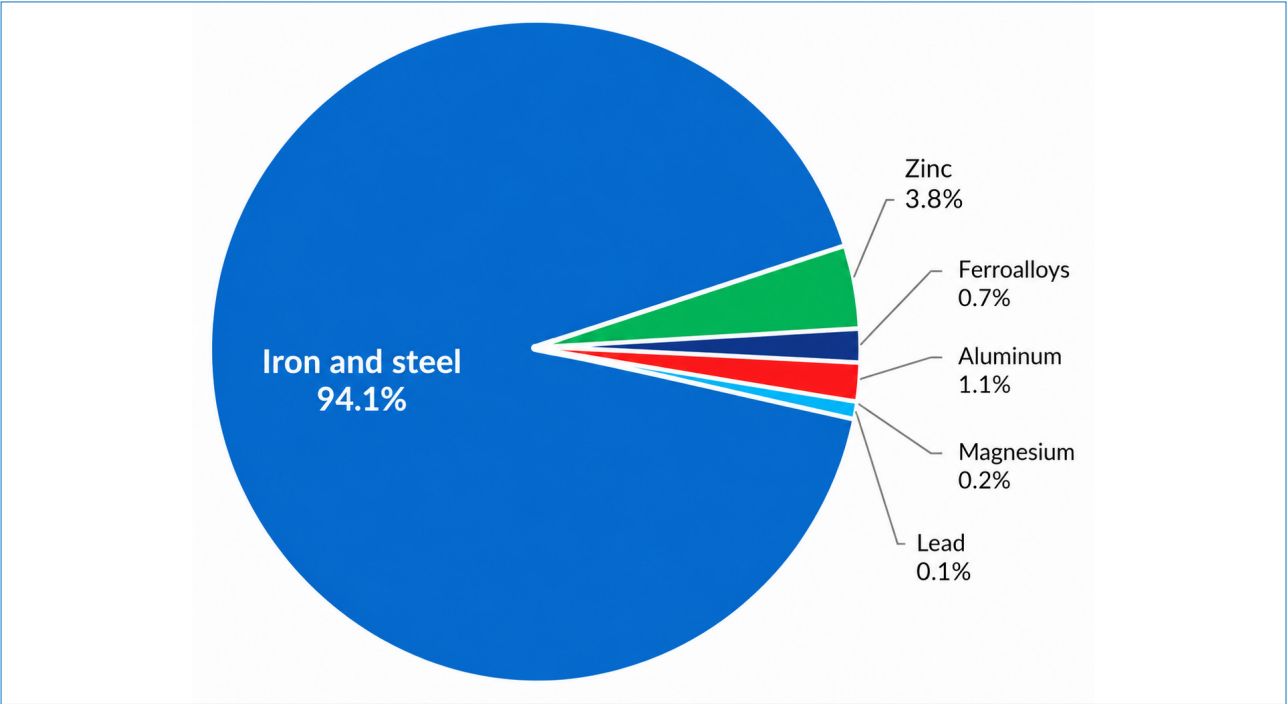


In 2024, the metal industry was responsible for 11.7 Mt CO₂ eq., 15.5% of total emissions from the IPPU sector. The vast majority of emissions in the metal industry were from iron and steel production, accounting for 94.1%. Zinc production was responsible for 442.32 kt CO₂ eq., contributing 3.8% of sector emissions. Aluminum production was responsible for 125 kt CO₂ eq., 1.1% of metal emissions, and ferroalloys production for 85.79 kt CO₂ eq., 0.7% of metal emissions (Figure 54).

152. NID, 2026



Figure 54 - Emissions from metal industry, 2024¹⁵³



Between 1990 and 2024, emissions from the metal industry rose by 54.8%, increasing from 7.6 Mt CO₂ eq. to 11.7 Mt CO₂ eq. This rise was largely driven by the iron and steel industry, which saw a 59% increase over the same period, growing from 6.9 Mt CO₂ eq. in 1990 to 11.0 Mt CO₂ eq. in 2024¹⁵⁴

Finally, ammonia production and nitric acid production within the chemical sector contributed 1,628.45 kt CO₂ eq. and 1,610.49 kt CO₂ eq., respectively, accounting for 2.15% and 2.1% of the IPPU sector's emissions.

3.2.3 Agriculture

The total emission value calculated for the agriculture sector is 73.54 Mt CO₂ eq. for the year 2024, which is 14.2% of the total emissions value including the LULUCF sector and 12.6% of all emissions excluding the LULUCF sector for Türkiye. The overall emission value for the agriculture sector increased from approximately 51.8 Mt CO₂ eq. in 1990 to around 73.5 Mt CO₂ eq. in 2024, representing an increase of 41.8%. The biggest increase among the categories in absolute terms for emissions is observed in the agricultural soils category, where emissions increased by around 8.3 Mt CO₂ eq. (53.9%) from 15.4 Mt CO₂ eq. to 23.7 Mt CO₂ eq. over the same period.¹⁵⁵

Other significant increases in this thirty-four-year period are seen in enteric fermentation, manure management, and urea application, where the figures are 8.0 Mt CO₂ eq. (26.6%), 4.4 Mt CO₂ eq. (79.4%), and 1.0 Mt CO₂ eq. (227.9%), respectively. Emissions for rice cultivation increased by around 0.2 Mt CO₂ eq. (165.6%), whereas emissions from field burning of agricultural residues between 1990 and 2024 resulted in a decrease of 48.8%.

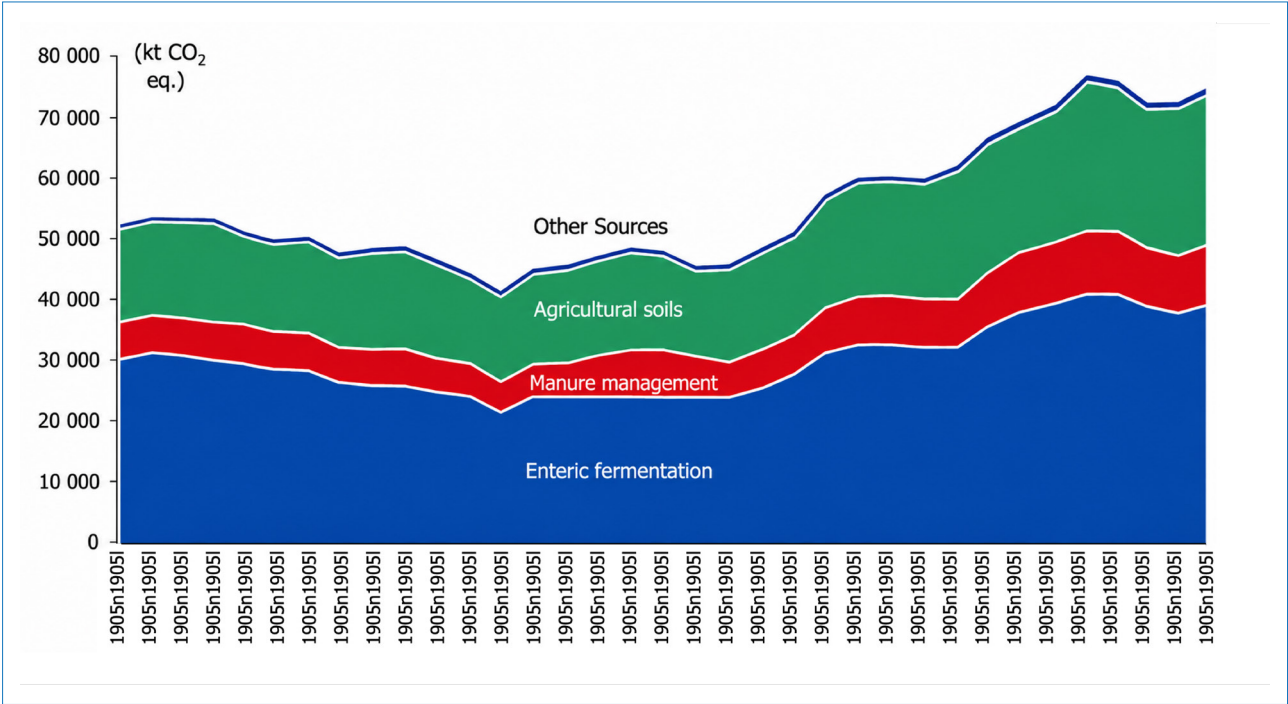
153. NID, 2026

154. NID, 2026

155. NID, 2026.

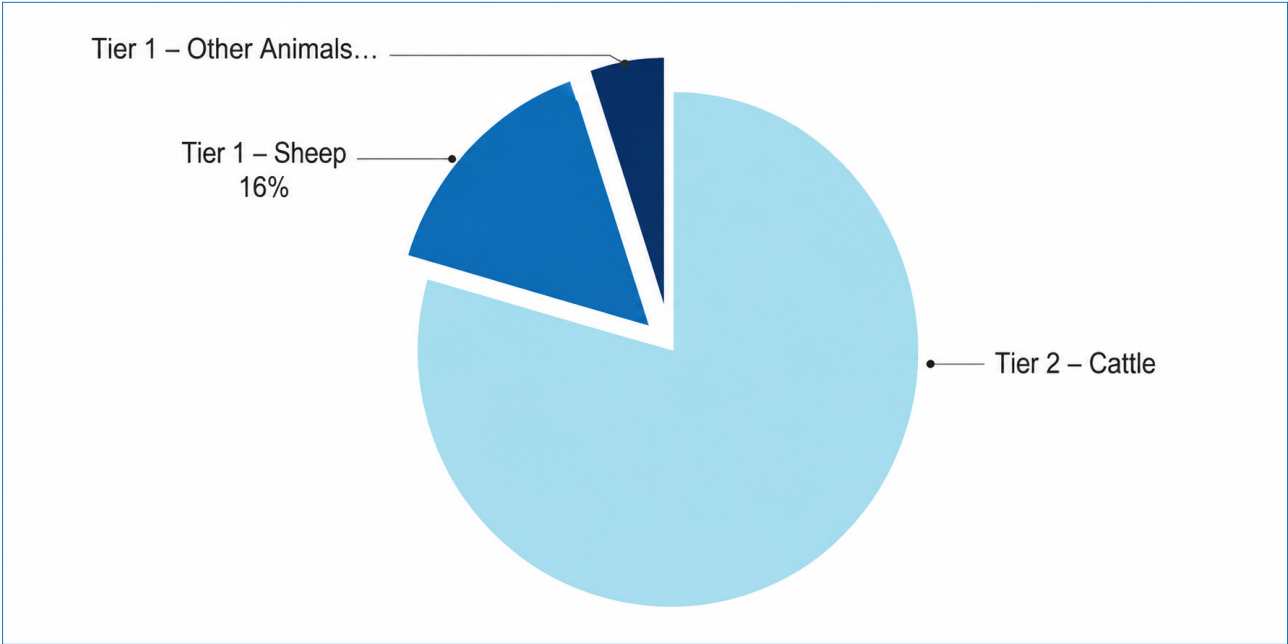


Figure 55 - Cumulative emissions of agricultural categories, 1990-2024¹⁵⁶



Furthermore, in relative terms, the biggest category in the agriculture sector is enteric fermentation, with a 51.6% share for 2024, so it dominates the sector. In all reported years, 1990-2024, this category had an average share of 54.5% in the agriculture sector, starting with a share of 57.9% in 1990.

Figure 56 - Enteric fermentation emission sources, 2024¹⁵⁷



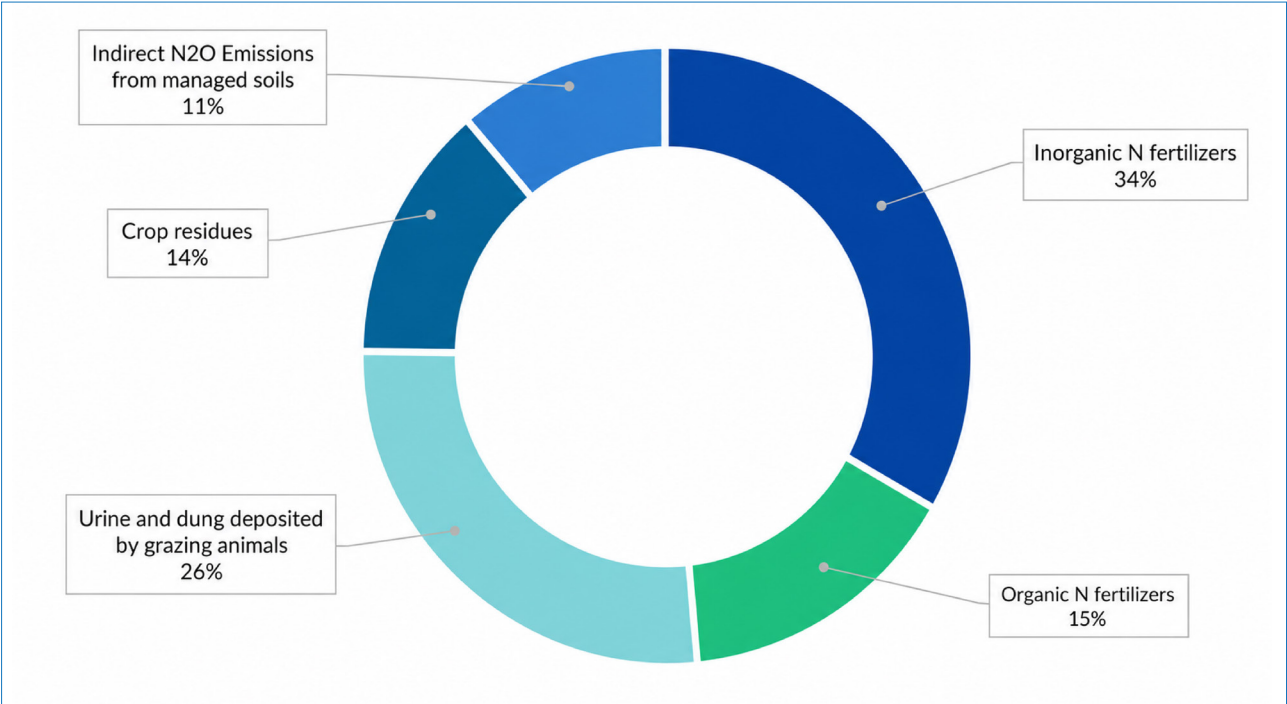
156. CRT, 2026.

157. CRT, 2026.



The second biggest category is agricultural soils having a proportion of 32.2% for 2024. Its average share for the entire reporting period of thirty-five years is around 31.2%. Manure management’s share presents a somewhat more stable increasing trend, starting from 10.6% in 1990 and reaching 13.5% in 2024 while having an average of 12.0% for all reporting years. For 2024, the remaining categories—rice cultivation, field burning of agricultural residuals, and urea application—had emission shares of 0.4%, 0.3%, and 2.1%, respectively. The share for field burning of agricultural residues decreased from 0.7% to 0.3%. On the other hand, the share for rice cultivation and urea application increased from 0.2 to 0.4 and from 0.9 to 2.1, respectively, for the reporting period.

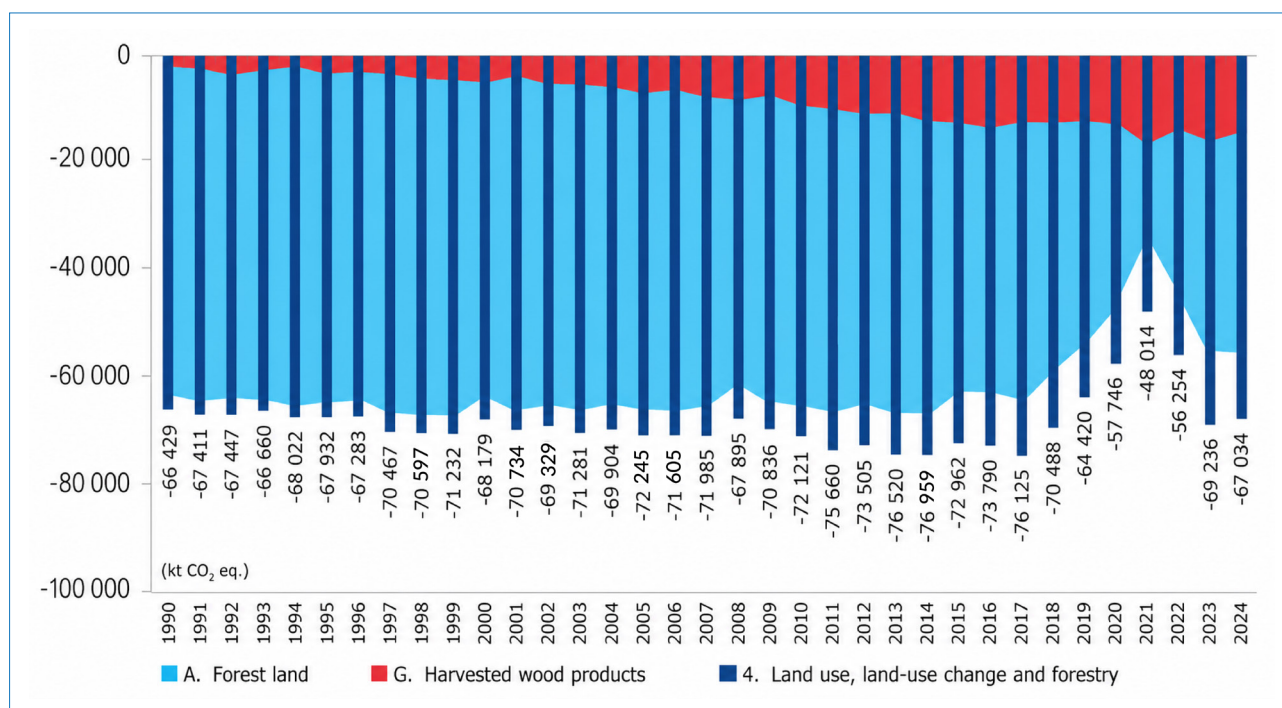
Figure 57 – Sub-categories of agricultural soils emission sources, 2024¹⁵⁸



3.2.4 Land Use Land Use Change and Forestry (LULUCF)

The LULUCF sector of Türkiye is a net removal dominated by forests. The 23 Mha of forest area removed a net 55.18 Mt of CO₂ eq. from the atmosphere in 2024. Other land uses are net emissions, while accounting for 5% of forest land removals. The total removals of the sector, when HWP was added, were 68.77 Mt of CO₂ eq.. Total net LULUCF removals have been 67.09 Mt of CO₂ eq. due to 1.67 Mt of CO₂ eq. emissions from other land uses. The reason for the decrease in the trend for the years 2019 to 2022 was intense wood harvest policies, including salvage logging, and to meet the demand of the growing wood industry of Türkiye, as well as mega forest fires and other natural disturbances triggered by climate change. These natural disturbances also caused a decrease in annual increment values per hectare. But for the year 2024, harvest numbers are closer to the average due to the low level of salvage logging.

158. CRT, 2026.

Figure 58 – The trend of LULUCF 1990-2024¹⁵⁹Table 18 – Total emissions and removals from the LULUCF sector by source (kt CO₂ eq.)¹⁶⁰

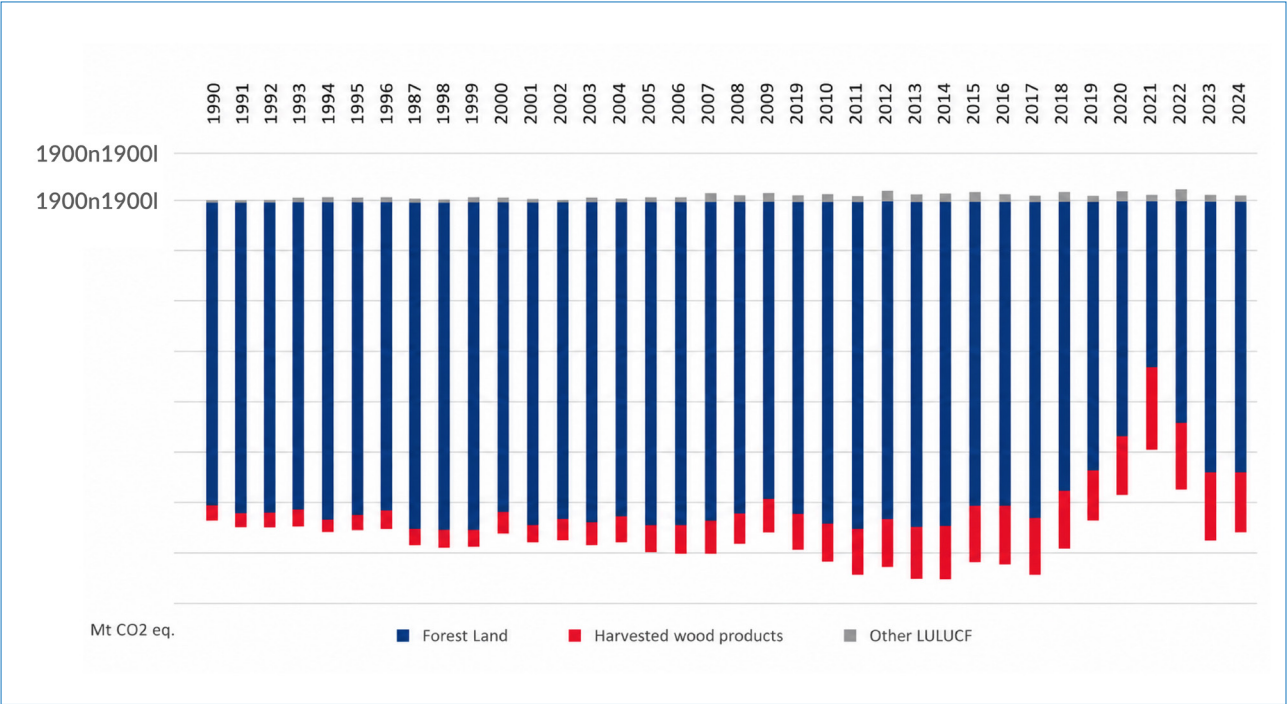
Year	Total	Forest land	Cropland	Grassland	Wetlands	Settlements	Other land	Harvested wood products
1990	-66 429	-63 482	1	0	0	IE,NO	NO	-2 948
1995	-67 932	-65 326	154	288	-27	131	180	-3 333
2000	-68 179	-64 183	42	94	-158	144	187	-4 305
2005	-72 245	-66 419	214	256	-427	271	310	-6 451
2010	-72 121	-65 691	467	630	-231	424	600	-8 321
2015	-72 962	-62 751	473	977	-644	419	764	-12 198
2020	-57 746	-47 924	480	645	-260	513	695	-11 895
2021	-48 014	-33 379	233	383	-519	478	533	-15 744
2022	-56 254	-44 798	458	628	-98	509	735	-13 689
2023	-69 236	-55 280	261	453	-349	469	624	-15 412
2024	-67 094	-55 184	368	738	-552	480	642	-13 586

159. CRT, 2026.

160. NID, 2026.



Figure 59 – Trend of total emissions from the LULUCF sector, 1990-2024¹⁶¹



LULUCF emissions or removals, in CO₂ equivalent, were variable over the reporting period 1990-2024. Generally, decreases in removals were influenced by fires and drought in the relevant areas. Moreover, increases originated mainly from forest management, afforestation, rehabilitation of degraded forests, reforestation on forest land, etc. In 2024, total CO₂ eq. removals of the LULUCF sector decreased by 3.1% compared to 2023.

3.2.5 Waste

The waste sector includes GHG emissions from the treatment and disposal of wastes, open burning, wastewater treatment and discharge. Waste incineration emissions were included in the inventory; however, it was reported under the energy sector.

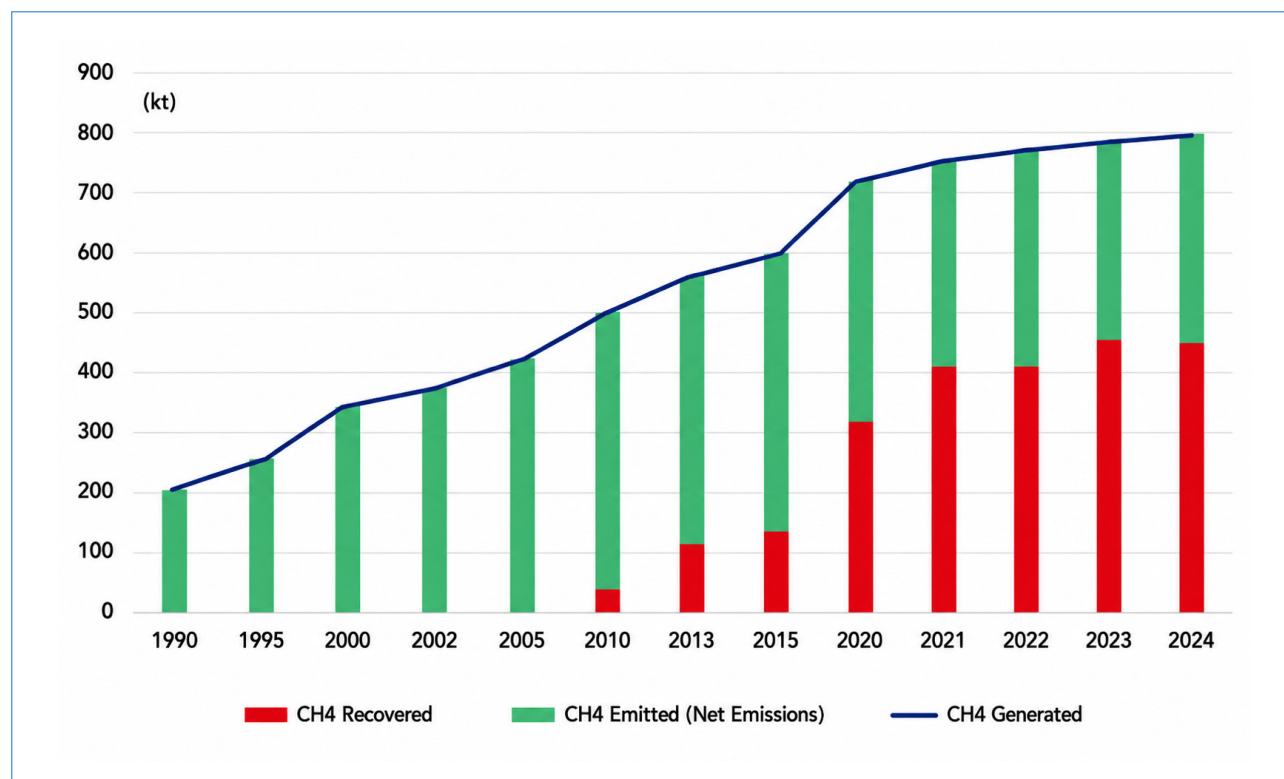
Total waste emissions for the year 2024 were 15.4 Mt CO₂ eq., or 2.6% of total GHG emissions (without LULUCF). Within the sector, 61.4% of the emissions were from solid waste disposal, followed by 38.5% from wastewater treatment and discharge, 0.14% from biological treatment of solid waste, and 0.05% from incineration or open burning of waste.

161. CRT, 2026.

Table 19 – Total emissions from the waste sector by source (kt CO₂ eq.)¹⁶²

Year	Total	Solid waste disposal	Biological treatment of solid waste	Incineration and open burning of waste	Wastewater treatment and discharge
1990	10 316	5 788	13	110	4 405
1995	12 114	7 198	11	109	4 796
2000	14 605	9 590	13	93	4 909
2005	16 987	11 881	17	50	5 038
2010	18 212	13 080	21	39	5 072
2015	17 872	13 140	16	2	4 713
2020	16 593	11 250	16	8	5 319
2021	15 110	9 581	23	10	5 496
2022	15 648	9 988	20	12	5 628
2023	14 857	9 049	20	11	5 777
2024	15 439	9 472	22	7	5 938

Waste emissions are 49.7% (5.1 Mt CO₂ eq.) higher in 2024 than they were in 1990 and 3.9% (0.6 Mt CO₂ eq.) higher than in 2023. The trend was mainly driven by solid waste disposal.

Figure 60 – CH₄ emissions from solid waste disposal, 1990-2024¹⁶³

Net CH₄ emissions tend to decrease as the CH₄ recovery amount increases due to the increased capacity and number of CH₄ recovery facilities producing electricity/heat energy from landfill gas in Türkiye.

162. NID, 2026.

163. NID, 2026.



3.3 NATIONAL INVENTORY SYSTEM

3.3.1 Institutional, Legal and Procedural Arrangements

The Turkish national inventory system is characterized by centralized governance. The Ministry of Environment, Urbanization and Climate Change (MoEUCC) is the National Focal Point of the UNFCCC and is responsible for climate change and air pollution policies and measures. Türkiye established the Coordination Board on Climate Change (CBCC) in 2001 with the Prime Ministerial Circular No. 2001/2 in order to determine the policies, measures, and activities to be pursued by Türkiye on climate change. Under the chairmanship of MoEUCC, this board is composed of high-level representatives (Undersecretary and President) from ministries related to foreign relations, finance, economy, energy, transport, industry, agriculture, forestry, health, education, TurkStat, and non-governmental organizations (NGOs) from business sector. The CBCC was restructured in 2013 and renamed as Coordination Board on Climate Change and Air Management (CBCCAM). The CBCCAM, a public body created by Prime Minister Circular 2013/11, is competent for taking decisions and measures related to climate change and air management. The CBCCAM decisions are the first legal means for the national inventory system.

Türkiye has also taken steps to strengthen its institutional arrangements. In 2021, Türkiye established a new DoCC under the MoEUCC by Presidential Decree No. 85 on Amending Certain Presidential Decrees. With the same decree, CBCCAM was replaced by the Coordination Board on Climate Change and Adaptation (CBCCA), and it was stated that climate change negotiations would be conducted by a Chief Negotiator (Relevant Deputy Minister). In addition, it was stated that the Secretariat services of the Coordination Board would be carried out by the CCO. The Coordination Board is responsible for determining, monitoring, and evaluating plans, policies, strategies, and actions related to climate change. The Coordination Board, which is an inter-ministerial coordination mechanism and is chaired by the Minister, consists of twenty-two members, including TurkStat.

The draft directive on the working procedures and principles of the Coordination Board will be prepared by the DoCC, and within this scope, sub-working groups will be formed, the details of which will be determined in the directive. Since studies on this directive are still ongoing, current studies are carried out with seven working groups (WGs) within the scope of the CBCCAM:

- GHG Mitigation WG
- Climate Change Adverse Effects and Adaptation WG
- GHG Emission Inventory WG
- Finance WG
- Technology Development and Transfer WG
- Education, Capacity Building WG
- Air Management WG

The national GHG inventory is prepared under the auspices of the "GHG Emission Inventory Working Group" which was established in 2001 by the former CBCC. TurkStat was formally appointed as the single national responsible authority to coordinate and implement national inventory activities from planning to management by Decision 2009/1 of the CBCC in 2009. TurkStat is also in charge of annual inventory submission to the UNFCCC Secretariat and for responding to the ERT recommendations.



Also, the legal basis of the national inventory system is currently provided by the Statistics Law of Türkiye through the Official Statistics Programme (OSP). The OSP is based on the Statistics Law of Türkiye No. 5429 and Presidential Order No. 4 was first prepared in 2007 for a 5-year period and updated every 5 years. OSP identifies the basic principles and standards dealing with the production and dissemination of official statistics and produces reliable, timely, transparent, and impartial data required at the national and international levels. For all kinds of official statistics, the responsible and related institutions are defined; the data compilation methodology and the publication periodicity/schedule of official statistics are specified. TurkStat is the responsible institution for the compilation of the national GHG inventory through the OSP and coordinates the activities of the GHG emission inventory working group established under the OSP with the same composition as the GHG emission inventory working group under the CBCCAM.

The GHG national inventory is compiled by GHG Emission Inventory working group under the coordination of TurkStat.

The institutions included in the working group are:

- Turkish Statistical Institute (TurkStat),
- Ministry of Energy and Natural Resources (MENR),
- Ministry of Transport and Infrastructure (MoTI),
- Ministry of Environment, Urbanization and Climate Change (MoEUCC),
- Ministry of Agriculture and Forestry (MoAF).

The national inventory arrangements are designed and operated to ensure the TACCC quality objectives and timeliness of the national GHG inventories. The quality requirements are fulfilled by implementing inventory quality management procedures.

Responsibilities of the institutions involved in the national GHG inventory are shown in Table 20.



Table 20 – Institutions by responsibilities for national GHG inventory

Sector	CRF Category	Collection of Activity Data	Selection of Methodology and Emission Factors	GHG Emission Calculation	Filling in CRF tables and preparing NID	Quality control
Energy	1 - Energy (Except 1.A.1.a- public electricity and heat production and 1.A.3 - Transport)	MENR, TurkStat	TurkStat	TurkStat	TurkStat	TurkStat
	1.A.1.a- Public electricity and heat production	MENR	MENR	MENR	MENR	MENR
	1.A.3- Transport	MoTI, TurkStat	MoTI	MoTI	MoTI	MoTI
Industrial Processes and Other Product Uses	2 - IPPU (except F-gases)	TurkStat	TurkStat	TurkStat	TurkStat	TurkStat
	F-Gases	MoEUCC	MoEUCC	MoEUCC	MoEUCC	MoEUCC
Agriculture	3 - Agriculture	TurkStat	TurkStat	TurkStat	TurkStat	TurkStat
Land Use, Land Use Change and Forestry	4 - LULUCF	MoAF	MoAF	MoAF	MoAF	MoAF
Waste	5 - Waste	TurkStat	TurkStat	TurkStat	TurkStat	TurkStat
Cross cutting issues	TurkStat					
Key Source Analysis						
Uncertainty analysis						
Indirect gases	MoEUCC					

The national GHG inventory is subject to an official consideration and approval procedure before its submission to the UNFCCC. The national inventory is subject to a two-step official consideration and approval process. The final version of the NID and CRT is first approved by the TurkStat Presidency and published in the official TurkStat press release. The latest press release of Greenhouse Gas Emissions Statistics can be found on <https://veriportalı.tuik.gov.tr/en/press/58000> as scheduled on National Data Publishing Calendar. Subsequently, the MoEUCC, as the National Focal Point to the UNFCCC, provides final checks and approval of the CRT via ETF web application tool as a final step prior to its submission to the UNFCCC.

TurkStat, as the Single National Entity, is responsible for official inventory submission to the UNFCCC and for responding to the UNFCCC expert review team (ERT) recommendations on national inventory improvement, ensuring that they are incorporated in the current and following NID(s) in the broader context of its continuous improvement.



3.3.2 Quality Assurance and Quality Control (Qa/Qc) and Verification

The inventory planning system of Türkiye is conducted in line with quality assurance and quality control (QA/QC) plan. The planning stage is under the responsibility of GHG Inventory WG. Planning activities include data collection and processing, selection of EF estimation methodology, compilation of CRT and NID, UNFCCC expert review team (ERT) recommendations, documentation and archiving, verification through time series consistency and cross-checks, reporting and publication process.

Every year in autumn, around October, a WG meeting is organized to agree on a work plan and calendar for the following submission.

Information required for the inventory is mostly covered by the OSP. Distribution of work for data gathering, processing, and estimation of emissions is shown in Table 20. Emissions originating from energy, IPPU, agriculture and waste, and emissions and removals from LULUCF are calculated at national level annually by using recommended approaches in 2006 IPCC Guidelines. Fuel combustion emissions other than electricity generation and transport are calculated by TurkStat using the energy balance tables of the Ministry of Energy and Natural Resources. Emissions from industrial processes (excluding F-gases), agriculture, waste, and fugitive emissions from coal mining, oil, and gas systems are also calculated by TurkStat. The emissions originating from public electricity and heat production are calculated on the basis of plant-level data by the Ministry of Energy and Natural Resources; the emissions originating from transportation are calculated by the Ministry of Transport and Infrastructure (MoTI). The F-gases are calculated by the MoEUCC. Emissions and removals from land use, land-use change, and forestry are estimated by the Ministry of Agriculture and Forestry (MoAF).

Every sector expert who performs the emission estimation is responsible for data entry to ETF Reporting Tool and for the preparation of the related section or sub-section of NID. TurkStat compiles and makes key source and uncertainty analysis and does final quality checks, and submits the national GHG inventory to the UNFCCC Secretariat.

TurkStat is also responsible for archiving the GHG inventory. Central archiving is carried out by TurkStat. EFs, AD, calculation sheets, CRT and NID outputs, etc. regarding the emission inventory are archived on TurkStat main server. All inventory-related documents are also archived by the relevant Ministries for the CRT categories under their responsibilities.

QA/QC and verification procedures are an integral and indispensable part of the national GHG inventory of Türkiye. The quality of the national inventory system is ensured by the QA/QC system through the QA/QC plan adopted by the CBCCAM decision in 2014 and revised and updated in 2017. The QA/QC plan introduces the structure and purpose of the QA/QC system and endorses the quality objectives. The main objective of the QA/QC plan is to ensure that the national GHG inventory is prepared in accordance with the quality objectives: transparency, accuracy, comparability, consistency, completeness (TACCC) as defined in UNFCCC reporting guidelines (18/CMA.1, Annex and 5/CMA.3). Türkiye also considers three additional quality objectives: improvement, sustainability, and timeliness.

Improvement: Processes ensure that the inventory represents the best possible estimates of GHG emissions and removals for all categories, given the current state of scientific knowledge, data availability, and national resources, taking into account information gained and lessons learned from reporting and review in the latest GHG inventory cycle.



Sustainability: Processes ensure the continuity of the GHG inventory system through institutional memory by establishing a documentation/archiving system and methodological manuals, as well as training for newcomers and periodic refresher trainings for existing inventory experts.

Timeliness: All of the QA/QC procedures are developed with a view to enabling the timely submission of the NID and the accompanying CRT to the UNFCCC by 15 April each year. In addition, inventory inputs, references, and materials should be transparently documented and accessible to enable timely responses to external requests for information, including formal and informal inventory review processes.

Together with verification, the implementation of QA/QC procedures is considered an integral part of national inventory preparation and plays a pivotal role not only in achieving the quality objectives but also in continuously reassessing and improving the national inventory where needed.

TurkStat is the designated body for the overall implementation of the QA/QC system and for ensuring coordination of the QA/QC activities.

Quality Control (QC) is a system of routine technical activities to assess and maintain the quality of the inventory as it is being compiled. It is performed by personnel compiling the inventory. QC activities include general methods such as accuracy checks on data acquisition and calculations, and the use of approved standardized procedures for emission and removal calculations, measurements, estimating uncertainties, archiving information, and reporting. QC activities also include technical reviews of categories, activity data, emission factors, other estimation parameters, and methods.

The data used in the preparation of the national GHG inventory for the IPPU, agriculture, and waste sectors are obtained from industrial production statistics, agricultural statistics, and waste statistics databases of TurkStat. TurkStat produces all its statistics according to the European Statistics Code of Practice, which covers a common quality framework with the European Statistical System. Therefore, high-quality data are used in the inventory.

Detailed information about the national inventory system is available in the latest NID of Türkiye, which was submitted to UNFCCC in 2024.

3.3.3 Reporting Under Article 3, Paragraphs 3 and 4, of the Kyoto Protocol

Türkiye, as a Party included in Annex I with no commitments inscribed in Annex B to the Kyoto Protocol, has no obligation to report on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

3.3.4 National Registry

Türkiye, as a Party included in Annex I with no commitments inscribed in Annex B to the Kyoto Protocol, has no obligation to report on the National Registry.



4 POLICIES AND MEASURES

This chapter provides a comprehensive overview of Türkiye's policies and measures (PaMs) aimed at mitigating GHG emissions and enhancing removals by sinks. The policies and measures presented in this chapter collectively support the implementation and achievement of Türkiye's NDC. Among them, the Climate Law, the Climate Change Mitigation Strategy and Action Plan (2024–2030), the National ETS, renewable energy deployment (YEKDEM and YEKA), energy efficiency measures, and transport electrification are expected to deliver the largest contribution to GHG emission reductions. These PaMs primarily target the energy, transport, industry, and buildings sectors, which represent the key categories in Türkiye's national GHG inventory.

4.1 INSTITUTIONAL, LEGISLATIVE AND POLICY FRAMEWORKS AND MONITORING AND EVALUATION APPROACH

Türkiye became a Party to the UNFCCC on 24 May 2004, followed by the ratification of the Kyoto Protocol on 26 August 2009 and the Paris Agreement on 7 October 2021.¹⁶⁴ As a candidate country for European Union (EU) accession, Türkiye maintains its commitment to full alignment with the EU Climate Acquis. Notably, in 2021, Türkiye formally announced its objective to achieve net-zero emissions by 2053. Accordingly, the transformation of institutional, legal, and policy structures has gained significant momentum across multiple dimensions. The subsequent sections provide a detailed overview of the contemporary legal and policy landscape in Türkiye, assessing their respective contributions to global climate mitigation and adaptation efforts.

4.1.1 Policymaking and Institutional Framework

4.1.1.1 Institutional Framework

The Climate Change and Adaptation Coordination Board (CCACB), comprising 26 member organizations,¹⁶⁵ serves as the primary inter-ministerial body responsible for formulating and streamlining national climate policies. The CCACB is strategically structured to integrate high-level technical and political expertise across diverse sectors, ensuring broad representation of relevant public and private institutions. To facilitate technical implementation, the CCACB is supported by specialized Working Groups. These groups convene at least biennially to provide technical guidance, execute activities mandated by Board Decisions, and operate in accordance with their respective thematic work programmes.

The DoCC, affiliated with the MoEUCC, serves as the primary national authority and the designated National Focal Point for the UNFCCC, the Kyoto Protocol, the Paris Agreement, and the Vienna Convention. In this capacity, the DoCC is responsible for coordinating national climate negotiations, leading the development of Türkiye's climate change and ozone layer protection

¹⁶⁴. On 7 October 2021 the Paris Agreement was ratified by the Parliament with the Law No. 7335 and entered into force on 10 November 2021.

¹⁶⁵. The Board consists of senior level representatives from the following institutions: MoEUCC (coordinator), chief climate negotiator, Ministry of Foreign Affairs, Ministry of Energy and Natural Resources, Ministry of Treasury and Finance, Ministry of Interior, Ministry of National Education, Ministry of Health, Ministry of Industry and Technology, Ministry of Agriculture and Forestry, Ministry of Trade, Ministry of Transport and Infrastructure, Presidency of Strategy and Budget, Council of Higher Education, Directorate of Climate Change, Scientific and Technological Research Council of Türkiye, TurkStat, Turkish Directorate of Environment Agency, Union of Chambers and Commodity Exchange, Turkish Industry and Business Association, Independent Industrialists' and Businessmen's Association, and The Union of Municipalities of Türkiye.



policies, and providing the permanent secretariat for the CCACB. Furthermore, the DoCC oversees the formulation, periodic updating, and implementation of pivotal national policy instruments, including the NDC, the Climate Change Mitigation Strategy and Action Plan (CCMSAP),¹⁶⁶ and the Climate Change Adaptation Strategy and Action Plan (CCASAP).¹⁶⁷ The DoCC also manages Türkiye's international reporting obligations, specifically the preparation of NCs and BTRs. Demonstrating a commitment to inclusive governance, the DoCC maintains a significant gender balance in its leadership and technical staff, with women representing 45% of the total personnel and holding a majority of senior management positions.¹⁶⁸

Sectoral ministries—including the MENR, MoEUCC, MoTI, the Ministry of Industry and Technology (MoIT), MoAF, the Ministry of Treasury and Finance (MoTF), and the Ministry of Trade (MoT)—develop and implement strategic initiatives aligned with national climate objectives. Policies and measures (PaMs) focused on GHG mitigation and climate resilience are formulated within the framework of the decisions adopted by the CCACB. The Presidency of Strategy and Budget (SBB) plays a pivotal role in ensuring the integration of climate policies into national development strategies and annual investment programmes. Regarding monitoring and reporting, TurkStat serves as the competent authority for the National GHG Inventory and acts as the National Focal Point for inventory submissions to the UNFCCC Secretariat. In this capacity, TurkStat coordinates the collection of sectoral data provided by relevant line ministries. At the local level, municipalities are instrumental in achieving national targets through their jurisdiction over urban planning, waste management, and public transportation. Their mandate allows for significant influence over emissions trajectories in the buildings and transport sectors, as well as the enhancement of local climate resilience.

4.1.1.2 Policy Making and Assessment of the Economic and Social Consequences of Response Measures

Türkiye's national ETS aims not only to support domestic mitigation objectives but also to facilitate the low-carbon transformation of Turkish industry. Türkiye's ETS serves as a key market-based instrument to support the achievement of its NDC and its 2053 net-zero emissions target. By establishing a domestic carbon-pricing framework and strengthening emissions monitoring, reporting, and verification, the Türkiye ETS is expected to provide incentives for industrial decarbonization, enhance the carbon competitiveness of emissions-intensive industries, and support the broader transition toward a low-carbon economy.

Climate change mitigation and adaptation are fundamentally integrated into Türkiye's national strategic planning, covering a wide array of socio-economic sectors. Central to this framework is the Five-Year Development Plan, which serves as the overarching guide for all climate-related PaMs. These national plans ensure high-level alignment between sectoral objectives and climate policies. Under this governance model, line ministries design and implement their respective sectoral policies in strict coherence with the national development targets. Consequently, Türkiye's climate-related PaMs demonstrate a cohesive integration into the national planning framework, facilitating the mainstreaming of climate considerations across various administrations. This systematic approach allows for the continuous monitoring, evaluation, and periodic revision of

166. DoCC. "Climate Change Mitigation Strategy and Action Plan (2024-2030)." 2023. <https://iklim.gov.tr/eylem-planlari-i-19>.

167. DoCC. Climate Change Adaptation Strategy and Action Plan (2024-2030). 2024. <https://iklim.gov.tr/eylem-planlari-i-19>.

168. At the DOCC, 45% of the staff, which consists of managers, experts, engineers, and other public personnel, are women. In addition, six of eleven (one director, three deputy directors, and seven heads of department) middle and senior managers of the Directorate are women.



PaMs and implementation practices, ensuring they remain responsive to both national needs and international obligations.

To evaluate the multifaceted environmental, economic, and social implications of PaMs, Türkiye uses two primary instruments: Regulatory Impact Assessments (RIAs) and Strategic Environmental Assessments (SEAs). These tools ensure that both regulatory and non-regulatory proposals are developed based on a comprehensive understanding of their potential impacts.

The preparation of RIAs is mandated by the Principles and Procedures Governing Regulatory Impact Analysis.¹⁶⁹ This framework was further strengthened by the Presidential Decree published in the Official Gazette on 4 June 2022 (Issue No: 31856), which established mandatory guidelines for conducting RIAs prior to the adoption of new regulations. The RIA process entails a rigorous analysis of the social, economic, and environmental costs, benefits, and risks associated with proposed legislation, requiring evidence-based justification to enhance transparency and institutional accountability.

In parallel, Strategic Environmental Assessment (SEA) focuses on mainstreaming environmental considerations into high-level planning and programming processes. Guided by the **By-law on Strategic Environmental Assessment**¹⁷⁰ and aligned with the relevant EU Directives, the SEA process ensures that significant environmental consequences of strategic decisions are identified and mitigated at the earliest stages of policy formulation. Together, these mechanisms provide a robust framework for assessing the effectiveness and sustainability of Türkiye's climate-related interventions.

Türkiye employs a robust participatory approach in the formulation of its climate policies, as exemplified by the Climate Council held in Konya in February 2022.¹⁷¹ This landmark event convened a broad spectrum of stakeholders, including civil society, the private sector, public institutions, international organizations, local governments, and academia.

Under the theme of '2053 Net Zero Emission Goal: Türkiye's Green Development Revolution,' the Council established a new national vision for green transformation through multi-stakeholder collaboration. The 217 decisions adopted through this transparent process serve as a strategic roadmap for Türkiye's future climate actions. Notably, the Council placed significant emphasis on social inclusivity; several of the adopted decisions specifically address the nexus of climate change and gender. These decisions aim to foster women's leadership and empowerment within the context of climate resilience and mitigation efforts. Collectively, the outcomes of the Climate Council constitute a formal guidance document, ensuring that Türkiye's transition to a net-zero future is both inclusive and evidence-based.¹⁷²

¹⁶⁹. Official Gazette. "Presidential Decree No. 5681." 2022. <https://www.resmigazete.gov.tr/eskiler/2022/06/20220604-13.pdf>.

¹⁷⁰. Official Gazette. "Strategic Environmental Assessment Regulation." 2017. <https://www.resmigazete.gov.tr/eskiler/2017/04/20170408-3.htm>.¹⁷¹.

¹⁷¹. Climate Council. "Declaration of the Climate Council." 2022. <https://iklimsurasi.gov.tr/sayfa/sonuc-bildirgesi>.

¹⁷². MoEUCC, 2023_c. Several decisions were formed at the intersection of climate change and gender equality and aimed at women's leadership and empowerment in fighting climate change.



4.1.2 Legislative Framework

Türkiye's environmental and climate governance is anchored in two primary legislative pillars: the **Environmental Law (No. 2872)** and the **Climate Law (No. 7552)**.¹⁷³

The Environmental Law is the foundational statute for environmental protection, enshrining the 'polluter pays' principle and providing the general legal framework for air, water, and soil protection. Complementing this, the Climate Law serves as the definitive and specialized legislation for climate action. This law formally integrates the '2053 Net-Zero Emissions' target and the 'Green Development Revolution' vision into the national legal system. The Climate Law establishes the essential institutional and regulatory framework for GHG mitigation and climate change adaptation. A critical advancement under this new main legislation is the formal establishment of a national ETS, CBAM, and green taxonomy. The Law requires the establishment of a Provincial Climate Change Coordination Board (CCCCB) in each province, chaired by the Governor.

4.1.3 Main Policy Documents

The 12th Development Plan (2024–2028)¹⁷⁴, approved by the Grand National Assembly of Türkiye and effective as of 1 November 2023, serves as the main multi-sectoral planning instrument. It stipulates a model for stable and sustainable economic growth, aiming to enhance global competitiveness and social welfare through a green-transformation-oriented macro-policy.

In alignment with the overarching goals of the Development Plan, Türkiye's climate-specific agenda is governed by three primary strategic pillars. The **LTS**¹⁷⁵ defines the high-level roadmap and ultimate vision for the nation's net-zero transition. Supporting this long-term objective, the **Climate Change Mitigation Strategy and Action Plan 2024–2030 (CCMSAP)**¹⁷⁶ and the **Climate Change Adaptation Strategy and Action Plan 2024–2030 (CCASAP)**¹⁷⁷ serve as the operational frameworks for mid-term implementation. These documents provide a cohesive and comprehensive policy architecture, ensuring that Türkiye's domestic development priorities remain synchronized with its international commitments under the Paris Agreement.

4.1.3.1 2053 Long Term Climate Strategy

Türkiye's **LTS**¹⁷⁸ enshrines the national 2053 net-zero emissions target, ensuring full alignment with the 2024–2030 climate action plans and the overarching vision of the 12th National Development Plan. LTS establishes a roadmap to achieve **net-zero emissions by 2053**. The strategy focuses on deep decarbonization through structural transformations across all primary sectors: energy, industry, buildings, transportation, agriculture, waste, LULUCF, and cross-cutting issues such as ETS, green taxonomy, and just transition. LTS also has pillars for upscaling investments in adaptation. This involves mobilizing public and private financial resources to strengthen national resilience and enhance disaster risk reduction management.

¹⁷³. Official Gazette, "Climate Law," 2025, <https://www.resmigazete.gov.tr/09.07.2025>.

¹⁷⁴. The plan was published in the Official Gazette dated November 1, 2023 and entered into force. (https://www.sbb.gov.tr/wp-content/uploads/2024/06/Twelfth-Development-Plan_2024-2028.pdf)

¹⁷⁵. DoCC. 2053 Long Term Climate Strategy. 2024.

¹⁷⁶. DoCC. "Climate Change Mitigation Strategy and Action Plan (2024–2030)." 2023. <https://iklim.gov.tr/eylem-planlari-i-19>.

¹⁷⁷. DoCC. Climate Change Adaptation Strategy and Action Plan (2024–2030). 2024. <https://iklim.gov.tr/eylem-planlari-i-19>.

¹⁷⁸. DoCC. 2053 Long Term Climate Strategy. 2024.



4.1.3.2 Climate Change Mitigation Strategy and Action Plan (2024-2030)

Türkiye contributes to global GHG emission reductions in accordance with its national circumstances. The CCMSAP 2024-2030 comprises seven primary mitigation sectors: energy, industry, buildings, transport, agriculture, waste, and LULUCF. These sectoral efforts are integrated with two cross-cutting thematic areas: just transition and carbon pricing mechanisms. The CCMSAP 2024-2030 prioritizes energy efficiency across all economic activities, the maximization of renewable energy deployment, and the significant reduction of carbon intensity within the industrial sector. Key strategic focus areas include the promotion of nearly Zero Energy Buildings (nZEB), the expansion of district heating and cooling systems, and the accelerated electrification of the transport sector. Furthermore, the plan emphasizes circular economy principles, resource efficiency in manufacturing, and the transformation of waste into a resource. To ensure a cost-effective transition, Türkiye is establishing a national ETS and other carbon pricing instruments. These mitigation strategies are supported by incentives for clean technology development, digitalization, and the mobilization of sustainable investment instruments, all aimed at fostering a low-carbon economy through a just and inclusive transition.¹⁷⁹

4.1.3.3 Climate Change Adaptation Strategy and Action Plan 2024-2030 (CCASAP)

Türkiye's Climate Change Adaptation Strategy and Action Plan (2024-2030) serves as a comprehensive national framework aimed at fostering an economically, socially, and ecologically resilient, sustainable, and green future. Developed through scientific vulnerability and risk assessments, the plan encompasses eleven priority sectors: Urban, Water Resources Management, Agriculture and Food Security, Biodiversity and Ecosystem Services, Public Health, Energy, Industry, Tourism and Cultural Heritage, Transport and Communications, Social Development, and Disaster Risk Reduction.

The CCASAP consists of 40 strategic goals and 129 actions formulated in collaboration with over 2,000 stakeholders from public and private institutions, academia, and non-governmental organizations (NGOs). Within the context of the BTR, the CCASAP represents the cornerstone of Türkiye's adaptation policies, aligning with the global adaptation goals of the Paris Agreement. To ensure a transparent implementation process, the plan includes a dedicated monitoring and evaluation framework featuring an online system and annual reporting to the CCACB.

4.1.3.4 Second NDC (NDC 3.0)

Türkiye aims to reduce its GHG emissions by 466 Mt CO₂ eq. relative to the Business-as-Usual (BAU) scenario, it effectively limits total emissions to 643 Mt CO₂ eq. by 2035.¹⁸⁰ This NDC target is operationalized through the CCMSAP and CCASAP, which function as the primary implementation instruments and are subject to periodic revisions to maintain full alignment with national commitments.

This enhanced ambition is the result of a rigorous, science-based assessment of national capacities and priorities, informed by the outcomes of the First Global Stocktake (GST). In accordance with its rights under the Paris Agreement, Türkiye emphasizes that the provision of adequate international finance, alongside technology transfer and capacity-building support, is indispensable for the

¹⁷⁹. Specific sectoral policies and actions are covered in the following sections

¹⁸⁰. UNFCCC. (2025). Republic of Türkiye The Second Nationally Determined Contribution. [https://unfccc.int/sites/default/files/2025-11/The Second NDC of Türkiye.pdf](https://unfccc.int/sites/default/files/2025-11/The%20Second%20NDC%20of%20T%C3%BCrkiye.pdf)



successful attainment of these targets. According to the 12th Development Plan, achieving the 2053 net-zero objective necessitates an annual incremental investment equivalent to at least 1.7% of GDP across key sectors, including energy, industry, buildings, transport, and agriculture.

Türkiye reaffirms its dedication to climate action while ensuring that sustainable development, economic growth, and food security are maintained. This whole-of-society approach prioritizes innovation, policy coherence, and multi-stakeholder collaboration to secure a low-carbon and climate-resilient future for the nation.

4.1.3.5 Other Policy Documents

The **Green Deal Action Plan (2021)**¹⁸¹ serves as a strategic roadmap for the green transformation of Türkiye's industrial sectors, specifically designed to align national regulations with the European Green Deal. Given the deep economic ties with the EU, the Plan comprises **32 objectives and 81 actions** across 9 thematic areas, including CBAM, circular economy, green finance, and sustainable smart mobility. This framework is instrumental in maintaining Türkiye's export competitiveness while fostering a sustainable and resilient industrial base.

In the energy sector—the primary source of national emissions—the **Türkiye National Energy Plan (2022)**¹⁸², the **Energy Efficiency 2030 Strategy and II. National Energy Efficiency Action Plan (2024-2030)**¹⁸³ constitute the core pillars of national energy policy. These documents delineate the pathways for enhancing energy security, maximizing renewable energy integration, and scaling up energy efficiency measures across the economy. Furthermore, various other national strategies and action plans intersect with these frameworks to support the national emission reduction trajectory.

4.1.4 Monitoring and Evaluation of Policies And Measures

Each line ministry overseeing respective policies PaMs is responsible for monitoring and evaluating their implementation status and associated GHG emission reduction impacts. As the National Focal Point for the UNFCCC, the DoCC consolidates this sectoral information and coordinates the reporting of national progress through official communications. In parallel, TurkStat serves as the competent authority for the collection and verification of GHG emission data, acting as the National Focal Point for GHG Inventories.

For the **National Development Plans**, a cornerstone of Türkiye's climate policy, detailed implementation data concerning the activities mandated by the Development Plan are integrated into the Presidential Plan Program Monitoring and Evaluation System (CPPIDS) on a quarterly basis. This digital governance platform allows designated administrative units to report on progress systematically. The SBB subsequently oversees these results through the CPPIDS, ensuring that climate-related objectives are achieved in alignment with national strategic targets and investment programmes.

181. Ministry of Trade, Green Deal Action Plan, 2021. 2021. <https://ticaret.gov.tr/data/60f1200013b876eb28421b23/MUTABAKAT%20YEŞİL.pdf>

182. Ministry of Energy and Natural Resources, Türkiye National Energy Plan (2022). https://enerji.gov.tr//Media/Dizin/EIGM/tr/Raporlar/TUEP/Türkiye_Ulusal_Enerji_Planı.pdf

183. MENR. Energy Efficiency 2030 Strategy and II. National Energy Efficiency Action Plan (2024-2030). 2024.



Monitoring and evaluation (M&E) are fundamental to the long-term success of Türkiye's **CCMSAP**, focusing on tracking the performance of designated actions and verifying whether planned outputs have been realized. Implementation is supported by an online monitoring system established under the national climate portal, where the 47 responsible institutions are required to record developments from the previous year between January 1 and March 31 annually. The DoCC then prepares annual monitoring and evaluation reports by June 30, which are subsequently discussed within CCACB Working Groups. Finally, these evaluation reports are submitted to the CCACB by December 31, allowing for case-by-case revisions of the action plan to ensure it remains aligned with national targets.

Similarly, CCASAP employs a matching M&E framework to ensure that its 129 adaptation actions effectively build national resilience across eleven priority sectors. This process is essential for determining whether planned outputs and adaptation outcomes have been achieved while maintaining the continuous support and financing necessary for long-term success. Responsible institutions are tasked with inputting their annual progress into a dedicated online system between January 1 and March 31 of each year. Annual monitoring reports are prepared by the DoCC by June 30, followed by consultations within CCACB Working Groups to review recommendations and designated future actions. These annual evaluation reports are submitted to the CCACB by December 31 of the monitoring year, facilitating a dynamic management approach that allows the strategy to be updated in response to evolving climate risks and vulnerabilities.

Türkiye's **Monitoring, Reporting, and Verification (MRV) system** for GHG emissions serves as the fundamental technical infrastructure for national climate policy and the ETS. Established through the Regulation on Monitoring of Greenhouse Gas Emissions and further institutionalized by the Climate Law (No. 7552), the system mandates that installations in designated energy-intensive sectors—such as electricity and heat generation, oil refining, and the production of metals, cement, chemicals, and paper—obtain a greenhouse gas emission permit. Since 2015, the system has monitored emissions from more than 700 industrial plants, which account for approximately half of Türkiye's total GHG emissions. Under this framework, operators are required to monitor their emissions according to approved monitoring plans and submit annual reports that have been validated by independent verification bodies to the DoCC. Furthermore, the system uses an online data management platform to ensure transparency and consistency with international standards, such as the EU ETS. By providing precise, installation-level data, the MRV system enables evidence-based decision-making and impact analyses essential for achieving Türkiye's 2053 Net Zero Emission Target.

The DoCC is establishing a dedicated legislative framework alongside a centralized digital platform known as E-YIDEP. This online tracking infrastructure will require municipalities to directly upload their local climate change adaptation plans, enabling the Ministry to oversee, evaluate, and dynamically monitor municipal climate action progress nationwide.

4.2 POLICIES AND MEASURES AND THEIR EFFECTS

Türkiye's comprehensive climate change policy framework is anchored in a suite of cross-cutting and sectoral strategies, all of which are underpinned by robust national legislation. These policy instruments ensure that climate objectives are integrated across diverse economic activities, facilitating a consistent and legally grounded approach to decarbonization. The following sections provide a detailed structure around both the overarching (cross-cutting) and sector-specific policies and measures currently in implementation.



4.2.1 Cross-Cutting Policies and Measures

Overview

The **12th Development Plan (2024-2028)**, articulates a transformative vision for the ‘Century of Türkiye,’ aiming to foster a stable, prosperous, and eco-friendly nation that is resilient to disasters, produces high added value through advanced technology, and ensures equitable income distribution. Formulated by the SBO through a collaborative and inclusive process involving all relevant stakeholders, the Development Plan is operationalized via **Annual Presidential Programs**. These programs define the specific mandates and activities of the respective administrations for the implementation of the Plan’s policies and measures. To ensure fiscal consistency, public administrations are required to align their budgets with the Development Plan, the Medium-Term Program, and the Annual Presidential Programs.

In alignment with this macro-strategic framework, Türkiye has formally established its **LTS**. Together with the 12th Development Plan, the LTS provides the legal and strategic foundation for national climate actions, including specific mitigation and adaptation targets. This integrated approach ensures that Türkiye’s transition to a low-emission economy is fundamentally set within its long-term socioeconomic development and national investment priorities.

Türkiye operationalized two cornerstone strategies designed to steer its climate trajectory through 2030: the **CCMSAP (2024-2030)**¹⁸⁴ and the **CCASAP (2024-2030)**.¹⁸⁵ The CCMSAP was developed through a comprehensive gap analysis of existing policies and GHG reduction measures. Facilitated by extensive stakeholder engagement, the plan establishes a robust framework consisting of 49 strategies and 260 actions. These focus on seven key sectors—industry, energy, buildings, transport, agriculture, waste, and LULUCF—while integrating horizontal themes such as just transition and carbon pricing mechanisms. Simultaneously, the CCASAP addresses climate resilience by utilizing high-resolution, Türkiye-specific climate projections. This plan is the result of rigorous vulnerability and risk assessments conducted at the national scale. To enhance adaptive capacity, the CCASAP identifies 40 strategies and 129 actions targeting critical areas, including water resource management, food security, public health, biodiversity, disaster risk reduction, and urban resilience. Together, these dual frameworks ensure that Türkiye’s climate action is both science-based and sectorally inclusive.

In 2025, Türkiye developed a national strategy that will shape its approach to water by taking into account climate change mitigation and adaptation until 2035: The **National Water Plan (2026-2035)**¹⁸⁶ provides a comprehensive policy framework aimed at strengthening Türkiye’s climate change adaptation capacity and ensuring the sustainable management of water resources. The Plan prioritizes increasing water use efficiency, expanding basin-based integrated management approaches, enhancing early warning systems against droughts and floods, and supporting investments in climate-resilient infrastructure. In addition, a water-energy-food-ecosystem nexus approach is adopted to better account for intersectoral interactions and improve policy coherence, thereby promoting overall resource efficiency and climate resilience. The Plan also emphasizes financing optimization by encouraging the more effective and coordinated use of public, private

¹⁸⁴. DoCC. “Climate Change Mitigation Strategy and Action Plan (2024-2030).” 2023. <https://iklim.gov.tr/eylem-planlari-i-19>.

¹⁸⁵. DoCC. Climate Change Adaptation Strategy and Action Plan (2024-2030). 2024. <https://iklim.gov.tr/eylem-planlari-i-19>.

¹⁸⁶. MoAF, 2025_a.. National Water Plan (2026-2035). 2026. [https://www.tarimorman.gov.tr/SYGM/Belgeler/Ulusal_Su_Planı_Resmi_Gazete/Ulusal_Su_Planı_\(2026-2035\).pdf](https://www.tarimorman.gov.tr/SYGM/Belgeler/Ulusal_Su_Plani_Resmi_Gazete/Ulusal_Su_Planı_(2026-2035).pdf).



sector, and international financial resources, enabling the cost-effective implementation of priority investments. By strengthening data-driven decision-making processes and improving efficiency in sectoral water allocation, the Plan aims to reduce pressures on water resources under changing climate conditions. In this context, the National Water Plan constitutes an important basis for tracking progress under Türkiye's transparency framework in line with Article 13 of the Paris Agreement.

The **Green Deal Action Plan** was designed to steer the green transformation of Türkiye's industrial base; the Plan comprises 32 objectives and 81 actions across 9 thematic headings. Its primary focus is technical and regulatory alignment with the European Green Deal, particularly within the domains of trade and industry. To ensure effective implementation at the technical level, twenty Specialized Working Groups have been operationalized. These groups focus on carbon-intensive sectors—such as textiles, construction, cement, aluminum, and steel—as well as cross-cutting areas including energy, finance, and technology. This structure facilitates targeted efforts to mitigate the impacts of the EU's CBAM on Türkiye's exports. The Action Plan clearly delineates the mandates of relevant institutions and stakeholders, fostering high-level cooperation with the central coordinating body. It also establishes a structured timeline for the execution of actions, ensuring that Türkiye's transition to a sustainable economy remains systematic, transparent, and aligned with international trade norms.

4.2.1.1 Adoption of the Climate Law

The Climate Law (Law No. 7552), which was accepted on July 2, 2025, and published in the Official Gazette on July 9, 2025, establishes the primary legal framework for Türkiye's fight against climate change in line with its **green growth vision and 2053 net-zero emission target**.¹⁸⁷ This comprehensive legislation covers GHG emission reductions, climate adaptation activities, planning and implementation tools, and the necessary institutional and legal structures.

Under the law, mitigation activities are directed by the NDC and the net-zero target, focusing on increasing efficiency in energy, water, and raw materials, expanding renewable energy use, and reducing the carbon footprint of products and institutions. To balance anthropogenic emissions, the law mandates the protection and enhancement of sink areas, including forests, agricultural lands, pastures, and wetlands. Simultaneously, adaptation activities focus on preventing climate-related losses and risks through scientific risk assessments, effective water resource management, the protection of biodiversity, and the development of integrated disaster early warning systems.

The institutional governance of Türkiye's climate policy is led by the DoCC, which is responsible for coordination, monitoring progress, and managing the technical aspects of the carbon market. Strategic decisions, such as the approval of the National Allocation Plan and the identification of sectors for international carbon markets, are handled by the Carbon Market Board, chaired by the Minister of Environment, Urbanization and Climate Change. Furthermore, an Advisory Board, led by the Union of Chambers and Commodity Exchanges of Türkiye (TOBB), provides consultative input on strategies related to the ETS and international carbon markets.

The Climate Law introduces a National ETS and establishes a CBAM to manage the embedded emissions of imported goods. Additionally, the legislation creates a Türkiye Green Taxonomy.

¹⁸⁷. Official Gazette. "Climate Law." 2025. <https://www.resmigazete.gov.tr/09.07.2025>.



The Law requires the establishment of a Provincial CCCB in each province, chaired by the Governor. All provinces must complete their Local Climate Change Action Plans by December 31, 2027.

4.2.1.2 Establishment of an Emissions Trading System (ETS) in Türkiye

Türkiye has been systematically developing its carbon pricing infrastructure since 2014, primarily through the Partnership for Market Readiness (PMR) and its successor, the Partnership for Market Implementation (PMI), in collaboration with the World Bank.¹⁸⁸ Building on this technical and institutional foundation, the Climate Law and the Türkiye Emissions Trading System Regulation (published in the Official Gazette of 27 August 2026, No. 33353) establish the legal basis for a national ETS and define the principal governance, compliance, and market arrangements required for its implementation.

The TR ETS commences with a two-year pilot phase covering energy-intensive sectors, namely electricity generation, iron and steel, cement, aluminium, and fertiliser production. Together, these sectors account for approximately half of Türkiye's total greenhouse gas emissions. During the pilot phase, 100% of allowances will be allocated free of charge to allow covered installations to adapt without initial financial liabilities while testing key design elements—including emissions cap setting, registry operations, MRV workflows, and market oversight arrangements—before transitioning to the first full implementation period involving auctioning.

The Carbon Market Board, established under the Climate Law and chaired by the Minister of Environment, Urbanization and Climate Change, will serve as the principal decision-making body for the ETS and other national carbon market mechanisms. Its responsibilities include approving the National Allocation Plan, determining the quantity and distribution of emission allowances, and taking strategic decisions concerning the operation and development of carbon markets. The DoCC will be responsible for the technical and administrative implementation of the system, including registry management, emissions monitoring, compliance assessment, and coordination with covered installations.

The ETS will be supported by Türkiye's existing facility-level MRV system, which provides verified emissions data for installations operating in energy-intensive sectors. Operators within the scope of the ETS will be required to hold an emission permit, monitor and report their annual emissions, obtain independent verification, and surrender allowances corresponding to their verified emissions. Revenues generated through allowance auctions and other ETS-related mechanisms will be recorded as special revenues and used to support climate action and the green transformation of covered sectors. Once operational, the ETS is expected to promote cost-effective emission reductions, support low-carbon investment, and contribute to Türkiye's NDC and 2053 net-zero emissions target.

4.2.1.3 Monitoring, Reporting and Verification (MRV) of GHG Emissions

The primary legal instrument for tracking industrial emissions in Türkiye is the **By-Law on Monitoring of Greenhouse Gas Emissions**.¹⁸⁹ This legislation establishes the comprehensive principles and

¹⁸⁸. Ari, I. (2025). Carbon Pricing in Emerging Economies Challenges and Opportunities for Türkiye. Routledge. <https://doi.org/10.4324/9781003570820>

¹⁸⁹. This By-law has been amended two times since then. Firstly, By-law Amending the By-law on Monitoring Greenhouse Gas Emissions was published in the Official Gazette No. 29757 of 29 June 2016 and the second amendment was published in the Official Gazette No. 30082 of 31 May 2017.



procedures for the MRV of GHG emissions for activities specified in its Annex-1. Under this regulatory mandate, representatives from energy-intensive sectors are required to submit verified annual GHG emission reports. The scope of this mandatory reporting framework includes:

- Energy & Transformation: Electricity and steam production, petroleum refineries, and petrochemical plants.
- Heavy Industry: Iron, steel, and aluminum production.
- Mineral Products: Cement, lime, glass, brick, and ceramics.
- Other Sectors: Paper and pulp production, etc.

This MRV system serves as the data foundation for Türkiye's climate policies, ensuring that high-emitting facilities operate within a transparent and accountable reporting structure.

Box 1. Operational Maturity of the National MRV System.

Since the enactment of the By-Law on Monitoring of Greenhouse Gas Emissions in 2014, Türkiye has established a robust and fully functional MRV framework. This system serves as the data backbone for national mitigation policies and the ETS. Key Components of the System:

- Sectoral Coverage: High-resolution monitoring of energy-intensive sectors, including electricity generation, refineries, petrochemicals, and heavy industry (iron, steel, cement, glass, and paper).
- Digital Governance: The Data Management System (DMS) enables 100% digital submission and tracking of monitoring plans and emission reports, ensuring a transparent data trail between operators, verifiers, and the Ministry.
- Technical Rigor: Implementation is supported by advanced technical guidelines on Uncertainty Assessment, Biomass Sampling, and Data Flow Activities, aligning national data quality with high-tier international standards.
- Independent Verification: A mature market of accredited verifiers ensures that all reported data undergoes rigorous third-party assessment before final submission.

Impact: The MRV system currently tracks approximately 50% of Türkiye's total GHG emissions from around 800 installations, providing a verified, facility-level data foundation that is critical for the "Accuracy" and "Transparency" requirements of the Paris Agreement's Enhanced Transparency Framework (ETF).

Türkiye's legal framework for the MRV of GHG emissions is built upon a strategic alignment with international standards, specifically the EU's technical acquis. This comprehensive regulatory architecture, established through a series of specialized By-laws and Communiqués, is designed to ensure that national emission data adhere to the core principles of being transparent, accurate, comparable, complete, and consistent (TACCC). By harmonizing domestic legislation with Commission Regulations (EU) No. 601/2012 and 2018/2066, Türkiye has institutionalized rigorous monitoring and reporting standards that mirror the requirements of the EU ETS Directive, particularly for the activities listed under the primary MRV legislation. To safeguard the integrity of this data, a modernized verification and accreditation system has been operationalized through



successive Communiqués, most notably the 2017 regulation and its 2022 amendment, which align national procedures with EU Regulations No. 600/2012 and 2018/2067. This framework mandates that every facility-level emission report undergo a comprehensive audit and on-site inspection by independent, accredited verification bodies prior to official submission to the DoCC. This two-tier approach—combining strict monitoring protocols with independent third-party oversight—ensures that Türkiye has a high-resolution, internationally recognized data foundation. Such a robust infrastructure is not only essential for the “Accuracy” and “Transparency” requirements of the Paris Agreement’s ETF but also serves as the critical prerequisite for the successful implementation of the national ETS.

Beyond its primary role in emission tracking, the implementation of a robust MRV framework generates significant socioeconomic co-benefits, particularly in the areas of specialized job creation and institutional capacity building. The technical complexity of MRV systems drives a growing demand for a diverse workforce, including environmental engineers, data analysts, and IT specialists dedicated to developing sophisticated reporting platforms. Furthermore, the mandatory requirement for third-party oversight has catalyzed a niche market for certified auditors and verifiers, while simultaneously fostering a new educational sector focused on sustainability standards and compliance training. These developments not only strengthen the national labor market but also equip various industrial sectors with the specialized expertise necessary for long-term emissions management. On a strategic level, MRV systems serve as an essential tool for data-driven governance and corporate transparency. By providing a high-resolution, verified emissions profile, these frameworks enable policymakers to design more effective national climate strategies and empower organizations to make informed investment decisions regarding energy efficiency and green technology. This systematic approach to data collection ensures strict regulatory compliance and mitigates legal risks, while the inherent transparency builds vital trust among investors, regulators, and the public. Ultimately, the MRV process transforms raw data into a strategic asset that facilitates policy coherence and accelerates the transition toward a climate-resilient, low-carbon economy.

4.2.1.4 Voluntary Carbon Market

Türkiye is strategically advancing its carbon market infrastructure by aligning voluntary mechanisms with the regulatory requirements of Article 6 of the Paris Agreement and its own national climate objectives. A foundational step in this transition was the 2022 comprehensive assessment of the voluntary carbon market, which evaluated current project inventories and established various participation scenarios for Article 6. Türkiye has since completed the development of its national Article 6 Strategy and is continuing its work to finalize the necessary technical arrangements for participation, including the establishment of an appropriate registry system and related institutional and reporting infrastructure.

Türkiye is planning to develop a National Carbon Crediting System to establish a state-backed domestic framework for emission reductions and removals, ensure that domestic projects meet high-integrity benchmarks, and support Türkiye’s NDC and long-term climate objectives. The system is expected to complement the national ETS by promoting mitigation activities across a broader range of sectors.



A transformative milestone in this journey is the partnership between Türkiye's Energy Exchange (EPIAŞ) and Verra, which supports the development of an exchange-based platform for trading internationally recognized carbon credits.¹⁹⁰ This initiative is expected to strengthen the role of Turkish market participants in voluntary carbon markets and increase the visibility and importance of these markets in Türkiye.

The maturation of these markets offers extensive socioeconomic co-benefits, ranging from the protection of biodiversity and the enhancement of food security to the creation of specialized green jobs. Much like the national ETS, the regulation of carbon crediting requires a sophisticated digital registry and a rigorous MRV infrastructure, driving demand for expertise in environmental auditing, software development, and technical consulting. Ultimately, by constructing a regulated and transparent carbon market, Türkiye is providing a cost-effective pathway for industrial compliance while incentivizing innovative projects that accelerate the national transition toward a climate-resilient, net-zero economy.

4.2.1.5 Ecodesign and Energy Labelling and Environmental Labelling

Türkiye has significantly strengthened its technical legislation to align with the EU's sustainability standards, focusing on product efficiency and environmental transparency. In 2022, the MoIT enacted the **By-law on Environmentally Responsible Design of Energy-Related Products**,¹⁹¹ achieving full harmonization with the EU's Ecodesign Directive (2009/125/EC). This was complemented by the **By-law on a Framework for Energy Labelling**, which mirrors EU Regulation 2017/1369/EU. Together, these regulations mandate that energy-related products meet specific performance thresholds and display clear energy efficiency ratings, supported by a series of product-specific communiqués issued by the MoIT.

In addition to energy efficiency, Türkiye has institutionalized a national **Environmental Labelling**¹⁹² system, enacted in 2018 in accordance with EU Regulation (EC) No 66/2010. This voluntary ecolabelling framework currently covers seven diverse categories: glass, hand-dishwashing detergents, personal care and cosmetics, ceramic coatings, textiles, cleaning paper products, and tourist accommodation services. By establishing strict environmental criteria for these groups, the regulation encourages the adoption of sustainable production practices and provides consumers with verified information regarding the environmental footprint of their purchases.

Türkiye has prioritized alignment with the **Ecodesign for Sustainable Products Regulation (ESPR, EU 2024/1781)**, which entered into force in the EU in June 2024. This regulation represents a paradigm shift from simple energy efficiency to a comprehensive life-cycle approach, aiming to enhance product durability, reparability, and recyclability. The harmonization process for the ESPR began simultaneously with its EU publication and is currently being executed by the relevant authorities. This proactive legislative update ensures that Turkish industries remain integrated into the European Green Deal framework and are prepared for the transition toward a circular economy.

190. Energy Exchange Istanbul. "EPIAŞ and Verra to Partner on Carbon Credit Trading Platform." 2024.

191. Official Gazette dated 5 February 2022 and numbered 31741. Previously, Türkiye adopted the By-law on Environmentally Responsible Design of Energy-Related Products in 2010 harmonizing previous versions of the EU directives on the issue.

192. Official Gazette dated 19 October 2018 and numbered 30570.



4.2.1.6 Promotion of Local Climate Actions

Türkiye has institutionalized a transformative model for sub-national climate governance through the Climate Law. This landmark legislation provides the definitive legal mandate for local authorities to align their developmental activities with the national 2053 Net Zero Emission Target and the NDC. Under Article 7 of the Climate Law, the preparation of **Local Climate Change Action Plans (LCCAP)** is now a mandatory requirement for all provinces. These plans serve as the primary strategic instruments for integrating national mitigation and adaptation targets into local urban planning, infrastructure development, and social protection services. To operationalize these mandates, the LCCAP Regulation establishes a clear governance structure and implementation timeline. The planning process is coordinated by the Governor, with Metropolitan Municipalities leading the preparation in their respective jurisdictions, while Provincial Special Administrations and District Municipalities collaborate in other provinces. According to Temporary Article 1 of the Regulation, the initial cycle of LCCAP will cover the 2028–2032 period, with all plans required to be finalized and approved by the Provincial CCCBs by December 31, 2027. This synchronization ensures that local actions are technically consistent and contribute directly to the national M&E cycles.

A critical component of this local framework is the emphasis on Just Transition and digital accountability. The Climate Law (Article 2) mandates that local climate policies prioritize vulnerable groups—including children, women, the elderly, and persons with disabilities—to ensure no segment of society is left behind during the green transformation. To monitor progress and ensure data integrity, all implementation data from the provincial level must be reported via the **E-YİDEP** platform. This digital architecture facilitates a transparent reporting line from local governments to the central administration, providing the high-resolution data necessary for Türkiye’s reporting under the Paris Agreement’s ETF. Combined with technical support from the Bank of Provinces (ILBANK) and regional development agencies, this system creates a robust, verifiable pathway for climate resilience at every administrative level.

The **National Strategy of Regional Development (NSRD) 2024-2028**¹⁹³ serves as the overarching blueprint for Türkiye’s regional development policies, guiding the strategic direction for 26 Regional Development Agencies, regional administrations, and public investment processes. With the official vision of “A fully developed Türkiye with globally competitive, prosperous, and resilient regions utilizing local dynamics,” the NSRD functions as the primary coordination document to address regional disparities and enhance national competitiveness. Within the NSRD, green growth is established as one of the nine core pillars, alongside themes such as urban and rural development, social policies, and digitalization. This thematic focus ensures that climate change mitigation and adaptation strategies are not treated in isolation but are embedded within the industrial, logistical, and agricultural fabric of each region.

A significant evolution in this framework is the alignment of the third generation of Regional Development Plans (2024-2028) with the national 2053 Net Zero Emission Target. While previous generations (2010-2013 and 2014-2023) focused primarily on basic economic convergence, the current plans are tailored to regional specificities—such as high-carbon industrial zones or climate-vulnerable agricultural basins—to implement localized green transformation pathways.

¹⁹³. MoIT. 2020. “National Regional Development Strategy.” 2020. <https://www.sanayi.gov.tr/bolgesel-kalkinma-faaliyetleri/strateji-belgeleri/01135b>.



By integrating the NSRD with the Climate Law and the Green Deal Action Plan, Türkiye ensures that regional development agencies act as catalysts for the green transition. These agencies now prioritize investments in resource efficiency, renewable energy integration at the local scale, and the circular economy, effectively bridging the gap between national climate goals and territorial implementation.

4.2.1.7 Promotion of Sustainability Reporting

Türkiye has institutionalized a comprehensive framework for ESG transparency by empowering the Public Oversight Accounting and Auditing Standards Authority (POA) to regulate and oversee mandatory sustainability reporting. This transition integrates sustainability-related financial disclosures into Türkiye's corporate reporting framework in line with internationally recognized sustainability reporting standards. To guarantee the integrity of these disclosures, the POA mandates that all sustainability reports compliant with Turkish Sustainability Reporting Standards (TSRS) be audited exclusively by authorized independent audit firms and professionals registered with the Authority. In a milestone for national transparency, the POA issued the Turkish Sustainability Reporting Standards (TSRS), which became effective on January 1, 2024. These standards—specifically TSRS 1 (General Requirements) and TSRS 2 (Climate-related Disclosures)—are fully harmonized with the IFRS Sustainability Disclosure Standards (S1 and S2).¹⁹⁴ The mandatory sustainability reporting requirements apply to companies subject to the regulation and supervision of the Capital Markets Board of Türkiye (CMB), entities regulated and supervised by the Banking Regulation and Supervision Agency (BRSA), insurance, reinsurance, and pension companies, and entities authorized to operate in Borsa İstanbul (BIST) markets, including authorized establishments, precious metals intermediary institutions, and companies engaged in the production or trading of precious metals, provided that they meet the prescribed reporting thresholds.¹⁹⁵ Following a strategic revision published in the Official Gazette in early 2026¹⁹⁶, the mandatory reporting thresholds have been updated to reflect the economic landscape. Starting from the reporting periods beginning on or after January 1, 2025, entities that exceed at least two of the following three criteria for two consecutive years are required to comply: total assets of 1 billion Turkish Liras, annual net revenue of 2 billion Turkish Liras, or a workforce of 500 employees.

Under TSRS 2 Climate-related Disclosures, an entity is required to measure its GHG emissions in accordance with the GHG Protocol: Corporate Accounting and Reporting Standard (2004), unless a jurisdictional authority or an exchange on which the entity is listed mandates the use of a different measurement method. The framework mandates the immediate disclosure of Scope 1 (direct) and Scope 2 (energy-indirect) emissions from the first year of compliance. Recognizing the technical challenges of mapping complex supply chains, the POA has extended a transition relief exempting entities from disclosing Scope 3 (value chain) GHG emissions during their first two reporting periods, pursuant to Board Decision No. 21634 published in the Official Gazette dated December 29, 2023.¹⁹⁷ This pragmatic approach allows companies to build the necessary data acquisition infrastructure before Scope 3 disclosures become mandatory, ensuring that the eventual data is both accurate and comparable. In addition, transition reliefs have been introduced to facilitate the initial implementation of the TSRS. Reporting entities are permitted to disclose only climate-related information during the first two annual reporting periods. Furthermore, a two-year

¹⁹⁴. Official Gazette. "Board Decision." 2023. <https://www.resmigazete.gov.tr/eskiler/2023/12/20231229M1-9.pdf>.

¹⁹⁵. Official Gazette. "Board Decision." 2023. <https://www.resmigazete.gov.tr/eskiler/2023/12/20231229M1-10.pdf>.

¹⁹⁶. Official Gazette. "Board Decision." 2023. <https://www.resmigazete.gov.tr/eskiler/2023/12/20231229M1-10.pdf>.

¹⁹⁷. Official Gazette. (2023). Board Decision No. 21634. <https://www.resmigazete.gov.tr/eskiler/2023/12/20231229M1-10.pdf>



transition relief has been provided with respect to the timing of sustainability reporting, allowing sustainability-related financial disclosures to be published after the related financial statements during the initial implementation period.

This disclosure framework serves as a critical pillar for Türkiye's 2053 Net Zero Emission Target by providing the transparency necessary to attract green financing and facilitate the decarbonization of the private sector. The systematic identification of climate-related risks encourages board-level accountability and strategic long-term planning. Furthermore, the alignment of corporate reporting with the National ETS and the Climate Law creates a unified data ecosystem, where verified facility-level data and corporate-level financial disclosures complement each other. By ensuring full international interoperability through IFRS alignment and maintaining regulatory rigor through POA-authorized audits, Türkiye effectively addresses “greenwashing” concerns and meets the high transparency standards of the Paris Agreement's ETF.

4.2.1.8 Introduction of a Green Taxonomy System

Türkiye is advancing toward a formalized sustainable finance ecosystem by establishing a **National Green Taxonomy**, a move fundamentally anchored by the Climate Law enacted in July 2025. This taxonomy serves as a critical technical dictionary, defining “green” economic activities to prevent greenwashing and mobilizing capital toward the 2053 Net Zero Emission Target. DoCC has developed a framework that encompasses six core environmental objectives: reduction of greenhouse gas emissions, adaptation to climate change, sustainable use and protection of water and marine resources, transition to a circular economy, prevention and control of pollution, protection and restoration of biodiversity and ecosystems.

The Türkiye Green Taxonomy Regulation establishes an institutional framework for taxonomy-related reporting and monitoring processes. Under this framework, relevant procedures are carried out through the Online Taxonomy Management System administered by the Directorate of Climate Change. While entities conducting eligible economic activities listed in Annex 1 may report on a voluntary basis, mandatory reporting obligations apply to certain financial institutions. Reports are to be submitted through the system within six months following the end of the relevant financial reporting period, while the procedures and principles governing verification are expected to be determined separately by the Directorate.

4.2.1.9 Green Asset Ratio

Türkiye has formally integrated climate considerations into its financial oversight through the “Communiqué on the Calculation of Green Asset Ratio of Banks,” officially published by the Banking Regulation and Supervision Agency (BRSA) in the Official Gazette on April 11, 2025.¹⁹⁸ This regulation marks a transition from a voluntary, qualitative self-assessment phase to a standardized, mandatory reporting framework designed to quantify the banking sector's contribution to environmentally sustainable economic activities and, by extension, to national climate targets. The Green Asset Ratio (GAR) serves as the primary key performance indicator (KPI) for assessing

¹⁹⁸. Official Gazette. “Communiqué on the Calculation of Green Asset Ratio of Banks.” 2025. <https://www.resmigazete.gov.tr/eskiler/2025/04/20250411-4.htm>.



the “greenness” degree of eligible assets within a bank’s non-consolidated credit and securities portfolios under defined definitions and scopes, and provides a harmonized metric.

While the methodology is broadly aligned with emerging national taxonomy work and international practices, it follows a pragmatic approach tailored to Türkiye’s regulatory and supervisory architecture rather than a full legal transposition of the EU Taxonomy. The ratio is calculated by dividing “aligned assets”—a sub-set of “eligible assets” that meet technical screening criteria, do not significantly harm to other environmental objectives, and comply with minimum social safeguards—by the “total assets within the GAR scope,” which include non-consolidated on-balance-sheet financial assets measured at amortized cost after excluding exposures to central government, central banks, and supranational institutions, as well as trading book positions. The framework identifies six key environmental objectives: climate change mitigation, climate change adaptation, transition to a circular economy, sustainable use and protection of water and marine resources, pollution prevention and control, and protection and restoration of biodiversity and ecosystems, which are broadly consistent with the mitigation and adaptation objectives reported under the Paris Agreement transparency framework. However, at this initial stage, the identification of aligned assets focuses solely on climate change mitigation, meaning the GAR currently measures financing dedicated exclusively to climate change mitigation.

Following the finalized Communiqué, the implementation phase follows a structured timeline to allow for institutional capacity building, with banks required to submit their first official GAR reports to the BRSA starting September 2025. To prevent “greenwashing” and ensure data integrity, the Communiqué mandates that compliance with technical screening criteria be substantiated through verifiable documentation, such as emission reports, energy efficiency audit/assessment reports, feasibility studies, green certificates, and investment expenditure documents issued or validated by independent verifying parties authorized by the Turkish Accreditation Agency (TÜRKAK) or relevant public institutions. In addition to the primary GAR, banks must report secondary indicators, notably the ratio of “aligned assets to eligible assets” and “eligible assets to total assets within the GAR scope,” providing a more granular view of both current green performance and the sector’s potential for green transformation.

The institutionalization of the GAR is expected to support Türkiye’s broader 2053 net zero GHG emissions target by enhancing the management of climate-related financial risks and opportunities. By reducing information asymmetry and establishing a reliable, comparable data ecosystem, the GAR framework may facilitate Turkish banks’ access to international green funds and climate finance and create the basis for a future national taxonomy-aligned disclosure regime that can be referenced in NDC updates as part of policy and regulatory instruments underpinning mitigation and adaptation goals.

4.2.1.10 Socially Inclusive Green Transition

Türkiye is institutionalizing a just transition as a core pillar of its climate response, ensuring that the shift to a net-zero economy does not deepen social inequalities. Grounded in the “leave no one behind” principle and aligned with the **Climate Law**, this approach integrates gender, disability inclusion, and generational equity into every stage of mitigation and adaptation policy. To operationalize this, Türkiye has established a Just Transition Policies Specialized Working Group¹⁹⁹, coordinated by the Ministry of Labour and Social Security. This group focuses on minimizing the

¹⁹⁹. Republic of Türkiye Ministry of Labour and Social Security. “The Process for the Establishment of Sub-Working Groups of the Just Transition Policies Specialized Working Group Has Begun.” 2025.



adverse impacts of the green transformation on labor markets while maximizing social dialogue. By fostering broad cooperation between the public sector, NGOs, and the private sphere, Türkiye aims to create a resilient society where “decent green jobs” are accessible to all, ensuring that the 2053 Net Zero target is met through a socially just and human-oriented development model.

In addition to national policies and regulatory instruments supporting climate change mitigation and green transformation, Türkiye has also initiated program-based financing mechanisms to accelerate environmentally sustainable investments at the regional and local level. One of the key initiatives in this context is the **Socially Inclusive Green Transition (SoGreen) Project**, which is implemented under the coordination of the MoIT and carried out through the network of Regional Development Agencies across Türkiye.²⁰⁰

The SoGreen Project aims to promote a socially inclusive green transition by supporting environmentally sustainable investments, strengthening the green transformation capacities of enterprises, and enhancing the institutional capabilities of regional stakeholders. The project focuses particularly on small and medium-sized enterprises (SMEs), local governments, cooperatives, and other local actors that play an important role in regional economic development. The scope of the project covers a wide range of thematic areas, including but not limited to energy efficiency and renewable energy applications, sustainable production and resource efficiency, circular economy practices, climate-resilient infrastructure and local development initiatives, sustainable agriculture and nature-based solutions, and environmentally sustainable industrial transformation. By supporting environmentally sustainable investments and strengthening regional implementation capacity, the SoGreen Project contributes to Türkiye’s efforts to achieve its NDC targets, enhance climate resilience, and support the country’s long-term objective of achieving **net-zero emissions by 2053**.

Table 21 presents a comprehensive overview of Türkiye’s cross-cutting PaMs designed to mitigate GHG emissions. These overarching instruments provide the strategic and legal foundation for climate action across multiple socio-economic sectors.

²⁰⁰ World Bank.2024. Socially Inclusive Green Transition (SoGreen) Project. 2024. <https://documents1.worldbank.org/curated/en/099031124170520652/pdf/BOSIB-226380b4-31cb-4005-a10e-e795d7a06b0d.pdf>.


Table 21 – Cross-cutting policies and measures

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1- Adoption of the Climate Law	Cross-cutting	All types of GHG	The aim of the Climate Law is to combat climate change in line with the green growth vision and the net-zero emission target	Regulatory	Implemented	2025	The Presidency of the Republic	NE
2 - Establishment of an Emissions Trading System	Cross-cutting	CO ₂ , N ₂ O, PFCs	Reducing GHG emissions of high-emitting installations that have high GHG emissions	Regulatory, Economic	Implemented	2026	MoEUCC	NE
3 - Monitoring, Reporting and Verification (MRV) of Greenhouse Gas Emissions of High GHG-Emitting Installments	Cross-cutting	CO ₂ , N ₂ O, PFCs	Increasing the knowledge and data on Türkiye's GHG emissions	Information	Implemented	2014	MoEUCC	NE
4 - Establishment of a National Crediting Mechanism	Cross-cutting	CO ₂ , N ₂ O, CH ₄	Increasing financial support for low-carbon development projects	Voluntary	Planned	2028	MoEUCC	NE
5 - Eco-Design and Energy Labelling and Environmental Labelling	Cross-cutting	CO ₂	Increasing the energy efficiency of products that use electric energy	Regulatory	Implemented	2010	MoIT	NE
6 - Promotion of Local Climate Change Action Plans	Cross-cutting	All types of GHG	Increasing local climate action of municipalities	Voluntary	Implemented	2018	Municipalities	NE
7 - Promotion of Sustainability Reporting	Cross-cutting	All types of GHG	To enhance the transparency and comparability of sustainability-related financial disclosures and provide investors and other primary users with reliable, comparable, and decision-useful information	Regulatory	Implemented	2024	POA	NE
8- Introduction of a Green Taxonomy System	Cross-cutting	All GHG	Managing the Online Taxonomy Management System through which Türkiye Green Taxonomy implementation and reporting processes are carried out	Other (Information)	Implemented	2026	MoEUCC	NE
9 - Green Asset Ratio	Cross-cutting	All GHG	Setting out the procedures and principles for calculating and reporting the green asset ratio and other key performance indicators developed to measure banks' contribution to the financing of environmentally sustainable economic activities	Regulatory	Implemented	2025	Banking Regulation and Supervision Agency (BRSA)	NE
10- Socially Inclusive Green Transition	Cross-cutting	All GHG	Promoting a socially inclusive green transition in line with the principles of just transition, leaving no one behind, supporting environmentally sustainable investments; strengthening the green transformation capacity of enterprises; enhancing the institutional capacity of regional stakeholders	Economic	Implemented	2024	MoIT	NE



4.2.2 Energy Industries

Overview

The energy sector is responsible for approximately 71.8% of Türkiye's total GHG emissions, underscoring the critical urgency of its decarbonization pathway to meet national climate commitments.²⁰¹ To systematically drive down emissions in this sector, Türkiye has established a robust policy framework that includes the National Energy and Mining Policy, the 12th Development Plan, and the Strategic Plans of the MENR. Following the landmark enactment of the Climate Law in July 2025 and the release of the LTS at COP29, these energy strategies have been fully harmonized with the nation's legally binding net-zero trajectory and the NDC.

This overarching decarbonization effort is supported by Türkiye's evolving green finance and market infrastructure. The implementation of the Turkish Sustainability Reporting Standards (TSRS 1 and TSRS 2), together with the Banking Regulation and Supervision Agency's (BRSA) Green Asset Ratio (GAR) framework, strengthens sustainability-related disclosure and may facilitate the allocation of capital toward environmentally sustainable investments. This economic transition is further supported by the Climate Law and the evolving green finance framework, with the Türkiye Green Taxonomy providing a framework for assessing the environmental sustainability of renewable energy and other eligible economic activities against applicable technical screening criteria. In parallel, the cooperation between EPIAŞ and Verra aims to support the development of transparent carbon credit trading infrastructure. Together, these developments contribute to a more structured framework for Türkiye's technology, energy and green finance transition, alongside ongoing efforts to strengthen social dialogue.

Under the strategic framework of the 12th Development Plan (2024–2028), Türkiye has established a competitive energy roadmap that prioritizes resource self-sufficiency, sustainability, and technological localization, all aligned with the overarching 2053 Net Zero Emission Target. To guarantee an uninterrupted, reliable, and affordable energy supply while simultaneously reducing carbon emissions, the plan outlines an extensive expansion of the national power portfolio. A core pillar of this mitigation strategy is the incorporation of nuclear energy into the electricity generation matrix, marked by the commissioning of the Akkuyu Nuclear Power Plant and ongoing capacity expansions. To secure long-term innovation, Türkiye is actively pursuing the deployment and localization of advanced technologies, including small modular reactors (SMRs), fusion technologies, and next-generation reactor designs, while continuing to strengthen source diversification across the entire grid infrastructure. In line with these efforts, the MoIT launched the "Domestic Nuclear Reactor Development Project Call" under the Pre-Competitive Cooperation Projects framework. This initiative aims to enhance national energy independence and technology development capacity, positioning Türkiye as a global energy and technology provider. By supporting innovative reactor technologies—including Generation III+ and IV reactors, micro-reactors, SMRs, and reactors across various power ranges—the initiative targets multi-dimensional benefits, including domestic industrial strengthening, nuclear technology cluster formation, skilled workforce development, job creation, and overall economic and scientific advancement.

Simultaneously, the plan places a heavy emphasis on demand-side energy efficiency, introducing comprehensive structural updates for both public and private buildings to accelerate urban energy transformation. The government is expanding efficiency initiatives within public infrastructure while updating regulatory frameworks to incentivize the development of low-carbon, energy-efficient buildings powered directly by integrated renewable energy sources. To overcome traditional

²⁰¹ NID 2026. https://unfccc.int/sites/default/files/resource/TUR_NID_2026.pdf.



financing barriers in the building sector, alternative financial mechanisms—such as the Energy Service Companies (ESCO) model, energy performance contracts, and specialized credit guarantee funds—are being heavily scaled. Furthermore, the plan mandates the finalization of comprehensive heat market legislation designed to expand district heating and cooling systems, promote the use of heat pumps in viable technical zones, and increase geothermal energy utilization for residential and industrial heating.

To ensure these efficiency gains span the wider economy, targeted support mechanisms are prioritized for energy-intensive sectors, striking a balance between emission reductions and industrial competitiveness. This economic transition is supported by the Climate Law and the evolving green finance framework, with the Türkiye Green Taxonomy providing a structured framework for assessing the environmental sustainability of corporate energy investments, while taxonomy alignment remains subject to compliance with the applicable activity-specific technical screening criteria. Finally, the plan recognizes that technology and infrastructure transformation must be accompanied by societal engagement and administrative capacity building. To this end, Türkiye is actively executing public awareness campaigns, vocational training, and promotional programs to cultivate a culture of energy efficiency, while systematically reinforcing institutional capacities and human resources to manage the decentralized green transformation effectively.

The Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy (No. 5346), enacted in 2005, serves as the cornerstone of Türkiye's clean energy strategy, aiming to expand renewable power generation, diversify energy resources, minimize waste, protect the environment, and foster a domestic renewable technology manufacturing industry.²⁰² To adapt this foundational framework to evolving global market conditions and align it with the country's subsequent 2053 Net Zero Emission Target, the support architecture has undergone significant legislative revisions. Under Law No. 7257²⁰³, enacted in December 2020, a restructured Renewable Energy Support Mechanism (YEKDEM) was established, with its detailed regulatory parameters, feed-in tariffs, and implementation guidelines.

Following the enactment of the Climate Law in July 2025, YEKDEM continues to operate as an important renewable energy support mechanism alongside Türkiye's evolving climate and sustainable finance framework. The TSRS framework, the BRSA's Green Asset Ratio mechanism and the Türkiye Green Taxonomy strengthen the disclosure, classification and assessment of environmentally sustainable economic activities and may facilitate access to sustainable finance. In this context, renewable energy investments supported under YEKDEM may also qualify as taxonomy-aligned activities where they meet the applicable technical screening criteria and other relevant requirements of the Türkiye Green Taxonomy. Together, these instruments contribute to Türkiye's broader decarbonization and energy transition objectives, including those reflected in its NDC, while supporting the development of a more transparent and structured sustainable finance framework.

The MENR Strategic Plan (2024–2028)²⁰⁴ defines the updated policy blueprint for Türkiye's energy transition, aiming to utilize energy and natural resources efficiently, in an environmentally sensitive and sustainable manner, to enhance national welfare. Given that energy-related activities are central

202. Official Gazette. "Law No. 5346 on the Utilization of Renewable Energy Sources for the Purpose of Generating Electrical Energy." 2005. <https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=5346&MevzuatTur=1&MevzuatTertip=5>

203. Official Gazette. "Law No. 7257 on Amending the Electricity Market Law and Certain Laws." 2020. <https://resmigazete.gov.tr/eskiler/2020/12/20201202-9.htm>.

204. MENR. 2024. MENR Strategic Plan (2024–2028). 2024. https://enerji.gov.tr/Media/Dizin/SGB/tr/Kurumsal_Politikalar/ETKB_2024-2028_Stratejik_Plan.pdf.



to Türkiye's carbon emissions reduction agenda, the strategy deepens a green transformation aligned with the legally binding 2053 net-zero emission target and the Paris Agreement. To reduce emissions from the sector while maintaining energy supply security, the plan prioritizes increasing the share of clean, renewable energy sources in total electricity generation and lowering the carbon intensity of energy use. This expansion is supported by measures to enhance electricity grid flexibility—developing energy storage technologies such as batteries and pumped storage hydropower (PHES), strengthening transmission infrastructure, and promoting energy efficiency and related demand-side practices—to safely manage and optimize the integration of growing intermittent renewable capacities into the national grid.

The National Energy Plan²⁰⁵ was prepared by the MENR in December 2022 and is expected to be updated and published prior to COP this year. This comprehensive roadmap forecasts the long-term trajectory of Türkiye's energy sector to align with national GHG emission reduction goals. According to the plan's projections, Türkiye aims to expand its total installed capacity by 2035 to reach approximately 35 GW of hydroelectric power, 33 GW of solar energy, 18 GW of wind energy, and 7.2 GW of nuclear power. Furthermore, the strategy outlines the introduction and scaling of newer grid technologies by 2030, targeting an installed capacity of 2.1 GW for battery storage systems and 1.9 GW of electric power capacity to support grid stability.

Over the past decade, energy efficiency has served as a cornerstone of Türkiye's energy and climate policy framework. The MENR holds the central mandate for coordinating and implementing energy efficiency initiatives nationally. To ensure a multi-sectoral approach, several key national institutions—including the MoEUCC, the MoIT, the MoTI, and the Small and Medium Enterprises Development Organization (KOSGEB)—actively design and execute targeted studies and cross-cutting projects to optimize energy performance across industrial, residential, and transport sectors.

4.2.2.1 Improving Energy Efficiency

The Energy Efficiency Law (No. 5627)²⁰⁶, which entered into force in 2007, establishes the comprehensive legal framework for national policies, strategic roadmaps, and cross-cutting activities aimed at optimizing energy performance. This foundational legislation is specifically designed to promote the effective use of energy resources, minimize transmission and distribution losses, alleviate the macroeconomic burden of energy costs on the domestic economy, and mitigate environmental impacts through enhanced conservation practices. This foundational law establishes the statutory framework for optimizing energy intensity across industrial facilities, residential and commercial buildings, the service and transport sectors, as well as electricity generation plants and transmission and distribution networks. To operationalize the Law, a robust ecosystem of secondary regulations, mandatory standards, and targeted support mechanisms has been established. Some of them are the By-law on Energy Performance of Buildings, the Communiqué on Procedures and Principles Regarding the Calculation of Efficiency of Cogeneration and Micro-cogeneration, By-law on Supporting Energy Efficiency in SMEs, and the By-law on Energy Efficiency in the Utilization of Energy Resources.

205. MENR. 2022. National Energy Plan. 2022. https://enerji.gov.tr//Media/Dizin/EIGM/tr/Raporlar/TUEP/Türkiye_Ulusal_Enerji_Planı.pdf.

206. Official Gazette. "Law No. 5627 on Energy Efficiency." no. Issue 26510. 2007. <https://mevzuat.gov.tr/mevzuat?MevzuatNo=5627&MevzuatTur=1&MevzuatTertip=5>.



The Energy Efficiency 2030 Strategy and 2nd National Energy Efficiency Action Plan (2024–2030),²⁰⁷ officially announced by the MENR on January 8, 2024, establish a comprehensive national vision designed to align energy conservation with economic growth and international climate obligations. This strategic framework defines 10 core strategic objectives and 23 concrete goals that respond to Türkiye's development priorities, technological capabilities, and socio-cultural dynamics. At its core, the strategy seeks to embed energy efficiency into all high-level decision-making processes to bolster supply security, increase total factor productivity, and advance the nation toward its legally binding 2053 Net Zero Emission Target. It approaches energy efficiency as a matter of social mobilization, prioritizing heightened public awareness and collaborative partnerships with external stakeholders to cultivate a culture of sustainability across all segments of society. A notable example is the “Enerji Hanım” (“Energy Lady”) project, jointly implemented by the Ministry of Energy and Natural Resources and the Ministry of Family and Social Services, which raises household-level energy-saving and efficiency awareness among women and had reached approximately 35,000 women across 24 provinces by 2022. To operationalize these strategic objectives, the Plan set actions in buildings and services, energy, transportation, industry, agriculture, start-ups, and digitalization, as well as in cross-cutting areas. On the supply and demand sides, the plan drives a comprehensive building renovation program—where the public sector assumes a leading role—while accelerating the deployment of domestic digital applications and innovative technologies. In the industrial and agricultural sectors, the framework focuses on scaling efficiency projects, optimizing agricultural irrigation, and safeguarding the food supply chain to support a broader green transition. Simultaneously, it mandates efficiency improvements across the entire energy value chain to minimize generation, transmission, and distribution losses, while accelerating the market transition toward eco-friendly, circular, and energy-efficient products. The plan recognizes high transportation mobility as a key driver of fuel consumption, addressing this challenge by prioritizing energy-efficient solutions and expanding multi-modal, integrated transit infrastructure. To bridge financing gaps, the framework introduces innovative funding mechanisms designed to de-risk green transition investments and attract international sustainable capital. Türkiye effectively ensures that its national efficiency gains directly support its NDC.

Under the strategic framework of Türkiye's 12th Development Plan (2024–2028), specific structural policy actions are outlined to systematically scale up energy efficiency across the national economy. To overcome traditional investment barriers in the building sector, Action 508.3 mandates the expansion of alternative financing and market-based mechanisms, explicitly prioritizing the deployment of the ESCO model, long-term energy performance contracts (EPCs), and targeted credit guarantee funds to accelerate deep energy renovations. Simultaneously, Action 508.5 channels targeted state support and financial incentives toward energy efficiency investments within energy-intensive industrial sectors; these interventions are strategically designed to balance ambitious GHG mitigation goals with the preservation of domestic production capabilities and global market competitiveness. Recognizing that structural infrastructure upgrades must be accompanied by behavioral and institutional changes, the development plan embeds widespread social mobilization and capacity building into its execution framework. Action 508.6 outlines a comprehensive approach to elevating national energy literacy, mandating widespread public awareness campaigns, promotional initiatives, and specialized training programs to foster an institutional culture of conservation. Finally, Action 508.7 establishes the governance foundation required to manage this decentralized transition by reinforcing the institutional frameworks and

207 MENR. 2024. Energy Efficiency 2030 Strategy and II. National Energy Efficiency Action Plan (2024-2030). 2024.



cultivating the specialized human resources tasked with overseeing energy efficiency mandates nationwide. Together, these actions bridge financial, industrial, and social spheres to align domestic efficiency milestones with Türkiye's broader legally binding 2053 net-zero emission target.

To reduce demand-side consumption and optimize the market transition of eco-friendly products, Türkiye has fully transposed the EU Eco-Design and Labelling Directives (2009/125/EC and 2010/30/EU) into its domestic legislative framework, mandating strict efficiency thresholds and consumer labels for energy-related appliances and systems. This comprehensive regulatory landscape is further reinforced on the financing side by the Presidential Decree on the Procedures and Principles Regarding Energy Performance Contracts in the Public Sector.²⁰⁸ This decree establishes the legal mechanism for public institutions to execute long-term EPCs via the ESCO model, allowing public building renovations and energy infrastructure modernizations to be financed entirely through guaranteed future utility savings without placing an immediate burden on the public budget.

4.2.2.2 Renewable Energy Sources Support Mechanism (YEKDEM)

Türkiye considers renewable energy deployment a cornerstone of its national climate change mitigation strategy and energy security paradigm. Under the framework of the 12th Development Plan (2024–2028), the country has established rigorous infrastructure benchmarks for 2028, targeting an expansion of installed capacity to 18,000 MW for wind power and 30,000 MW for solar energy (Table 22). The realization of these clean energy additions is primarily driven by two complementary legislative mechanisms: the Renewable Energy Support Mechanism (YEKDEM), which provides market stability through regulated feed-in tariffs, and the Renewable Energy Resource Zone (YEKA) initiatives, which catalyze large-scale, high-integrity investments through strategic competitive auctions.

Table 22 – 12th Development Plan renewable energy targets²⁰⁹

	2022	2023	2028
Installed Wind Power Capacity (MW)	11,396	11,700	18,000
Installed Solar Power Capacity (MW)	9,425	11,350	30,000
Share of Renewable Resources in Electricity Generation (%)	42.4	40	50

The introduction of the YEKDEM has significantly accelerated investments in clean energy infrastructure, particularly across the wind and solar power sectors. The underlying financial structure applies specific feed-in tariffs to renewable energy generation facilities holding a valid Renewable Energy Source (RES) Certificate that are commissioned between July 1, 2021, and December 31, 2030. To safeguard investors against macroeconomic fluctuations and maintain the real value of the incentives, these resource-specific feed-in prices are dynamically escalated on a monthly basis according to an indexation formula (25% D-PPI, 15% CPI, 30% USD, 30% EUR), pursuant to Presidential Decree No. 7189.²¹⁰ The adjustment methodology uses an indexation formula calculated using the Domestic Producer Price Index (D-PPI), the Consumer Price Index

208. Official Gazette. “Presidential Decision No. 2850.” no. 2850. 2020. <https://www.resmigazete.gov.tr/eskiler/2020/08/20200821-31.pdf>.

209. SBO. 2023. Twelfth Development Plan (2024–2028). 2023.

210. Official Gazette. “Presidential Decision No. 7189.” no. Issue 32177. 2023. <https://www.resmigazete.gov.tr/eskiler/2023/05/20230501-7.pdf>.



(CPI), and the daily average foreign exchange buying rates for both the US Dollar and the Euro (Table 23).

Table 23 – Details of YEKDEM ²¹¹

Type	Sub-type	YEKDEM Price (01/03/2026) (TL Kuruş/ kWh)	YEKDEM MIN (c/kWh)	YEKDEM MAX (c/kWh)	YEKDEM Period (years)	Local Contribution (01/03/2026) (TL Kuruş/ kWh)	Local Contribution Period (years)
Hydro	Lake (Reservoir)	348.98 (7.73 ¢/ kWh)	6.75	8.25	10	69.81 (1.55 ¢/ kWh)	5
Hydro	River (Run-of-River)	327.16 (7.25 ¢/ kWh)	6.30	7.70	10	69.81 (1.55 ¢/ kWh)	5
Wind	Onshore	256.88 (5.69 ¢/ kWh)	4.95	6.05	10	69.81 (1.55 ¢/ kWh)	5
Wind	Offshore	348.98 (7.73 ¢/ kWh)	6.75	8.25	10	93.15 (2.06 ¢/ kWh)	5
Biomass	Waste Gas / Waste Tyre	256.88 (5.69 ¢/ kWh)	4.95	6.05	10	69.81 (1.55 ¢/ kWh)	5
Biomass	Biomethanization	419.25 (9.29 ¢/ kWh)	8.10	9.90	10	69.81 (1.55 ¢/ kWh)	5
Biomass	Thermal Disposal	326.94 (7.24 ¢/ kWh)	5.75	8.00	10	52.30 (1.16 ¢/ kWh)	5
Geothermal	—	489.59 (10.84 ¢/kWh)	9.45	11.55	15	69.81 (1.55 ¢/ kWh)	5
Solar (PV)	—	256.88 (5.69 ¢/ kWh)	4.95	6.05	10	69.81 (1.55 ¢/ kWh)	5
Storage (Wind/ Solar)	—	302.95 (6.71 ¢/ kWh)	5.85	7.15	10	93.15 (2.06 ¢/ kWh)	10
Pumped Storage Hydro	—	489.59 (10.84 ¢/kWh)	9.45	11.55	15	93.15 (2.06 ¢/ kWh)	10
Wave / Current	—	327.16 (7.25 ¢/ kWh)	6.30	7.70	10	93.15 (2.06 ¢/ kWh)	10 ²¹²

211. Prices published by EPIAŞ on 4 March 2026 under Presidential Decree No. 7189 (Official Gazette No. 32177, dated 01/05/2023).

212. YEKDEM prices are updated monthly using a weighted index: 25% PPI + 15% CPI + 30% USD + 30% EUR. The USD equivalent of each TL kuruş/kWh price must remain within the YEKDEMmin-YEKDEMmax band. The min/max USD-cent bands are fixed by the Presidential Decree and remain unchanged. There is no ceiling or floor price limitation for Local Contribution (yerli aksam) prices. USD equivalents shown above are calculated using the TCMB buying rate of approximately 45.15 TL/USD (May 2026). The rate used for official indexation is the average of the two preceding months. Local contribution (yerli aksam) support tiers as of March 2026: 69.81 kr/kWh for reservoir HES, run-of-river HES, onshore wind, solar, geothermal, and biomethanization/waste gas; 93.15 kr/kWh for offshore wind, storage-integrated wind/solar, pumped-storage HES, and wave/current; 52.30 kr/kWh for thermal disposal facilities. Source: EPIAŞ YEKDEM price announcement, 4 March 2026. For the latest monthly prices, see: www.epias.com.tr.



Under this regulatory framework, the operational parameters for clean energy incentives have been institutionalized through Presidential Decree No. 7189²¹³. This decree specifies the feed-in tariff prices, applicable eligibility periods, and indexation mechanisms for renewable energy generation assets holding a valid Renewable Energy Certificate (YEK) that are commissioned between July 1, 2021, and December 31, 2030. By formalizing these provisions, the legislative decree ensures that the timeline for entering and benefiting from the Renewable Energy Support Mechanism (YEKDEM) has been officially extended through December 31, 2030, offering long-term market predictability and safeguarding capital investments against macroeconomic volatility.

Driven by the long-term price security and structural incentives provided under the YEKDEM, Türkiye's clean energy deployment has experienced extraordinary growth. Supported by this policy framework, the nation's total renewable energy installed capacity reached 81,100 MW, representing 64.65% of the country's total aggregate installed capacity of 125,438 MW as of May 15, 2026. The underlying infrastructure remains anchored heavily by a diversified portfolio, where approximately 64% of this total renewable footprint is derived from a combination of hydraulic installations, standing at 32,307 MW, and wind energy components, yielding 15,105 MW. According to historical tracking data compiled by EPIAŞ, the trajectory of the wind power market underlines the direct impact of these targeted regulations; a utility sector that possessed a marginal installed wind capacity of just 18.9 MW in 2002 has aggressively scaled up to achieve a commanding 15,105 MW milestone by May 2026.

4.2.2.3 Renewable Energy Resource Areas (YEKA)

The By-Law on Renewable Energy Resource Zones (YEKA) introduced a transformative investment model designed to maximize the deployment of clean energy while systematically cultivating a domestic industrial ecosystem. The deployment of utility-scale renewable energy capacity under the YEKA framework is expected to deliver the most significant GHG mitigation impact among national climate policies. The primary objective of the YEKA framework is to ensure the highly efficient and effective utilization of Türkiye's renewable energy potential by designating specialized resource zones across public, treasury, or privately owned lands. By streamlining regulatory processes and offering limited-time power purchase guarantees, the model significantly accelerates project development timelines for investors while simultaneously incentivizing the localization of supply chains and technology transfers through targeted R&D requirements.

Operationally, the YEKA framework utilizes two primary allocation models to drive localized economic value. The first approach mandates that project developers establish domestic manufacturing facilities or form partnerships with local businesses, thereby generating employment for the national workforce and actively investing in localized R&D. The second model specifically requires the direct utilization of locally manufactured components. Underpinning both approaches, the by-law stipulates that all power generation equipment deployed within these zones must be sourced from domestic manufacturers and hold a valid domestic goods certificate. This rigorous localization strategy directly benefits Turkish factories and industrial manufacturers, stimulates the rapid growth of subsidiary supply industries, and ensures that the domestic manufacturing sector serves as a structural backbone for the nation's clean energy transition.

Looking forward, this policy framework remains a core driver of long-term infrastructure planning. Under Activity 511.1 of the 12th Development Plan, Türkiye aims to launch new YEKA bidding rounds

213 Official Gazette. "Regulation on Amendments to the Regulation on Energy Performance in Buildings." In Official Gazette, No. 33255. May 2026. <https://www.resmigazete.gov.tr/eskiler/2026/05/20260516-3.htm>.



that reinforce these local component mandates while expanding the model's scope into innovative frontiers, including the development of the country's inaugural offshore wind YEKA projects.

To encourage the deployment of renewable energy technologies and optimize market entry conditions for clean energy developers, Türkiye implements significant regulatory cost reductions and structural fee exemptions for generation facilities powered by sustainable resources. Under the operational framework established by the EMRA and national grid legislation, clean energy projects benefit from substantial relief from upfront and long-term administrative costs. Specifically, during the pre-construction and early implementation phases, applications for setting up renewable energy facilities—as well as subsequent pre-license and license amendment procedures—are strictly subject to only 10% of the standard administrative fees required for conventional, thermal power plants.

Once these generation assets are successfully commissioned and integrated into the national grid, developers are granted an extended operational cost exemption designed to accelerate the amortization of initial capital investments. Under this statutory provision, the annual license fee is entirely waived for the first 8 years following the date of the asset's initial official temporary acceptance. By systematically lowering the total cost of ownership through this 90% licensing discount and the subsequent 8-year annual fee waiver, the regulatory framework ensures financial viability for sustainable projects, mitigates early-stage cash flow risks, and actively drives private sector engagement to meet Türkiye's expanded clean energy infrastructure targets.

To support the widespread deployment of sustainable energy infrastructure, Türkiye implements long-term land allocation and infrastructural cost reliefs under its primary renewable energy legislation. For generation facilities powered by sustainable resources that were in operation as of May 18, 2005, or are commissioned through December 31, 2030, a substantial 85% discount is applied to all permit, rent, easement, and land usage fees for a fixed period of 10 years starting from the initial date of licensing. This statutory fiscal relief covers not only the immediate generation site itself but also extends across all auxiliary transportation corridors and grid-connected energy transmission lines up to the specific system connection point defined in their licenses. This includes infrastructure elements scheduled for formal transfer to regional distribution companies or the Turkish Electricity Transmission Corporation (TEİAŞ). By lowering the long-term operational and capital costs associated with land acquisition and grid integration, this regulatory framework ensures enhanced project bankability, facilitates faster grid connection timelines, and creates an attractive investment climate to support the realization of the country's expanded 2028 clean energy targets.

4.2.2.4 Electricity Generation from Nuclear Energy

Under the strategic framework of the 12th Development Plan (2024–2028) and the Türkiye National Energy Plan (2020–2035), nuclear power has been institutionalized as a core pillar for ensuring baseload security of supply and driving deep decarbonization. To align with the nation's legally binding 2053 Net Zero Emission target, the National Energy Plan sets a definitive intermediate baseline of 7.2 GW of installed nuclear capacity by 2035, forecasting that nuclear energy will ultimately account for a 29.3% share of the primary energy supply by 2053. The 12th Development Plan actively reinforces this trajectory through a series of mandated, high-level policy actions targeted at structural deployment, supply chain localization, and frontier technology integration. Specifically, Action 510 integrates nuclear energy into the national electricity generation mix while establishing targeted domestic programs to localize the manufacturing and assembly of nuclear technologies, which is directly operationalized by Action 510.1's mandate for the full-scale, multi-



unit commissioning of the flagship Akkuyu Nuclear Power Plant (NPP). Furthermore, Action 510.2 requires continuous pre-development planning to expand national nuclear capacity, while Action 510.3 establishes institutional frameworks to explore advanced energy frontiers such as Small Modular Reactors (SMRs), Generation IV reactors, and nuclear fusion. To anchor these expansion plans in strict environmental governance, Action 510.4 initiates the technical design and site selection processes required to establish a high-security national repository for the long-term, safe disposal of nuclear waste.

4.2.2.5 Cogeneration and Trigeneration

To systematically reduce primary energy consumption and enhance supply security, Türkiye prioritizes the deployment of high-efficiency cogeneration (Combined Heat and Power - CHP) systems as a core component of its national energy strategy. To accelerate private sector adoption, the MENR has implemented targeted regulatory reliefs, notably through the By-law on Unlicensed Electricity Production in the Electricity Market. This regulation exempts facilities that install cogeneration systems for self-consumption from standard corporate establishment mandates and bureaucratic licensing processes. To validate the ecological and technical performance of these installations, MENR has been actively auditing and issuing official efficiency certificates since 2014, a process that ensures qualifying plants meet stringent primary energy-saving thresholds. To anchor these demand-side efficiencies within broader municipal and commercial infrastructure, the 12th Development Plan (2024–2028) introduces Action 508.4. This action mandates the finalization of a dedicated heat market legislative framework, the targeted expansion of district heating and cooling networks, the integration of high-efficiency heat pumps in technically and economically viable zones, and the aggressive scaling of geothermal-sourced district heating systems.

4.2.2.6 Mandatory Energy Audits Programs

Pursuant to the Energy Efficiency Law (Law No. 5627) and the By-law on Increasing Efficiency in the Use of Energy Resources and Energy,²¹⁴ Türkiye mandates structured energy audits across the industrial, commercial, and public sectors. Industrial facilities with annual energy consumption exceeding 1,000 toe are required to conduct energy audits, renewed every four years. Commercial and service-sector buildings with a total built area exceeding 20,000 m² are required to conduct audits every seven years, as are public buildings exceeding 10,000 m² or an annual energy consumption of 250 toe—the latter cycle having been reduced from ten to seven years following a 2019 amendment to the by-law.

4.2.2.7 Energy Sector Research and Development Projects Support Program (ENAR)

The Energy Sector Research and Development Projects Support Program (ENAR) was established to systematically fund, monitor, implement, and evaluate research initiatives focused on technology development and localized innovation. The core objective of the program is to translate scientific and technological advancements into commercialized products and operational systems that directly reinforce national energy policies, enhance security of supply, and foster the growth of domestic energy technologies and industrial manufacturing.

²¹⁴ Official Gazette. “Regulation on Increasing Efficiency in the Use of Energy Resources and Energy.” no. Issue 28097. 2011. <https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=15437&MevzuatTur=7&MevzuatTertip=5>.



4.2.2.8 Incentives for Energy Transformation in Agriculture Sector

Türkiye, rural GHG mitigation in agriculture by scaling water and energy efficiency, modernizing equipment, and consolidating land holdings. Between 2017 and 2021, 18,466 on-farm irrigation modernization projects received 50% grant support, enabling a shift to modern pressurized systems over 183,295 hectares and improving both water use efficiency and energy performance. In the same period, land consolidation procedures were completed for 6.022 million hectares, reducing fuel consumption and logistics inefficiencies associated with fragmented plots and thereby lowering the operational carbon footprint of agricultural activities.

Agricultural fleet renewal has been pursued through low-interest credit schemes introduced in 2018 to replace legacy tractors and harvesters with more efficient models. Under this initiative, financial support was extended to 5,400 tractor replacement projects and a smaller number of specialized harvester upgrades, contributing to lower specific fuel use and emissions per unit of output. Complementing these measures, the Program for the Support of Rural Development Investments provides a 50% direct grant for eligible agricultural projects, including dedicated capital support to integrate on-site renewable energy generation for farms and commercial greenhouses, which reduces grid and fossil fuel dependence in rural areas.

On the infrastructure side, the General Directorate of State Hydraulic Works (DSİ) is progressively decarbonizing large-scale pumped irrigation systems to align with national energy security and net zero objectives. DSİ's pumped irrigation facilities currently require about 500 MW of installed power and consume roughly 600 million kWh of electricity annually.

A phased roadmap aims to replace this consumption with solar power, beginning with 150 MW of solar PV capacity (around 250 million kWh/year) and scaling up to 500 MW (around 750 million kWh/year) by 2030. Pilot operations, such as the Adıyaman Samsat, Elazığ Kuzova, Tunceli Akpazar, Gaziantep Belkıs-Nizip, Afyon Bolvadin, Konya Suğla, and Afyon Merkez pumped irrigation solar power plant, are being used to test and refine this model before wider deployment. Furthermore, adopting a holistic approach to the water-energy-food nexus, DSİ is integrating innovative solutions—such as floating photovoltaic (FPV) systems on reservoirs and irrigation canals—into its agricultural irrigation infrastructure.

These measures are complemented by the continuous expansion and modernization of irrigation networks and targeted support for on-farm systems through low-interest and zero-interest loans, backed by technical assistance from trained agricultural engineers working through agricultural credit cooperatives. Overall, current rural development and agricultural policies continue to prioritize modern irrigation, energy-efficient machinery, land consolidation, and distributed renewable energy solutions as key levers to cut emissions, strengthen energy security, and enhance the resilience of vulnerable rural communities.

4.2.2.9 Inspection Regulation

The formal regulatory architecture for energy governance was substantially strengthened through the enactment of the By-law on Energy Efficiency Inspection.²¹⁵ This statutory instrument officially integrated a robust, structured energy efficiency inspection and enforcement mechanism directly into the foundational Energy Efficiency Law. By codifying these oversight procedures, the regulation established the legal basis for systematic compliance audits, standardized monitoring protocols,

²¹⁵. Official Gazette. "Energy Efficiency Audit Regulation." no. Issue 30470. 2018. <https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=24729&MevzuatTur=7&MevzuatTertip=5>.



and accountability frameworks across regulated sectors to ensure national energy-saving targets are met.

4.2.2.10 Public Lighting

To systematically reduce public sector energy consumption, mitigate indirect GHG emissions, and support national climate mitigation goals, Türkiye has prioritized efficiency upgrades within its public lighting networks. This strategy was formalized through the publication of the Procedures and Principles of Using LED Luminaires in the General Lighting Facilities, which established strict technical guidelines and efficiency benchmarks for outdoor illumination.²¹⁶ Following its enactment, the implementation of energy-efficient LED technologies became mandatory for all newly constructed public lighting facilities starting in 2021. By significantly lowering electricity demand from the national grid, this policy plays an integral operational role in reducing carbon intensity across municipal infrastructure and mitigating fossil fuel-based emissions from power generation, thereby directly contributing to the achievement of Türkiye's NDC mitigation targets.

4.2.2.11 Development of Electricity Storage Capacity

Recognizing grid flexibility as a cornerstone of the clean energy transition, Türkiye heavily emphasizes the strategic deployment of utility-scale energy storage infrastructure. Under the 12th Development Plan (2024–2028), the government has established a clear national roadmap to scale the country's aggregate battery storage capacity from a baseline of 0 MW in 2022 and 2023 up to a definitive target of 5,000 MW by 2028 (Table 24).

Table 24 – 12th Development Plan battery storage capacity targets²¹⁷

Type	2022	2023	2028
Battery Storage Capacity (MW)	0	0	5,000

To accelerate private capital deployment toward this 5,000 MW milestone, the EMRA enacted landmark structural reforms through the By-law Amending the By-Law on Electricity Market License²¹⁸ and subsequent board decisions in late November 2022.²¹⁹ Türkiye aims to aggressively expand its wind and solar generation base, unlock low-risk merchant investment opportunities, and establish a resilient nationwide network of electricity storage units. Synthesizing generation with storage directly mitigates the intermittent supply profiles and grid imbalances typical of variable renewables, structurally reinforcing the long-term security and stability of the national transmission grid. This expanding 33.1 GW storage-linked project pipeline underscores a massive acceleration in grid flexibility infrastructure, vastly outstripping the initial 7.5 GW national storage baseline targeted for 2035 in the Türkiye National Energy Plan.

216. MENR. (2015). Procedures and Principles Regarding the Use of LED Luminaires in General Lighting. https://enerji.gov.tr/Media/Dizin/BHIM/tr/Duyurular/genel_aydinlatma_usul_ve_esaslar_202110120910.pdf

217. SBO. Twelfth Development Plan (2024–2028). 2023.

218. The Official Gazette dated 19 November 2022 and numbered 32018.

219. Published in the Official Gazettes dated 24 November 2022 and numbered 11412-1 and 11412-2 and published in the Official Gazette dated 25 November 2022 and numbered 32024.



4.2.2.12. Energy Management Program

Introduced under the foundational Energy Efficiency Law (No. 5627) in 2007, the Energy Management Program is a key regulatory policy instrument implemented under the authority of the MENR. The overarching objective of the program is to systematically increase energy efficiency and optimize energy performance across end-use, public, industrial, and energy supply sectors. It provides the statutory basis for energy governance by mandating structured energy audits and requiring large industrial installations, commercial building complexes, and public institutions to establish dedicated energy management units, appoint certified energy managers, and adopt international energy management standards such as ISO 50001.

The program serves as an operational pillar within Türkiye's broader strategic frameworks, including the Energy Efficiency 2030 Strategy and the 2nd National Energy Efficiency Action Plan (2024–2030), and the Climate Change Mitigation Strategy and Action Plan (2024–2030). By institutionalizing continuous energy monitoring, enforcing saving benchmarks across public and private estates, and mitigating primary energy losses, the program plays a critical role in curbing fossil fuel reliance and reducing CO₂ emissions. Through these sustained efficiency measures, the Energy Management Program directly supports the implementation of Türkiye's Second NDC (NDC 3.0) economy-wide mitigation goals and advances the long-term transition toward the 2053 net-zero emission objective.

The structural mitigation pathways, regulatory directives, and sectoral policies designed to systematically reduce GHG emissions across Türkiye's energy infrastructure are comprehensively cataloged in Table 25.

**Table 25 – Energy sector policies and measures**

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1-Improving Energy Efficiency	Energy,	All GHG	Reducing energy intensity across buildings, industry, transport, and energy supply through minimum performance standards, audits, and energy management programmes	Regulatory	Implemented	2007	MENR	NE
2 - Renewable Energy Sources Support Mechanism (YEKDEM)	Energy	CO ₂	Increase in renewable power generation	Regulatory, Fiscal	Implemented	2011	MENR, EMRA	NE
3 - Renewable Energy Resource Areas (YEKAs)	Energy	CO ₂	Increase in renewable power generation	Fiscal, Economic	Implemented	2016	MENR	NE
4 - Electricity Generation from Nuclear Energy	Energy	CO ₂	Decreasing GHG emissions through the use of nuclear energy	Infrastructure Development	Adopted	2010	MENR	NE
5 - Cogeneration and Trigenation	Energy	CO ₂	Dissemination of cogeneration systems with the cogeneration plant efficiency certificate issued for the facilities that provide a minimum efficiency value, an electricity/heat ratio value, and primary energy savings of at least ten percent or more	Regulatory	Implemented	2014	MENR	NE
6 - Mandatory Energy Audit Programs	Energy	CO ₂	Determination of energy-saving potential in industry, building, service, and energy	Regulatory	Implemented	2012	MENR	NE
7 - Energy Sector Research and Development Projects Support Program (ENAR)	Energy	All gases	Promotion of sustainable energy policies, supply security, local energy technologies, and industry products and systems.	Economic, other	Implemented	2010	MENR	NE
8 - Incentives to Energy Transformation in Rural Areas	Energy	CO ₂	Promotion of water- and energy-efficient irrigation systems through financial support and awareness raising: Sustainable Energy Financing Mechanism for Solar Photovoltaic Systems in Forest Villages in Türkiye	economic, regulatory, informative, other	Implemented	2017	MENR	NE
9 - Inspection Regulation	Energy	CO ₂	Ensuring the effectiveness of energy efficiency applications	Regulatory	Implemented	2018	MENR	NE
10 - Public lighting	Energy	CO ₂	Decreasing GHG emissions resulting from public lighting	Infrastructure Development	Implemented	2021	MENR	NE
11 - Development of Electricity Storage Capacity	Energy	CO ₂	Supporting an increase in renewable power generation	Infrastructure Development	Adopted	2022	MENR, EMRA	NE
12 - Energy management Program	Energy	CO ₂	Increasing energy efficiency in end-use, public, and energy sectors	Regulatory	Implemented	2007	MENR	NE



4.2.3 Buildings

Overview

Türkiye aims to accelerate the structural energy transformation of its building stock by promoting energy-efficient buildings integrated with renewable energy technologies and by preparing the necessary supporting regulations. The 12th Development Plan outlines the finalization of heat market legislation, paving the way to increase the deployment of centralized district heating and cooling systems alongside advanced heat pumps where technically and economically viable, while simultaneously accelerating studies to maximize the direct utilization of geothermal resources for residential heating.

Türkiye's buildings sector is a core component of the NDC and net-zero emissions by 2053. Türkiye Building Sector Decarbonization Roadmap (2023), which aligns sectoral activities with long-term climate goals, focuses on enhancing energy and resource efficiency, electrification, and low-carbon innovation.

Türkiye's building sector policies are central to achieving its 2053 net-zero emission target, primarily focusing on energy efficiency, the integration of renewable energy, and digital transformation. As of the 2024 GHG emissions inventory, the building sector accounted for 11.27% of Türkiye's total GHG emissions, highlighting its significant role in the national mitigation strategy. A primary pillar of the strategy is the decarbonization of energy used directly in buildings by increasing on-site renewable energy production and transitioning buildings into prosumers (producer-consumers). This effort is supported by the expansion of district heating and cooling systems, particularly those utilizing geothermal energy or waste heat from industrial and energy sectors. In collaboration with local governments, Türkiye also aims to promote micro-cogeneration and renewable heat technologies to reduce the carbon intensity of space and water heating. The implementation of Nearly Zero Energy Building (nZEB) standards is a critical regulatory measure, already mandatory for new buildings over 2,000 m² as of 2022. Sustainability is further institutionalized through the National Green Certificate System (YeS-TR), which evaluates buildings' environmental and social performance throughout their lifecycle. Starting in 2026, all new public buildings exceeding 10,000 m² will be required to obtain this certification. These efforts are strengthened by the digitalization of the construction ecosystem, including the widespread use of Building Information Modeling (BIM), life cycle analysis (LCA), and AI-based smart building solutions. On the adaptation side, building strategies emphasize resilience against climate-related disasters and the urban heat island effect. Crucially, these climate adaptation measures explicitly yield substantial mitigation co-benefits; by mitigating thermal stress and reducing urban heat island impacts, they significantly lower energy demand for building cooling, thereby reducing indirect GHG emissions. Standards are being established for roof and facade materials to improve thermal resilience, while legislation on rainwater and greywater harvesting is being enhanced. Additionally, urban transformation projects prioritize risky structures in flood-prone areas, ensuring that disaster and climate risks are integrated into the modernization of the existing building stock.

Türkiye's building sector mitigation strategy targets both existing and new buildings. For new buildings, the nearly Zero Energy Building (nZEB) approach applies to all buildings with a total construction area of 2,000 m² or more, a threshold that has been in effect since 1 January 2025 (previously 5,000 m², phased in from 2023). These efforts are complemented by the 2025 update to the TS 825 thermal insulation standard, which aligns energy limits more closely with EU levels and now explicitly incorporates cooling requirements alongside heating. The sector also aims to improve appliance and equipment efficiency by harmonizing national regulations with the EU



Ecodesign Directive and the Energy Labelling Regulation. In parallel, Türkiye is expanding district heating and cooling systems in mass housing estates, supported by mapping studies to match heat pump and renewable energy potential with building demand.

Türkiye's building policies under the Climate Change Adaptation Strategy and Action Plan (2024-2030) focus on enhancing structural resilience and resource efficiency to manage hazards like flooding and extreme heat. Primary actions include transforming buildings in flood-prone areas, scaling up green roofs and facades, and mandating rainwater harvesting for buildings on plots larger than 2,000 m². Regulatory oversight is provided through the Law on Construction Inspection, which enforces thermal insulation standards, and the Law on the Transformation of Areas under Disaster Risk, which facilitates urban regeneration in high-risk zones. Furthermore, the plan promotes the integration of district heating/cooling systems and the repurposing of unused structures into emergency shelters to bolster urban resilience.

The Energy Efficiency 2030 Strategy and II. National Energy Efficiency Action Plan (2024-2030) designate the buildings and services sector as a critical priority for Türkiye's final energy consumption. The primary strategic mission is to implement a comprehensive improvement program in which the public sector leads the way in reducing carbon emissions through energy-efficient solutions and approaches. This is supported by specific objectives, including the establishment of a functioning heat market, improving energy performance in all public service buildings and infrastructure, and continuing incentive programs for the rehabilitation and insulation of private residential and commercial buildings. Sustainability in these efforts is further underpinned by an objective to develop the necessary institutional, technical, and financial frameworks. Concrete measures in the strategy emphasize public sector leadership, setting a mandatory 30% energy-saving target for 2030 in public buildings. To fund these improvements, the government is expanding the use of EPC, allowing investments to be repaid through the resulting energy savings. For existing private residences, the strategy focuses on the rehabilitation of building stock through insulation campaigns and low-interest loans, while also exploring additional financial incentives for high-efficiency equipment like heat pumps. Municipalities are also being integrated into the strategy, with plans to reduce energy-intensive water loss and leakage in city lines and a push for local administrations to obtain International Organization for Standardization (ISO) 50001 Energy Management System certification. The strategy also prioritizes modernizing heat systems and technical capacity.

The regulatory framework for buildings is anchored by Energy Efficiency Law No. 5627 and the Regulation on Energy Performance in Buildings, which regulates procedures for efficient resource use and waste prevention. A key legislative measure is Presidential Circular No. 2023/15, which mandated an increase in the energy-saving target for public buildings from 15% to 30% by 2030.²²⁰

Energy Efficiency Law No. 5627 introduced the first mandatory legal provisions for building energy management in Türkiye and explicitly authorized the drafting of targeted secondary regulations to enforce energy-efficiency targets in the built environment. The Regulation on Energy Performance in Buildings, enacted in December 2008, is an overarching by-law that regulates the efficient deployment of energy resources, mandates waste prevention, and governs environmental protection throughout a building's operational lifecycle. It established the legal requirement for

220. Official Gazette. "Presidential Circular No. 2023/15 on Energy Savings in Public Buildings." 2023. <https://www.resmigazete.gov.tr/eskiler/2023/11/20231104-5.pdf>.



the Energy Performance Certificate (EPC), which serves as the official document certifying a building's energy consumption metrics and GHG emissions.

In effective April 1, 2025, a major regulatory update was enacted via the Circular Regarding TS 825 Standard on Thermal Insulation Rules in Buildings. To address changing climate patterns, the updated code integrates mandatory cooling requirements alongside traditional heating limitations. It also dynamically expands the country's climate-zone classification from four regions to six distinct climate zones, while tightening baseline thermal insulation parameters. Per the updated technical communiqué published on April 25, 2025, the data infrastructure powering the national energy performance calculation software (Building Energy Performance Application—BEP-TR) was fundamentally overhauled.

Through an amendment to the Regulation on Planned Areas Zoning published on March 11, 2025, the MoEUCC introduced the progressive rollout of building Life Cycle Analysis (YDA). This framework accounts for total ecological footprints spanning the entire asset timeline—from initial architectural design and raw material sourcing through construction, operation, maintenance, and ultimate demolition or material recovery. Building upon this initiative, a subsequent regulatory amendment published on May 16, 2026, made the Building LCA Certificate mandatory for all buildings with a gross floor area of 10,000 m² and above. This regulation established legal authorization and qualification criteria for certified experts who will prepare these assessments. Furthermore, starting from January 1, 2027, the submission of the Building LCA Certificate alongside the EPC will become a mandatory requirement for occupancy permit applications.

Grounded in the Green Certificate Regulation for Buildings and Settlements, YeS-TR operates as Türkiye's voluntary national green building standard. It establishes rigorous criteria to evaluate and verify the holistic environmental, social, and structural sustainability profiles of individual buildings and large-scale settlements.

Based on Türkiye's Energy Efficiency 2030 Strategy and II. National Energy Efficiency Action Plan (2024–2030), the Second NDC, the Long-Term Climate Strategy, and the Climate Change Mitigation and Adaptation Strategy and Action Plans (2024–2030), Türkiye is pursuing building-sector emission reductions through several regulatory tracks. All new buildings must achieve at least an EPC Class C rating under the Regulation on Energy Performance of Buildings, with the TS 825 insulation standard now aligned with EU energy limits and extended to cover cooling as well as heating. Nearly Zero Energy Building (nZEB) requirements were introduced by the Official Gazette No. 31755 amendment of 19 February 2022: initially applicable to buildings above 5,000 m² with a 5% renewable share during the 2023–2025 transition period, then permanently lowered to a 2,000 m² threshold with a 10% renewable share from 1 January 2025 onward; no provision removes this threshold after 2026. Türkiye's Building Sector Decarbonization Roadmap further envisions new residential buildings meeting nZEB standards through 2032, advancing to EPC Class A between 2033 and 2042, and all buildings reaching Net Zero Operational Carbon status between 2043 and 2053, alongside a 5% annual retrofit rate for buildings constructed between 2000 and 2010 through 2043. Complementary measures include renewable-supported central hot water systems in hotels, hospitals, dormitories, and sports facilities above 2,000 m²; mandatory YeS-TR green certification from 2026 for new public health, education, dormitory, and service buildings above 10,000 m²; and, under amendments to the Planned Areas Zoning Regulation, rainwater harvesting for plots above 2,000 m² or roofs above 1,000 m², alongside greywater recycling from 1 January 2026 for accommodations with over 200 beds, shopping centers above 10,000 m², and public buildings above 30,000 m².



4.2.3.1 Increasing Energy Performance of New Buildings

Introduced under the By-law on Energy Performance of Buildings, the EPC serves as a mandatory regulatory instrument designed to provide transparent data regarding the primary energy demand and CO₂ emissions profiles of new constructions, as well as existing properties subject to market sale or lease agreements. To operationalize and standardize this certification process nationwide, the country developed and deployed the proprietary BEP-TR software, a centralized calculation engine administered under the MoEUCC. Under this statutory framework, all new buildings are legally required to achieve at least a Class C energy performance rating to secure an occupancy permit. This systemic enforcement has led to widespread compliance and measurable market penetration across the national building stock. Between the inception of the program in 2011 and the end of June 2026, a cumulative total of 1,431,181 buildings successfully completed audits and received their official EPCs. Demonstrating high structural alignment with national energy codes, 1,322,415 of these certified properties successfully achieved a Class C or higher efficiency rating (Classes A, B, and C).

4.2.3.2 Near Zero Energy Buildings (nZEBs)

Through a strategic amendment to the By-law on Energy Performance of Buildings enacted in 2022, Türkiye formally integrated the “Nearly Zero Energy Buildings” (nZEB) concept into its national building code. Under this high-performance standard, an nZEB-compliant structure is defined as one that achieves a heightened efficiency rating of at least an EPC Class B while simultaneously sourcing a minimum of 10% of its primary energy consumption from on-site or nearby renewable energy installations. To operationalize this decarbonization milestone, the regulation mandates that all newly constructed buildings with an aggregate construction footprint of 2,000 m² or greater must be built in strict compliance with these nZEB criteria effective January 1, 2025.

4.2.3.3 Introducing Low-Carbon Building Certificate

“Low-carbon building certificate” for buildings with low operational GHG emissions has been incorporated into the By-law on Energy Performance of Buildings in 2026. In addition, it has been stipulated that the low-carbon building certificate may only be issued via BEP-TR by authorised EPC experts for buildings with a minimum GHG emission class of B and a minimum energy performance class of C. It has been made mandatory to submit the life cycle analysis certificate for buildings with a construction area of 10,000 m² and above to the relevant authority together with the EPC at the building occupancy permit stage, and a transition clause has been introduced for certain public works contracts tendered before 1/1/2027.²²¹

4.2.3.4 Building Life Cycle Analysis Certificate

The scope of By-law on Energy Performance of Buildings has been updated so that it no longer focuses solely on the “heating and cooling” of buildings, but more broadly on their “climatisation for human comfort,” and new concepts have been introduced to assess GHG emissions over the building’s entire life cycle. In this context, the concept of “building life cycle analysis” has been defined, under which the GHG emissions caused by the building—from raw material supply to demolition and waste disposal, including any reuse and energy export—are calculated via BEP-TR, and the resulting “building life cycle analysis certificate.” Furthermore, through a regulatory

²²¹ Official Gazette. “Regulation on Amendments to the Regulation on Energy Performance in Buildings.” In Official Gazette, No. 33255. May 2026. <https://www.resmigazete.gov.tr/eskiler/2026/05/20260516-3.htm>.



amendment published on May 16, 2026, the Building Life Cycle Assessment Certificate was made mandatory for all buildings with a floor area of 10,000 m² and above. This amendment established the legal authorization principles and qualification criteria for experts preparing these evaluations. Starting from January 1, 2027, the submission of this certificate alongside the EPC will become a mandatory prerequisite for occupancy permit applications.²²²

4.2.3.5 Increasing Energy Performance of Public Buildings and Building Complexes

Under the By-law on Energy Performance of Buildings, Türkiye has enforced design thresholds for space conditioning. Since April 1, 2010, all newly constructed buildings with a total floor area exceeding 2,000 m² are legally required to install central heating systems. For non-residential properties, central cooling system architectures must be integrated into any design where the peak cooling demand exceeds 250 kW. To preserve the operational integrity of these centralized networks, the Property Ownership Law (Law No. 634) establishes high statutory barriers for modifying existing heating infrastructure. Converting a building's central heating network into individual systems requires the affirmative vote of at least 50% of the co-owners. For any property boasting a total construction footprint of 2,000 m² or greater, transitioning from a centralized system to individual units requires the unanimous approval of all flat owners. To ensure equitable cost allocation and incentivize conservation, the installation of individual metering and thermal control systems for both central heating and domestic hot water has been strictly mandatory since May 2, 2012.

In 2018, Türkiye expanded its energy efficiency framework by legally permitting public infrastructure managers to procure efficiency services through authorized Energy Service Companies (ESCOs). Under this mandate, public buildings that cross a structural threshold of 10,000 m² or exhibit an annual energy demand exceeding 250 toe are directed to contract ESCOs. These public-private partnerships leverage Energy Performance Contracts (EPCs) with a maximum statutory duration of 15 years, allowing facilities to fund modernizations directly through verified utility savings.

To standardize this procurement channel, the Presidential Decree on the Procedures and Principles Regarding Energy Performance Contracts in the Public Sector²²³ was enacted in 2020. This decree provides the overarching administrative framework to govern energy-saving agreements across central and regional government bodies. To operationalize the decree, the Ministry published a comprehensive implementation communiqué in April 2021, standardizing critical transactional artifacts, including mandatory energy audit report formats, technical specifications, and official contract templates.

Complementing the long-term ESCO framework, a targeted Presidential Circular issued on August 16, 2019, established immediate operational efficiency targets for government real estate, mandating that all public buildings required to retain a certified energy manager under Energy Efficiency Law No. 5627 must achieve a minimum 15% energy savings benchmark by the end of 2023 compared to their historical baselines. This short- to medium-term regime was subsequently reinforced by an updated Presidential Circular dated November 4, 2023 (No. 2023/15), which updates and extends the obligation by raising the minimum savings target to at least 30% by 2030 for the same portfolio of public buildings and by anchoring implementation in a dedicated 'Public Buildings Savings Target and Implementation Guideline (2024-2030)', thereby aligning

²²². Official Gazette. "Regulation on Amendments to the Regulation on Energy Performance in Buildings." In Official Gazette, No. 33255. May 2026. <https://www.resmigazete.gov.tr/eskiler/2026/05/20260516-3.htm..>

²²³. Official Gazette. "Procedures and Principles Regarding Energy Performance Contracts in the Public Sector." 2020.



operational efficiency requirements in the public estate with Türkiye's broader energy efficiency and emission reduction objectives.²²⁴

4.2.3.6 Promotion of Thermal Insulation Standard (TS 825)

To enforce building envelope integrity, the By-law on Energy Performance of Buildings mandates that all structural designs comply with the national Thermal Insulation Standard for Buildings (TS 825). On April 1, 2025, a comprehensive technical update of the TS 825 standard officially entered into force. The modernized TS 825 standard introduces three fundamental structural changes to Türkiye's building code. First, moving beyond traditional heating metrics, the updated framework factors mandatory cooling energy demands directly into the building insulation calculation matrix to mitigate increasing summer cooling loads. Second, baseline thermal transmittance values (U-values) were thoroughly revised and restricted, requiring enhanced insulation thickness and superior material performance across building facades, roofs, and fenestration. Third, to reflect microclimate variations more accurately, the country's building-climate map was dynamically expanded, increasing the number of distinct climate zones from four to six regional zones.

4.2.3.7 YeS-TR

The **By-law on Green Certificate for Buildings and Settlements** established a structural framework for environmentally friendly practices across their design, construction, and operational lifecycles.²²⁵ This comprehensive national rating system assesses a broad matrix of sustainability parameters, including sustainable building materials, energy efficiency, water conservation, indoor environmental quality, land use, integrated urban design, and long-term socio-economic viability.

YeS-TR platform is a mandatory legal prerequisite for securing a new building permit for any public health, education, or administrative service building boasting a total construction area of 10,000 m² or greater. To operationalize this transition, the government published the Green Certificate Implementation Guide for Public Buildings, a dedicated technical manual that clarifies how specific sustainability criteria map onto architectural design and construction workflows, enabling public institutions to manage the compliance process effectively.

To extend the reach of the national green certificate system globally, the international version—YeS-INT—was developed under a protocol signed with Istanbul Technical University (ITU) on April 8, 2025. Following this agreement, the YeS-INT Guide was officially completed by the end of 2025, with software development actively underway to support its international application. Furthermore, on March 13, 2026, a cooperation protocol was signed among Emlak Konut REIC and the Turkish Environment Agency (TUCA) to ensure that ongoing and future construction projects are executed in full alignment with both YeS-TR and YeS-INT standards.

In the short term, Türkiye aims to expand the capacity of the YeS-TR system, foster employment in the green building sector, and establish the rating framework as a recognized national brand. Through YeS-INT, the nation plans to actively introduce and scale this standard across international markets—focusing particularly on regions with strong commercial ties to Türkiye, including the Turkic Republics, the Middle East, Arab nations, and the Balkans.

²²⁴. Official Gazette. "Presidential Circular No. 2023/15 on Energy Savings in Public Buildings." 2023. <https://www.resmigazete.gov.tr/eskiler/2023/11/20231104-5.pdf>.

²²⁵. Official Gazette. "Regulation on Green Certificate for Buildings and Settlements." 2022. <https://www.resmigazete.gov.tr/eskiler/2022/06/20220612-1.htm>.



4.2.3.8 Higher Financial Incentives for Better EPC Buildings

Credit limits for A, B, and C energy performance class buildings have increased. On January 29, 2026, the Banking Regulation and Supervision Agency (BDDK) issued a rule on housing loans. Under this rule, the benefit previously given to A and B energy class homes is now also applied to C energy class homes. The loan-to-value ratio of the house taken as collateral is set as shown in Table 26.²²⁶

Table 26 – Maximum loan amount for housing acquisitions and housing-collateralized loans

Property Value	Energy Class A-B	Energy Class C	Other Energy Classes
Value ≤ 5 million TRY	Value x 90%	Value x 80%	Value x 70%
5 million TRY < Value ≤ 7 million TRY	Value x 80%	Value x 70%	Value x 60%
7 million TRY < Value ≤ 10 million TRY	Value x 70%	Value x 60%	Value x 50%
10 million TRY < Value ≤ 20 million TRY	Value x 50%	Value x 40%	Value x 30%
20 million TRY < Value	Value x 40%	Value x 30%	Value x 20%

To promote energy efficiency in the building sector, in addition to industrial facilities, building, agriculture, and service sectors were included in the scope of the Efficiency Improving Project (VAP) Support under Law No. 7346, enforced on 25 December 2021.²²⁷ Since then, the VAP programme has been significantly updated. Offices, business centers, shopping malls, hospitals, and large campuses are now eligible to receive energy efficiency incentives of up to 21.6 million TRY per project—a major increase from the earlier programme ceiling. Public buildings are also required to obtain a “green building certificate” as of 2026, with the aim of ensuring that newly constructed public buildings are more energy efficient.

4.2.3.9 Reducing Heating-Related Direct GHG Emissions in Buildings

The 12th Development Plan and the Climate Change Mitigation Strategy and Action Plan (2024–2030) fundamentally pivot toward deep decarbonization to align with Türkiye’s 2053 Net Zero Emission Target. Direct GHG emissions through improving energy efficiency and electrification are major measures. Furthermore, priorities include expanding localized and mass-housing district heating and cooling networks, supported by advanced GIS mapping, to match building demand with low-carbon thermal sources such as geothermal energy and high-temperature industrial and power plant waste heat.

Table 27 outlines the strategic matrix of policies and targeted mitigation measures enacted by Türkiye within its buildings sector to systematically lower the country’s GHG emissions.

226. Decision of the Banking Regulation and Supervision Agency, No. 11364, dated 29.01.2026.

227. Official Gazette. “Law No. 7346.” 2021.

**Table 27 – Buildings sector policies and measures**

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1- Increasing Energy Performance of New Buildings	Buildings	CO ₂	Increasing Energy Performance of New Buildings	Regulatory	Implemented	2008	MoEUCC	NE
2 - Nearly Zero Energy Buildings (nZEB)	Buildings	CO ₂	Increasing Energy Performance of New Buildings	Regulatory	Implemented	2022	MoEUCC	NE
3-Introducing low-carbon building certificate	Buildings	CO ₂	Promoting low-operational-emission buildings by introducing a low-carbon building certificate issued via BEP-TR for buildings with at least GHG emission class B and energy performance class C	Regulatory and information instrument	Implemented	2026	MoEUCC	NE
4-Building life cycle analysis certificate	Buildings	CO ₂	Introducing mandatory life-cycle GHG assessment for large buildings, requiring a building life cycle analysis certificate via BEP-TR for buildings of 10,000 m ² and above at the occupancy permit stage	Regulatory and information instrument	Adopted	2027	MoEUCC	NE
5 - Increasing Energy Performance of Public Buildings and Building Complexes	Buildings	CO ₂	Promotion of central heating and utilization of solar power systems. A 15% energy-saving target in Public Buildings Energy Performance Contracts in Public Buildings. Annual energy consumption in buildings and premises of public institutions will be decreased by 10% until 2015 and by 20% until 2023.	Regulatory	Implemented	2008	MoEUCC, MENR	NE
6- Promotion of Thermal Insulation Standard (TS 825)	Buildings	CO ₂	Increasing energy efficiency of buildings	Regulatory	Implemented	2008	MoEUCC	NE
7 - Green Certificate System (YeS-TR)	Buildings	CO ₂ , CH ₄	Reducing environmental impacts of buildings, including energy consumption, waste, and others.	Voluntary, Mandatory (Public Buildings)	Implemented	2022	MoEUCC	NE
8 - Higher Financial Incentives for Better EPC Buildings	Buildings	CO ₂	Increasing energy efficiency of buildings through financial incentives	Economic, Regulatory	Implemented	2019	MoEUCC, MENR	NE
9 - Reducing heating-related direct GHG emissions in buildings	Buildings	CO ₂	Reducing energy emissions of buildings and air pollution	Infrastructure Development	Implemented	2006	MoEUCC, MENR	NE



4.2.4 TRANSPORT

Overview

Türkiye's transport sector and climate mitigation strategies have been comprehensively modernized to align with international commitments. These policies are systematically set in the 12th Development Plan (2024–2028), Climate Change Mitigation and Adaptation Action Plans, 2053 Long-Term Strategy, the Türkiye National Energy Plan (2020–2035), the 2053 Transport and Logistics Master Plan (NTLMP), and the National Intelligent Transportation Systems Strategy Document.

One of the six overarching goals of Türkiye's 2053 National Transport and Logistics Master Plan (NTLMP)²²⁸ — “Ensuring Environmental Sensitivity and Increasing Energy Efficiency in Transport and Logistics” — comprises five action areas directly relevant to the country's climate policy: accelerating the deployment of renewable energy across the transport and logistics value chain; reducing dependence on petroleum products while rebalancing transport modes on environmental grounds; institutionalizing the “Polluter Pays” principle through fair and transparent criteria; mandating green terminal/building certification for airports, seaports, dry ports, rail hubs, and highway terminals; and protecting natural, agricultural, and cultural assets during the planning and construction of new transport infrastructure.

The Green (Sustainable) Scenario has been selected as the foundational blueprint for Türkiye's NTLMP. This scenario strategically prioritizes a major modal shift—diverting passenger and freight traffic away from carbon-intensive highways and toward electrified rail networks—alongside targeted public investment programs. Utilizing 2019 as its baseline year, the macro-transportation model establishes clear milestone projections for 2035 and 2053.

The Green (Sustainable) Scenario is the foundational blueprint for Türkiye's NTLMP, using 2019 as its macro-transportation model baseline year and projecting milestones for 2023, 2029, 2035, and 2053. It prioritizes shifting passenger and freight traffic from carbon-intensive highways to electrified rail, targeting 8,554 km of new railway lines by 2053 (6,196 km rapid rail, 1,474 km conventional, 622 km high-speed, and 262 km very high-speed), expanding rapid-rail connectivity from 8 to 52 provinces.²²⁹ Under this scenario, rail's share of freight is set to rise from 5.08% (2023) to 21.93% (2053), while road freight falls from 71.39% to 57.47%, and rail's passenger share grows from 0.96% to 6.20%.²³⁰ Complementary decarbonization measures include sourcing 35% of rail's operational energy from renewables, accelerating highway electrification and alternative-fuel vehicle infrastructure, expanding Green Port certification, adopting sustainable aviation fuels, and building a comprehensive MRV framework for transport emissions.

The National Intelligent Transportation Systems (ITS) Strategy Document and 2020–2023 Action Plan remain Türkiye's primary sector-specific ITS guide, comprising 31 actions and 54 implementation steps.²³¹ Although its formal period has expired, no successor action plan has

228. MoTI. “2053 Transport and Logistics Master Plan.” Ankara, Turkey, 2022. <https://www.uab.gov.tr/media/3cgbeluf/20221025-2053-ulasirma-ve-lojistik-ana-plani-eng.pdf>.

229. Turkish State Railways [TCDD]. Energy Management and Climate Change Action Plan 2023–2025. Ankara, Türkiye, 2023.

230. MoTI. 2022. “2053 Transport and Logistics Master Plan.” Ankara, Turkey, 2022. <https://www.uab.gov.tr/media/3cgbeluf/20221025-2053-ulasirma-ve-lojistik-ana-plani-eng.pdf>.

231. MoTI. 2020. National Intelligent Transportation Systems Strategy Document and 2020–2023 Action Plan. Ankara, Turkey, 2020. <https://www.uab.gov.tr/media/14xfzlxz/ulusal-akilli-ulas-im-sistemleri-strateji-belgesi-ve-2020-2023-eylem-plani-eng.pdf>.



been formally published—though a draft 2024–2030 ITS action plan has circulated for stakeholder consultation since mid-2025, and its core targets have meanwhile been folded into the General Directorate of Highways’ 2024–2028 Strategic Plan. This plan aims to extend ITS-equipped road segments from 54 km to 100 km and complete a 1,400 km fiber-optic communication backbone by end-2025.²³² ITS deployment aims to cut travel times, improve traffic safety, optimize road capacity, and support energy efficiency through real-time data exchange among users, vehicles, infrastructure, and control centers, with growing coordination alongside the emerging National Smart Cities Strategy and Action Plan on urban resilience and climate adaptation.

The MoTI has launched a strategic project funded by the EU, titled “Türkiye’s Net Zero Emission Target: Road Map for Transport.” This initiative is designed to formulate a comprehensive and structured zero-emission transition roadmap extending to 2053, spanning all key transport sub-sectors: road networks, urban mobility systems, aviation, maritime shipping, and rail transport.

The primary objective of the project is to deliver an actionable, data-driven roadmap equipped with concrete policy targets, localized decarbonization strategies, and practical solution frameworks. By incorporating specific key performance indicators (KPIs), this roadmap will serve as an integrated national guidance document, charting a clear and measurable path to successfully align the entire transport sector with Türkiye’s 2053 net-zero emission mandate.

4.2.4.1 Modal Shift to Public Transport

To expand sustainable municipal transport and lower urban transport emissions, the MoTI actively finances and executes large-scale public transit projects. These electrified rail system initiatives are strategically designed not only to meet Türkiye’s growing transit demands but also to generate significant socio-cultural, tourism, macroeconomic, commercial, and ecological benefits by displacing private vehicle use. Leading these efforts, the Directorate General of Infrastructure Investments has successfully completed and commissioned seven major rail transit infrastructure projects across the metropolitan cities.

To formalize micromobility within urban transit networks and accelerate a structural modal shift toward shared mobility, Türkiye enacted the groundbreaking By-law on Electric Scooters in April 2021. Developed through a collaborative, multi-agency initiative combining the technical jurisdictions of the MoTI, the MoEUCC, and the Ministry of Interior (MOI), this statutory instrument introduces rigorous national standards governing the operational lifecycle of shared electric scooter commercial activities. Specifically, the framework regulates market entry by establishing a formal licensing and permitting architecture for commercial micromobility operators, standardizes the digital orchestration of e-scooter fleets within municipal boundaries, and codifies mandatory public safety protocols, speed thresholds, and designated usage zones. By institutionalizing these clear legal parameters for both operators and users, the by-law serves as a key regulatory catalyst to reduce short-distance private vehicle trips, alleviate urban traffic congestion, and lower localized transport emissions.

The By-law was subsequently amended in December 2025 (published in the Official Gazette on 2 December 2025), introducing significant new requirements for operators. Key additions include mandatory geo-fencing to software-restrict e-scooter access to prohibited areas, real-time location tracking integrated into the Ministry’s U-Net digital platform (active scooters every 3 minutes, parked within 10 minutes), a two-year operating permit regime with one-year extensions,

232. GDH, 2024. General Directorate of Highways. 2024–2028 Strategic Plan. Ankara, Türkiye, 2024.



enhanced mobile application requirements including carbon footprint comparisons, and a 30% domestic production requirement for the e-scooter fleet (effective 1 July 2026).

The General Directorate of Highways has completed the construction of a 103.64 km-long bicycle path, and the construction of a 46.25 km-long bicycle path continues. In addition, the project for the 244.80 km-long bicycle path has been completed, and the project studies for the 80.55 km-long bicycle path are ongoing.

The MoTI's Mobility Hub Design Guide sets out standardized typologies and components to help metropolitan municipalities plan integrated transit hubs, supporting a shift toward public and active transport, while the MoIT's 2022 Mobility Vehicles and Technologies Roadmap outlines Türkiye's broader transition toward zero-emission mobility. To decarbonize freight, the By-Law on Combined Transport²³³ establishes a legal framework for multimodal logistics, energy efficiency, GHG management, and sustainable packaging. Operators holding a Green Logistics Certificate benefit from fee reductions of up to 50% on authorization and activity certificates and up to 95% on vehicle cards, five additional points in International Transport Forum (UBAK) permit applications, and eligibility for the official Green Logistics Award.

4.2.4.2 Strengthening Railway and Combined Transport

To modernize its national transport network and minimize transit emissions, Türkiye has scaled up infrastructure outlays across comprehensive railway construction, track renovation, signaling, and network electrification works.

Under the operational guidance of the NTLMP 2053, Türkiye is actively executing a modal shift strategy to transfer bulk freight and passenger volume from carbon-intensive highways to electrified rail networks. Through this master plan, the country aims to increase the share of railways in freight transport from the 5.08% baseline recorded in 2023 up to 20.12% by 2035, ultimately targeting a 21.93% share by 2053. Similarly, the railway sector's percentage in passenger transportation is projected to scale up from a 0.96% baseline in 2023 to 5.31% by 2035, reaching its final targeted share of 6.20% by 2053.

In tandem with expanding this physical capacity, Türkiye has committed to a deep-decarbonization target requiring 35% of the railway sector's total operational energy demand to be supplied entirely by renewable energy sources. To operationalize these climate mandates at the corporate level, the Directorate General of Turkish State Railways (TCDD) put into effect its comprehensive Energy Management and Climate Change Action Plan (2023–2025). This structural policy instrument organizes 9 core goals, 20 specific targets, and 82 actionable implementation steps under three strategic pillars designed to ensure clean growth, grid integration, and supply resilience: “Green Transportation on the Railroad,” which focuses on maximizing track efficiency and accelerating modal shifts; “Zero Carbon Future,” which institutionalizes carbon accounting and energy-efficiency audits; and “Reliable Energy Supply,” which seeks to expand traction power infrastructure and diversify clean energy procurement across the decentralized national network.

The By-Law on Combined Transport²³⁴ aimed to establish and expand an environmentally friendly and sustainable transportation system by setting out the principles regarding all elements of green logistics activities (such as combined transportation, energy efficiency, greenhouse gas

233. MoTI. 2022. “Regulation on Combined Transport.” May 2022. <https://www.resmigazete.gov.tr/eskiler/2022/05/20220527-1.htm>.

234. The Official Gazette dated 27.05.2022 and numbered 31848.



management, and green packaging)). In this context, it has been stated that businesses holding a 'Green Logistics Certificate' that continue their combined transportation and green logistics activities will be given additional points in their applications for the UBAK Permit, with various reductions in the Authorization Certificate, Activity Certificate, and Vehicle Card fees that are given by the MoTI. In addition, among the enterprises that provide continuity in green logistics activities, those who are found suitable according to the procedures and principles to be prepared and published by the MoTI will be entitled to receive the Green Logistics Award.

4.2.4.3 Blending Ethanol to Gasoline Types

The **Communiqué on Blending Ethanol into Gasoline Types**, which originally entered into force in 2012, established a core regulatory mechanism designed to reduce GHG emissions by improving the combustion efficiency of gasoline-powered vehicles through the integration of biofuels derived from domestic agricultural products and organic wastes. While the baseline objective of the policy remains unchanged, the operational and regulatory framework has undergone substantial updates. Initially, the legislation mandated that licensed fuel distributors blend at least 3% (v/v) of domestically sourced ethanol into gasoline types imported or supplied from refineries.

4.2.4.4 Blending Biodiesel in Diesel Types

The **Communiqué on Blending Biodiesel into Diesel Types**, which entered into force in 2017, serves as a primary regulatory mechanism designed to reduce GHG emissions by improving the combustion efficiency of diesel-powered vehicles. This statutory instrument introduces a legal mandate for licensed fuel distributors in Türkiye to blend a minimum of 0.5% (v/v) biodiesel into all diesel fuel types that are imported or directly supplied from national refineries. To strengthen the domestic circular economy and support the agricultural sector, the regulation requires that the blended biodiesel be manufactured exclusively from domestic oily seeds, agricultural crops, or recycled vegetable waste oils. By replacing conventional fossil diesel with a locally sourced bio-component, this policy effectively reduces the carbon footprint of the road freight and passenger transport sectors.

4.2.4.5 Promotion of Electric and Hybrid Vehicles

Türkiye is continuously accelerating its efforts to promote the adoption of electric vehicles as part of its broader strategy to reduce GHG emissions and dependence on fossil fuels. According to the latest data at the end of 2025, the total number of registered electric vehicles in the country has exceeded 420,000, and the number of charging points (sockets) has reached 44,139 according to data from the EMRA. In 2025 alone, the number of fully electric vehicles sold approached 190,000, achieving a historic market share of 17.7% in the new vehicle market. The MoTI has prepared its plan to determine EV charging station locations based on future charging demand on highways—which is key to increasing EV adoption—along with its grid integration projects.

Türkiye, aiming to promote the purchase of these types of vehicles, most recently revised the Special Consumption Tax (SCT) rates applied to electric and hybrid motor vehicles via a Presidential Decree in July 2025, keeping them lower than those applied to conventional (high-emission internal combustion) motor vehicles. With this updated regulation, SCT rates for electric vehicles have been structured into new graduated brackets ranging from 25% to 75%, depending on engine power (kW) and tax base criteria. Although these rates were adjusted upward, electric vehicles are still kept in a much more advantageous tax bracket to incentivize adoption, compared with the high SCT rates applied to internal combustion engine vehicles, which can go up to 220%.



Recent developments on taxation of vehicles:

With **Presidential Decree No. 10115 dated 24/7/2025**, for the goods listed under the line “– Others” within HS Code 87.03 in the list (II) annexed to the Special Consumption Tax (SCT) Law No. 4760:

- Vehicles with an engine cylinder volume exceeding 1400 cm³ but not exceeding 2000 cm³ are taxed at SCT rates ranging from 75% to 170%, depending on the tax base. Among those also equipped with an electric motor, vehicles whose engine power exceeds 50 kW and whose engine cylinder volume does not exceed 1800 cm³ are taxed at SCT rates of 70% and 80%, depending on the tax base.
- Vehicles with an engine cylinder volume exceeding 2000 cm³ are taxed at an SCT rate of 220%. Among those also equipped with an electric motor, vehicles whose engine power exceeds 100 kW and whose engine cylinder volume does not exceed 2500 cm³ are taxed at SCT rates of 150% and 170%, depending on the tax base.
- Pure electric vehicles are taxed according to engine power and tax base as follows:
 - Vehicles with an engine power of 160 kW or less are taxed at 25% and 55%, depending on the tax base,
 - Vehicles with an engine power above 160 kW are taxed at 65% and 75%, depending on the tax base.
- For externally chargeable vehicles (plug-in vehicles) equipped with an electric motor, with weighted combined CO₂ emissions below 25 grams per kilometer and an electric-only driving range of 70 kilometers or more:
 - Vehicles with an engine cylinder volume not exceeding 1600 cm³ are taxed at 45% and 75%, depending on the tax base,
 - Vehicles with an engine cylinder volume exceeding 1600 cm³ but not exceeding 1800 cm³, whose SCT tax base does not exceed TRY 1,350,000, are taxed at an SCT rate of 85%.

Accordingly, hybrid, plug-in hybrid, and electric vehicles are subject to more advantageous SCT rates than vehicles with conventional internal combustion engines.

The By-Law on the Disclosure to Consumers of Fuel Economy and CO₂ Emissions of New Passenger Cars²³⁵ serves as a key consumer protection and environmental transparency mechanism in Türkiye. The primary objective of this regulation is to provide clear, accessible data regarding the fuel efficiency and CO₂ emissions of new passenger cars offered for retail sale or commercial lease, thereby empowering consumers to make environmentally informed purchasing choices.

4.2.4.6 Electric Vehicles Fast Charging Stations Support Program

The MoIT, maintaining its resolute stance in combating climate change, designed the Fast-Charging Infrastructure Call for Electric Vehicles to provide grants to companies investing in this field,

235. Official Gazette. “By-Law on the Disclosure to Consumers of Fuel Economy and CO₂ Emissions of New Passenger Cars.” 2023. <https://www.resmigazete.gov.tr/eskiler/2023/03/20230311-2.htm>.



assuming an encouraging role in accelerating the transformation of transportation. The first call was completed on January 31, 2024, supporting the installation of 1,050 fast-charging units across more than 400 districts in all 81 provinces of Türkiye. Building on this progress, a second call was launched on April 14, 2025, aiming to further strengthen existing infrastructure, ensure equitable access nationwide, and establish complementary charging capacity in districts where coverage remained lacking or insufficient. Structured around province- and district-level needs projected for electric vehicle and charging infrastructure growth, the second call is planned to support the installation of 529 fast-charging units across all 81 provinces.

4.2.4.7 Decreasing Emissions from Road Transport in Freight Transport

To accelerate its green transit transition, Türkiye is actively implementing strategies to reduce the dominance of highway shipping and reduce GHG emissions from the logistics sector. Guided by the NTLMP 2053, the nation aims to systematically decrease the annual freight transport share of road transport from a 71.39% baseline down to 59.22% by 2035, redirecting that volume toward lower-emission rail and maritime networks. Alongside this macro-level modal shift, Türkiye is targeting direct emissions reductions within the remaining road transport sector through large-scale infrastructure modernization. This includes the strategic construction of advanced highway tunnel and bridge projects designed to shorten logistics routes, bypass high-congestion areas, and eliminate fuel-heavy steep climbs, thereby optimizing vehicle combustion efficiency and lowering localized carbon outputs. Furthermore, given Türkiye's strategic position as a primary cross-continental transit hub, these highway optimization and modal shift measures positively influence and directly contribute to reducing GHG emissions from international transport.

4.2.4.8 Regulation on Transferring Cargoes Carried by Road to Sea

The MoTI enacted a targeted regulation on August 9, 2022, specifically designed to facilitate the modal shift of freight from road networks to domestic seaways. The primary objective of this regulatory framework is to define the administrative policies, financial incentives, and operational guidelines for delivering state assistance to ship owners and maritime operators. By providing structured support, the regulation aims to elevate the overall share of maritime transit within Türkiye's broader combined multi-modal transportation network and actively incentivize logistics companies to reroute commercial cargo volumes currently relying on high-emission highway corridors onto sustainable sea routes. In doing so, this modal shift significantly lowers the GHG emission intensity per ton-kilometer across regional freight corridors, thereby supporting the decarbonization of international transport and enhancing the climate performance of cross-border supply chains.

4.2.4.9 ILBANK & MoEUCC Grant Programme

To accelerate the development of sustainable, climate-resilient urban infrastructure, the MoEUCC, in close cooperation with İLBANK, established a dedicated institutional grant and financial support program for local municipalities. This joint funding initiative is strategically directed toward financing the construction of municipal bicycle lanes, green pedestrian walking trails, and eco-friendly smart streets, all of which aim to promote active mobility and reduce reliance on motorized urban transit. Additionally, the program provides targeted capital to construct urban noise barriers along high-traffic corridors, effectively mitigating environmental noise pollution and enhancing the overall liveability and ecological balance of residential areas.



4.2.4.10 Green Ports

The MoTI launched the Green Port Project around 2014 as a voluntary, operations-focused initiative, evaluating port compliance against core certifications such as the ISPS Code, ISO 9001, ISO 14001, and ISO 45001 (formerly OHSAS 18001). The framework was formalized through the Green Port Certification Regulation²³⁶ which set out technical and environmental criteria—including a minimum 5% renewable energy share in operational consumption, shore-side electrical connections, waste and water management systems, and ecological measures such as a commemorative forest—while keeping certification voluntary for all facilities at that stage. A subsequent amendment²³⁷ introduced a conditional mandate, requiring newly built or substantially expanded facilities, along with ports exceeding certain cruise-ship or container-throughput thresholds, to obtain certification by 2028–2030, while other existing ports remain voluntary. Certified ports benefit from a two-year extension of their Operating Permit and Dangerous Goods Conformity Certificate, waived survey and container-weighing fees, discounts on MoTI Revolving Fund charges, and priority passage through the Turkish Straits for up to thirty vessels per calendar year.

4.2.4.11 Renewal of the Turkish Marine Fleet

To accelerate the decarbonization of its maritime sector, Türkiye has established an expansive regulatory, financial, and international framework aimed at transitioning to a low-carbon, energy-efficient commercial and recreational fleet. By encouraging the adoption of alternative fuels, energy-efficient engines, and low-emission propulsion technologies across merchant and passenger vessels, these fleet renewal measures significantly reduce the carbon intensity of maritime operations, thereby actively driving GHG emission reductions in international transport and maritime supply chains.

The MoTI has significantly overhauled its commercial merchant fleet renewal program to heavily favor sustainable propulsion technologies. While the initial scrap-and-build scheme targeted ships between 1,000 GT and 5,000 GT, the eligibility scope has been expanded to include smaller vessels down to 50 GT. Additionally, the program capacity has doubled, allowing up to 10 ships to benefit from the incentive annually, up from the previous limit of 5. The financial incentives within this framework have been scaled to aggressively reward green innovation. Support for constructing a new conventional ship to replace a scrapped vessel has been increased by 50%, rising from 1.0 time the scrap price per ton to 1.5 times the scrap price. However, if a newly constructed ship integrates alternative, environmentally friendly energy systems—such as LNG or hybrid-electric propulsion—the incentive is boosted to 2.5 times the scrap price per ton. To encourage the decarbonization of active vessels, the state also provides a direct 25% financial grant covering the total conversion cost of replacing a ship's fossil-fueled main engine with an alternative, eco-friendly energy system, placing priority on technologies utilizing LNG, electrification, batteries, methanol, green hydrogen, and ammonia.

On the regulatory front, the By-Law on Recreational Craft and Personal Watercraft was enacted in May 2017 to align national standards with the EU Directive 2013/53/EU. This regulation establishes strict statutory limits on environmental pollutants, specifically targeting the reduction of carbon, nitrogen oxides, and hydrocarbons emitted by personal watercraft and recreational boat engines.

236. Official Gazette. “GreenPortCertificationRegulation.” 2023. <https://www.resmigazete.gov.tr/eskiler/2023/11/20231118-25.htm>.

237. Official Gazette. “Amendment of Green Port Certification Regulation.” 2026. <https://www.resmigazete.gov.tr/eskiler/2026/03/20260324-1.htm>.



4.2.4.12 Green Airports

Green Airport Project and National Legislation Launched in 2009 by the Directorate General of Civil Aviation (DGCA), the Green Airport Project uses an escalating tier of fiscal incentives to reward ecological compliance. Under this framework, companies that secure a Green Company Certificate qualify for a 20% reduction on their official license renewal fees. Crucially, if an entire airport environment successfully achieves a Green Airport Certificate, this financial benefit scales dramatically, granting a 50% license renewal fee reduction to all commercial operators functioning within that specific terminal. To institutionalize these parameters under uniform statutory governance, the Environmental Management Directive at Airports was developed and submitted to the MoTI. This comprehensive regulation anchors all core actions established under the Green Airport Project, mandating rigorous, standardized environmental compliance and mandatory carbon emission monitoring across every active airport in Türkiye.

Türkiye's aviation hubs have achieved rapid advancements within the global Airport Carbon Accreditation (ACA) program administered by the Airports Council International (ACI).

4.2.4.13 Carbon-free Airport Project

In 2020, DHMI launched the Carbon-Free Airport Project to ensure sustainable airport operations. With the project, all environmental aspects such as solid waste, wastewater, noise, greenhouse gas, and climate change generated within the scope of airport activities are managed.

Demonstrating a deep alignment with continental climate targets, DHMI is an active signatory to the Toulouse Declaration, binding its operational trajectory to the achievement of net-zero carbon emissions (covering Scope 1 and Scope 2 outputs) by 2050 in alignment with ACI Europe. Comprehensive, data-backed emission reduction roadmaps have been officially compiled and submitted to ACI Europe to guarantee compliance with this mid-century decarbonization target. By systematically decarbonizing airport infrastructure, enhancing energy efficiency, and promoting eco-friendly ground operations across Türkiye's aviation hubs, these initiatives directly contribute to lowering the carbon intensity of international flights and actively driving GHG emission reductions in international transport.

4.2.4.14 Monitoring and Pricing GHG Emissions from Ships Calling Turkish Ports

Under the EU's Fit for 55 package, which targets a 55% net reduction in GHG emissions by 2030 relative to 1990 levels, Directive (EU) 2023/959 extended the EU ETS to maritime shipping. The Directive entered into force on June 5, 2023, and became operational on January 1, 2024, covering 100% of emissions from voyages between EU ports and 50% of emissions from voyages between an EU port and a non-EEA port. Allowance-surrender obligations are being phased in gradually—40% of verified emissions in 2024, 70% in 2025, and full coverage from 2026 onward. For the 50% of extra-EEA voyage emissions not priced under the EU ETS, the Directive simply leaves that portion outside its own pricing scope, allowing the non-EEA jurisdiction to apply its own carbon-pricing measures if it chooses to.

Türkiye introduced a parallel national framework through Law No. 7519.²³⁸ Article 3 of the law added a new provision to the Ports Law (Law No. 618), establishing a legal basis to levy fees on the GHG emissions of commercial ships arriving at or departing from Turkish ports, with rates to be set

²³⁸. Official Gazette. "Law on Amendments to the Turkish Civil Aviation Law, Certain Laws, and the Decree Law No. 655." 2024.



by presidential decree referencing prevailing EU ETS carbon prices. Revenues collected under this provision are recorded as a special appropriation within the MoTI's budget, earmarked to support maritime research and development (R&D), fleet retrofits, and new-build shipbuilding for green shipping. The same decree is expected to establish the MRV procedures needed to implement the emissions fee. This framework represents Türkiye's domestic policy response to the impacts of a response measure, reflecting its efforts to adapt to evolving international climate-related regulatory frameworks while supporting the green transition of its maritime sector.

4.2.4.15 Forest Fire Aerial Suppression Activities

Forest fire aerial suppression activities are essential for mitigating GHG emissions by preventing the escalation of large-scale wildfires. Aerial assets, including helicopters and fixed-wing aircraft, are utilized for early detection, rapid response, and effective fire suppression. These operations help contain the spread and reduce the duration of forest fires, thereby avoiding significant carbon releases. In addition, integrated airspace coordination improves operational efficiency and contributes to more optimized fuel use during firefighting missions.

Table 28 details the strategic policies and mitigation measures implemented within Türkiye's transport sector to systematically reduce GHG emissions.


Table 28 – Transport sector policies and measures

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1 - Modal shift to public transport	Transport	CO ₂	Increasing low-carbon transport modes share in public transport	Infrastructure Development	Implemented	2006	MoTI	NE
2 - Strengthening Railway and Combine Transport	Transport	CO ₂	Increasing the share of railways in passenger and freight transport	Infrastructure Development	Implemented	2006	MoTI	NE
3 - Blending Ethanol to Gasoline Types	Transport	CO ₂ , N ₂ O, CH ₄	Decreasing GHG emissions through increase in combustion efficiency in gasoline burning vehicles	Regulatory	Implemented	2012	EMRA, MENR, MoTI, MoEUCC	NE
4 - Blending Biodiesel in Diesel Types	Transport	CO ₂ , N ₂ O, CH ₄	Increasing share of biofuels use in diesel vehicles	Regulatory	Implemented	2017	EMRA, MENR, MoTI, MoEUCC	NE
5 - Promotion of electric and hybrid vehicles	Transport	CO ₂	Promotion of vehicles with alternative fuel types (including electric and hybrid vehicles), through fiscal incentives	Fiscal	Implemented	2018	MoTF, MoTI, MoEUCC	NE
6 - Electric Vehicles Fast Charging Stations Support Program	Transport	CO ₂	Increasing number of electric vehicles charging stations	Fiscal	Implemented	2022	MoIT	NE
7 - Decreasing the emissions from road transport in freight transport	Transport	CO ₂	Decreasing Türkiye's transport emissions by converting road transport freight to emission-efficient railway and seaway transport modes.	Infrastructure Development	Adopted	2022	MoTI	NE
8 - Regulation on Transferring Cargoes Carried by Road to Sea	Transport	CO ₂	Decreasing Türkiye's transport emissions by converting road transport freight to emission-efficient railway and seaway transport modes.	Regulatory	Adopted	2022	MoTI	NE
9 - ILBANK & MoEUCC Grant Programme	Transport	CO ₂	Supporting municipalities for the construction of bicycle lanes, green walking trails, environment-friendly streets, and noise barriers.	Fiscal	Implemented	2018	MoEUCC, ILBANK	NE
10 - Green Port Project	Transport	CO ₂	Promoting modern, cost-efficient, and environmentally friendly port facilities.	Economic, regulatory, other	Implemented	2013	MoTI	NE



Table 28 – Transport sector policies and measures

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
11 - Renewal of the Turkish Marine Fleet	Transport	CO ₂	Promotion of energy-efficient ships through renewal of Coaster fleet	Regulatory	Planned	2021	MoTI	NE
12 - Green Airports	Transport	CO ₂	Airport Carbon Accreditation Programme	Regulatory, economic	Implemented	2009	MoTI	NE
13- Carbon-free Airport Project	Transport	CO ₂	Airport Carbon Accreditation Programme	Regulatory, economic	Implemented	2020	MoTI	NE
14-Monitoring and Pricing GHG Emissions from Ships Calling Turkish Ports	Transport	CO ₂	Protecting the competitiveness of the Turkish-flagged and Turkish-owned fleet while pricing maritime GHG emissions and earmarking revenues to finance green fleet retrofits, alternative-fuel port infrastructure, R&D, and sustainable shipbuilding	Economic and regulatory instrument	Implemented	2024	MoTI	NE
15- Forest fire aerial suppression activities	Transport and LULUCF	CO ₂	Reducing GHG emissions and ecosystem damage by using helicopters and fixed-wing aircraft for early detection, rapid response, and suppression of large-scale forest fires, while improving operational efficiency and fuel use through integrated airspace coordination	Operational and information instrument	Implemented	2024	MoTI	NE



4.2.5 INDUSTRY, INDUSTRIAL PROCESSES AND PRODUCT USE

Overview

The **12th National Development Plan** establishes a macro-level roadmap to transition Türkiye's industrial base toward a high value-added, competitive, and productive ecosystem driven by twin green and digital transformations across all manufacturing sectors, with an acute focus on priority industries. To operationalize these decarbonization and modernization targets, the plan prioritizes the industrial green transition, accelerating the green readiness of Small and Medium Enterprises (SMEs) and international compliance and carbon accounting.

The **Green Deal Action Plan** is designed to harmonize Türkiye's trade and industrial frameworks with the EU's Green Deal regulations. This alignment is highly critical because the EU's climate mandates directly impact Turkish industrial sectors and their commercial exports to European markets. To anchor these initiatives within the country's broader 2053 net-zero emission target, the MoIT has formulated and publicly released specialized, long-term industrial decarbonization pathways as the Low Carbon Roadmap for the Steel Sector, the Low Carbon Roadmap for the Aluminum Sector, the Low Carbon Roadmap for the Cement Sector, and the Low Carbon Roadmap for the Fertilizer Sector.

The **Industry and Technology Strategy** for 2030, published on 10 May 2025, places strong emphasis on reducing industrial carbon emissions and accelerating the transition toward a green and circular economy.²³⁹ Within this framework, a range of policy measures and actions are envisaged to align Türkiye's industrial transformation with the EGD and to ensure compliance with the CBAM. The strategy foresees the diversification of support mechanisms to promote the adoption of low-carbon production technologies and circular economy practices, including investment incentives delivered through platforms such as TIDIP²⁴⁰. It also prioritizes the green transformation of planned industrial areas, particularly Organized Industrial Zones (OIZs), through enhanced financing programs and the expansion of Green OIZs.²⁴¹

Under the investment incentive framework renewed by Presidential Decree No. 9903, Türkiye implements two complementary instruments for the manufacturing industry: the Green Transformation Program and the Digital Transformation Program. The Green Transformation Program supports investments consistent with circular economy principles, resource efficiency, low-carbon production, and national climate and sustainability objectives. The Digital Transformation Program supports the integration of technological products and solutions into production and supply-chain processes with the aim of improving productivity, quality, traceability, flexibility, resource efficiency, and industrial competitiveness. Together, the Green Transformation Program and the Digital Transformation Program operationalize the twin green and digital transformation objective of the 12th Development Plan and the Industry and Technology Strategy for 2030.

239. MoIT, 2025. The Industry and Technology Strategy for 2030 serves as a roadmap for advancing Türkiye's National Technology Initiative vision. The strategy is structured around five strategic pillars: High Technology, Digital Economy, Green Transition, Global Integration, and Structural Transformation. Within this framework, the document defines 20 macro-level objectives and 100 strategies covering a broad range of policy areas, and aims to guide Türkiye's industrial and technological transformation through coordinated measures in innovation, digitalization, sustainability, and global competitiveness.

240. UNFCCC,. 2025. Republic of Türkiye The Second Nationally Determined Contribution. [https://unfccc.int/sites/default/files/2025-11/The Second NDC of Türkiye.pdf](https://unfccc.int/sites/default/files/2025-11/The%20Second%20NDC%20of%20T%C3%BCrkiye.pdf)

241. MoTI. 2025. 2030 Industry and Technology Strategy. Ankara, Türkiye, 2025. <https://www.sanayi.gov.tr/assets/pdf/plan-program/2030IndustryAndTechnologyStrategyENG.pdf>.



Since July 2024, Türkiye's MoIT has been implementing the Green Transition Program under the Investment Incentive System, pursuant to Decree No. 3305 and the implementing communiqué published in Official Gazette No. 32613 on July 26, 2024. The Investment Incentive System was restructured and announced to public via Decree No. 9903 of May 30, 2025, and Green Transformation Projects are supported under the "Priority Investments" scheme. The Program supports investments in Türkiye's manufacturing industry that are compatible with the circular economy approach, conserve natural resources, contribute to climate and sustainability goals, and aim for resource-efficient, low-carbon production.

The Türkiye Green Industry Project is being implemented with the support of the World Bank to promote a sustainable green transition in Türkiye, with a total budget of USD 450 million. The Project is implemented through coordinated efforts of the MoIT, KOSGEB, and TUBITAK. The MoIT provides overall coordination. KOSGEB supports the green transformation of SMEs through the USD 250 million financing made available under this project. The Scientific and Technological Research Council of Türkiye (TÜBİTAK) supports firms engaged in green innovation activities under the Türkiye Green Industry Project, for which the World Bank has allocated USD 175 million to TÜBİTAK to foster the development of new green technologies, products, and processes.

The OIZ initiative serves as a landmark framework to systematically integrate eco-friendly solutions into both the fundamental infrastructure and superstructure of industrial estates. The Loan Agreement for the Türkiye OIZ Project was signed between the World Bank Group and the MoTF on February 26, 2021, and became effective on July 20, 2021, with the closing date set for June 30, 2028. The contract value is 250.3 million Euros. By embedding sustainability directly into the core design of these zones, the project portfolio modernizes essential utility networks, including advanced water, storm water, and sewage pipelines, optimized electricity and natural gas grids, and smart internal road systems. Furthermore, the initiative scales up industrial circularity and clean energy generation through the targeted construction of state-of-the-art wastewater treatment facilities, wastewater reclamation and reuse plants, industrial solar power plants (SPP), eco-efficient administrative complexes, zero-waste processing facilities, and decentralized biogas generation units. This integrated infrastructure approach effectively enables clustered manufacturing facilities to minimize their collective resource footprint, lower localized carbon intensity, and achieve high-level environmental compliance. Within the scope of the action titled "Completion of technical and administrative work for the implementation of the Green OIZ and Green Industrial Zone Certification System", which is included under the target of "Enhancing the green transformation of industry and the development of a circular economy in our country" in the 2021 Green Deal Action Plan, the relevant studies have been completed. Accordingly, the duties and responsibilities regarding the Green OIZ Certification System were defined with the Ministerial Approval dated 29 December 2022.

The "Application Guideline," which includes the pre-criteria determined by the MoIT, as well as information on application procedures and evaluation stages, was shared with OIZs on 30 December 2022, and applications have been received electronically as of that date.

With the amendment introduced by Law No. 7451 on 4 April 2023 to Article 3, paragraph (j) of the Organized Industrial Zones Law No. 4562, the concept of "Green OIZ" has been defined as: "OIZs that are certified by the Turkish Standards Institution (TSE) within the framework of criteria determined by the MoIT, and that stand out through resource and energy efficiency, lean production, industrial symbiosis, and environmentally friendly practices in environmental, economic, social, and governance aspects." It has also been stipulated that the certification process shall be carried out by the Turkish Standards Institution.



Furthermore, an additional provision was introduced to Article 14 of Law No. 4562 through Law No. 7451, stating that:

“Projects prepared by OIZs to meet Green OIZ criteria shall be evaluated by the MoIT with priority.” This amendment ensures that OIZs meeting the Green OIZ criteria are given priority in project evaluations.

The Green OIZ Certification System, carried out in coordination between the MoIT and the Turkish Standards Institution, is implemented based on a total of 38 criteria defined under four main categories: environmental, economic, social, and governance. Within this framework, OIZs are evaluated on a 100-point scale, with weighted criteria consisting of environmental, economic, social, and governance components. This scoring methodology enables a holistic assessment of applicant OIZs, covering not only their environmental performance but also their economic operations, social practices, and governance capacities.

4.2.5.1 Efficiency Enhancing Projects (VAP) Support Program

To motivate industrial enterprises to optimize their resource utilization, the MENR has implemented the Efficiency Enhancing Projects (VAP) and Voluntary Agreements (GA) grant and support programs since 2009, allocating dedicated funds within its annual budget to incentivize industrial establishments. While the structural amendments introduced via Law No. 7346 in December 2021 initially expanded the eligibility criteria of these energy efficiency project supports beyond the industrial sector to cover the building, agriculture, and service sectors, subsequent major legislative reforms in 2024 and comprehensive revaluation adjustments implemented on January 1, 2025, have fundamentally transformed the financial scope, limits, and operational capacity of these incentive mechanisms.²⁴²

Under the modernized regulatory framework, the historical project expenditure ceiling of 5 million TL and the previous grant limit of 1.5 million TL have been completely abolished, with the state stabilizing the direct energy efficiency project support ratio at 30% of the total investment cost (excluding VAT). The maximum grant funding available per project has been scaled. The program's operational scope has moved far beyond traditional heavy manufacturing plants, meaning that commercial offices, business centers, shopping malls (public/private), hospitals, and large institutional or educational campuses can now apply directly for VAP grants.

4.2.5.2 Voluntary Agreements (GA)

The Voluntary Agreements scheme is designed to challenge and motivate commercial enterprises to achieve a minimum 10% reduction in overall energy intensity over a continuous three-year monitoring period. If a participating company successfully fulfills the strict reduction targets mandated by the agreement, the state provides an aggressive financial cushion by granting a direct subsidy of up to 30% of the facility's actual energy costs during the first year of compliance.

Manufacturing facilities that demonstrate verified energy savings of at least 15% compared to their baseline operational status continue to qualify for high-priority strategic investment incentives. This robust package of state-backed financial relief features:

242. MENR. “Efficiency-Enhancing Project (VAP) Support Programme.” Ankara, Turkey, 2025. <https://enerji.gov.tr/evced-enerji-verimlilik-destekleri-verimlilik-artirici-proje-destekleri>.



- Value-Added Tax (VAT) exemptions (specifically covering facility construction costs and the procurement of brand-new manufacturing machinery and equipment),
- Customs duty exemptions on imported components,
- Significant corporate and income tax reductions,
- Direct employer's social security premium support,
- Favorable interest rate and profit-share supports, alongside strategic investment location allocations.

4.2.5.3 Promotion of Renewable Electricity Use in Manufacturing Industry

Since 2015, Türkiye has been supporting renewable electricity use in the manufacturing industry. The MENR plans legislative arrangements that would aim to promote renewable power generation and use in the manufacturing industry. To further accelerate this transition, the MENR is designing targeted legislative frameworks and regulatory mechanisms aimed at systematically promoting both on-site renewable power generation and its widespread commercial utilization across industrial sectors.

4.2.5.4 Promotion of Waste-Derived Fuels

The **By-law on Waste** Incineration formally integrated co-incineration facilities and alternative fuel frameworks into Turkish environmental legislation. Following the enactment of this regulatory structure, the manufacturing sector—particularly the cement industry—substantially increased its utilization of waste-derived alternatives, including Refuse-Derived Fuels (RDF) and Solid Recovered Fuels (SRF). To facilitate this circular approach, several cement production plants secured specialized waste incineration licenses issued by the MoEUCC. These facilities leverage processed waste streams not only as alternative thermal energy sources but also as raw material substitutes. Licensed co-incineration activities across the sector typically utilize waste plastics, scrap tires, waste oils, industrial sludge, tank bottom residues, and sewage sludge. Building on this momentum, the 2022 Climate Council recommended scaling up both the production and consumption of waste-derived fuels to further advance industrial emission reductions, advocating for highly coordinated, joint initiatives between relevant ministries, local municipalities, and industrial facilities.

4.2.5.5 Promotion of ISO 50001

Compliance with the ISO 50001 Energy Management System standard serves as a mandatory prerequisite for enterprises seeking to qualify for state-backed energy efficiency support mechanisms. Under this regulatory framework, participating companies are legally obligated to institutionalize their energy governance by establishing a dedicated internal energy management unit, appointing a certified energy manager, or implementing both oversight measures to guarantee systematic resource tracking and optimization.

4.2.5.6 Supporting Sustainable Energy Project Implementations of SMEs

To accelerate the adoption of high-efficiency electric motors within SMEs, the MoIT implemented the Promoting Energy-Efficient Motors in Small and Medium-Sized Enterprises in Turkey Project—widely known as the TEVMOT Project. Spanning a six-year operational timeline from 2017 to 2023, the initiative was developed in close collaboration with the United Nations Development Programme (UNDP) and backed by financial assistance from the Global Environment Facility (GEF). The primary objective of the TEVMOT framework was to catalyze substantial additional



private sector capital investments in industrial energy efficiency across Türkiye by structurally transforming the domestic market and supply chains for energy-efficient electric motors utilized by small and medium industrial manufacturers.

4.2.5.7 Reducing F-Gases Emissions

According to Türkiye's Montreal Protocol and Kigali Amendment Compliance Framework, as an Article-5 (developing) Group 1 country, Türkiye is a committed party to the Montreal Protocol on Substances that Deplete the Ozone Layer and has successfully enacted the necessary legislative instruments to phase out Ozone Depleting Substances (ODSs). Under its strict national phase-out program, Türkiye has drastically restricted its ODS import volumes, reducing them from 13,200 tons in 2009 to 200 tons in 2019, followed by further declines to 100 tons annually in 2020 and 2021, and to a baseline of 50 tons per year across the 2022-2024 period. While the final global deadline for Article-5 countries under the Protocol is set for 2030, Türkiye successfully achieved the complete phase-out and total elimination of hydrochlorofluorocarbons (HCFCs) ahead of schedule by January 1, 2025.

Following its formal ratification of the Kigali Amendment on November 10, 2021, which entered into force nationally on February 8, 2022, Türkiye became the 129th party to the agreement and established binding phase-down schedules for hydrofluorocarbon (HFC) consumption. This strategic framework seeks to capture critical synergies between the Paris Agreement and the Kigali Amendment, recognizing that a managed reduction in these high global warming potential (GWP) F-gases will substantially reduce GHG emissions. The national strategy relies on a baseline roadmap, the Kigali Implementation Plan, which was completed in 2024. Under this plan, Türkiye officially froze its HFC consumption in 2024—calculated against a baseline of average 2020-2022 HFC consumption plus 65% of the HCFC baseline—and has initiated its step-down phase. The national schedule targets an initial 10% reduction by 2029, progressing systematically toward an ultimate 80% reduction in baseline HFC consumption by 2045. To operationalize these limits, an import and export licensing system for HFCs was introduced on May 10, 2023, followed by the rigorous implementation of a quota allocation system for bulk HFC imports beginning in 2024.

On the legislative front, the older 2018 regulation has been completely superseded to align with the Kigali Amendment and the latest EU F-gas frameworks, specifically EU Directive 517/2014 and the 2024/573 recast regulations. On October 15, 2024, the MuEUCC published and enacted a brand-new By-law on Fluorinated Greenhouse Gases, which serves as the core regulatory tool governing the release and lifecycle of HFCs. This updated legislation establishes a centralized Equipment Operators Database known as EKOMVET to digitize and manage leakage checks, equipment traceability, and quota reporting. Under this framework, commercial and industrial operators are legally mandated to report all preceding annual F-gas activities through the FARAVET database by April 30 of each year. Furthermore, to eliminate uncontrolled atmospheric venting during servicing, the regulation enforces a total ban on placing single-use (non-refillable) HFC containers on the market for maintenance and service purposes.

The new by-law also introduces highly stringent market prohibitions and phase-out timelines for commercial refrigeration and climate systems utilizing high-GWP gases. Effective January 1, 2027, the market placement of commercial refrigerators and freezers containing HFCs with a GWP of 2,500 or higher, as well as split-type air conditioning systems with a GWP of 750 or higher, will be completely banned. This prohibition will be expanded on January 1, 2031, to bar any commercial refrigeration and freezing equipment containing fluorinated greenhouse gases with a GWP of 150 or more. These sweeping restrictions and verification mechanisms directly impact equipment



lifecycles across refrigeration, air conditioning, heat pumps, fire protection, electrical switchgear, refrigerated transport (trucks and trailers), aerosols, and industrial solvents. Mirroring these technical obligations, Türkiye continues to manage strict training and certification programs for personnel and technical enterprises handling these systems, while executing institutional capacity-building projects to reinforce regulatory oversight of both HCFC and HFC compliance.

4.2.5.8 Development of Low-Carbon Technology Roadmaps in Manufacturing Industries

As part of the overarching Green Deal Action Plan, the MoIT, in close collaboration with TÜBİTAK, has successfully developed comprehensive low-carbon technology roadmaps for the manufacturing industries, specifically targeting the iron and steel, aluminum, cement, chemicals, plastics, and fertilizer sectors. Building upon the quantitative results and technological benchmarks established in these sectoral studies, MoIT and TÜBİTAK have jointly designed targeted investment support programs. By systematically mapping out the precise green growth and technological requirements of these high-emission sectors, this strategic initiative establishes the baseline framework to create specialized, future-oriented R&D and innovation support mechanisms to accelerate industrial decarbonization.

Table 29 contains the specific policies, regulatory frameworks, and targeted mitigation measures designed to systematically reduce GHG emissions across Türkiye's IPPU sectors.

**Table 29 – Manufacturing industry, industrial process and product use sector policies and measures**

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1 - Efficiency Enhancing Projects (VAP) grant support programme	Industry / Industrial Processes and Product Use	CO ₂	Supporting energy efficiency investments by providing grants covering 30% of eligible project costs and expanding coverage beyond industry to buildings, services, and agriculture	Economic	Implemented	2009	MENR	NE
2- Voluntary Agreements	Industry / Industrial Processes and Product Use	CO ₂	Reducing energy intensity by at least 10% over three years in participating facilities and providing subsidies of up to 30% of the first-year energy bill for compliant companies	Economic and voluntary instrument	Implemented	2009	MENR	NE
3 - Promotion of renewable electricity use in industry	Industry / Industrial Processes and Product Use	CO ₂	Promoting renewable power generation and use in manufacturing industry	Economic, regulatory	Implemented	2015	MENR, MoIT	NE
4 - Promotion of Waste-Derived Fuels	Industry / Industrial Processes and Product Use	CO ₂ , CH ₄	Decreasing GHG emissions of manufacturing industries by replacing fossil fuel consumption with waste-derived fuels	Regulatory	Implemented	2014	MoEUCC	NE
5 - Promotion of ISO 50001	Industry / Industrial Processes and Product Use	CO ₂	Increasing energy efficiency at manufacturing industries	Regulatory	Implemented	2018	MENR, MoIT, TSE	NE
6 - Supporting Sustainable Energy Project Implementations of SMEs	Industry / Industrial Processes and Product Use	All gases	Provision of support for SMEs that implement sustainable energy projects that reduce GHG emissions	Economic, other	Implemented	2015	MENR, MoIT, KOSGEB	NE
7 - Reducing F-Gas Emissions	Industry / Industrial Processes and Product Use	F-gases	Decreasing F-gas emissions	Regulatory	Adopted	2022	DOCC, MoEUCC	NE
8 - Development of low-carbon technology roadmaps in manufacturing industries	Industry / Industrial Processes and Product Use	All gases	Identifying the technological needs of industrial sectors regarding Türkiye's green development goals and formulating solutions	Research	Adopted	2022	MoIT, TUBITAK	NE



4.2.6 AGRICULTURE

Overview

Türkiye's agriculture-related policies are fundamentally integrated into the country's economy-wide mitigation and adaptation targets, as established in NDC 3.0. As a key sector for climate action, agriculture is addressed through the Climate Change Mitigation Strategy and Action Plan (2024–2030), which focuses on sustainable soil management to reduce GHG emissions. To ensure these mitigation policies are evidence-based, Türkiye utilizes the CLEWs (Climate, Land, Energy, and Water) modelling framework to assess resource flows and design targeted interventions for the sector through 2035. On the adaptation front, agriculture is designated as one of 11 priority sectors within the Climate Change Adaptation Strategy and Action Plan (2024–2030), which aims to strengthen resilience through risk assessments and infrastructure modernization. Specialized policy instruments have been adopted to manage specific climate risks, most notably the Türkiye Agricultural Drought Mitigation Strategy and Action Plan (2023–2027) and the Water Efficiency Strategy Document and Action Plan (2023–2033). Furthermore, the 2021 Green Deal Action Plan identifies agriculture as a critical area for supporting the green transition. These policies also emphasize social inclusion and capacity building, specifically through targeted training programs designed to enhance women's participation in sustainable agriculture. Central to all these initiatives is Türkiye's commitment to advancing a low-carbon and climate-resilient future without compromising national food security.

Türkiye's 2053 Long-Term Climate Strategy addresses agricultural productivity and food security alongside the 2053 net-zero target, anticipating a population of 94 million by mid-century. The strategy sets out four main pillars. First, soil and water management: protecting 24 million hectares of cultivated land from degradation or conversion, completing consolidation of fragmented plots by 2053, raising irrigation efficiency to 65% by 2050 through closed irrigation systems and automated monitoring, and powering pumped irrigation with on-site renewable energy to lower farmers' costs. Second, climate-smart agriculture: expanding organic farming to at least 10% of cultivated land by 2053 with climate-friendly techniques applied economy-wide, promoting soil analysis before fertilizer use, subsidizing organic fertilizers, and encouraging no-till and reduced-tillage methods to boost soil carbon retention. Since enteric fermentation accounts for 53.5% of agricultural emissions, the strategy also prioritizes optimized feed rations and channeling animal waste to biogas facilities. Third and fourth, the strategy focuses on agricultural residue R&D, food-loss awareness campaigns, and capacity building—with women, who make up 41% of the agricultural workforce, prioritized in climate and low-carbon technology training. Smart-farming technologies such as unmanned agricultural vehicles, autonomous robots, and big-data decision-support systems are promoted to improve resource efficiency.

Türkiye's Climate Change Mitigation Strategy and Action Plan (2024–2030) sets out seven strategies for the agriculture sector. The top priority is mitigating livestock-related CH₄ emissions through R&D on methane-suppressing feed additives, genetic-based breeding that accounts for CH₄ output, improved manure collection and diversion to biogas facilities, and sustainable, delimited pasture management. In crop production, the plan promotes efficient chemical fertilizer use via the "4R" approach (right source, dose, time, and place) and expanded legume rotation to naturally fix nitrogen, alongside efforts to reduce pesticide and antimicrobial use. It also addresses agricultural loss and waste by completing recycling inventories and raising awareness to cut food loss across the supply chain, and strengthens land and soil management through completed land-aggregation registration, updated soil maps, and wider adoption of no-till farming and agro-



forestry to boost carbon sequestration. Finally, the strategy aims to improve farmers' access to affordable financing—including credit access for women farmers—underpinned by training and capacity-building delivered with a gender-sensitive approach.

Türkiye's agricultural adaptation strategies, established within the **Climate Change Adaptation Strategy and Action Plan (2024-2030)**, focus on building a resilient and sustainable sector through three primary strategic goals. The **first** goal targets the development of policy and legal frameworks to enhance institutional capacity and awareness. This includes updating agricultural legislation to ensure climate resilience and technology use while aligning production with basin-specific water budgets. Furthermore, production is planned based on specific agricultural basins or farms, and support mechanisms are being revised to match these objectives. A major emphasis is also placed on expanding training and capacity-building activities for all stakeholders, including farmers, technical personnel, and vulnerable groups such as women and seasonal workers. The **second** strategic goal aims to ensure the protection and sustainable use of ecosystems and natural resources within agricultural production. Key actions involve identifying appropriate crop patterns and livestock systems to ensure the efficient use of soil and water at the provincial and district levels. Strategies are also implemented to protect cultivated lands, grasslands, and rural landscapes while monitoring productivity and maintaining water balance. To support these efforts, the government is drafting guidelines for nature-based solutions in agriculture, promoting ecosystem-based food production and agroforestry. These environmental strategies also extend to promoting sustainable aquaculture and improving support for apiculture, recognizing its vital interconnection with fruit production and forestry. The third goal centers on advancing R&D, innovation, and infrastructure resilience to secure the food supply. This includes increasing support for scientific studies on climate impacts, plant diseases, and alternative feed sources. Additionally, socio-economic factors influencing agricultural vulnerability are being identified and monitored at the village level to guide targeted interventions. Technological advancement is prioritized through the development of digital databases and early warning systems for drought. Finally, significant efforts are being made to minimize damage to critical infrastructure, such as irrigation systems and cold chains, while enhancing the agricultural insurance system (TARSIM) to better manage increasing climate risks.

The **Strategic Plan (2024-2028) of the MoAF** prioritizes R&D to enhance agricultural efficiency and quality, utilizing a core performance indicator that tracks the number of systems developed for emission measurement, monitoring, and mitigation. To achieve this, the plan deploys a three-pronged strategy: expanding climate change adaptation by bolstering sector resilience, studying agricultural drought, and deploying early warning systems alongside erosion-control measures; rigorously assessing and lowering GHG emissions from livestock and crop production by scaling low-carbon farming and preserving soil organic carbon; and accelerating circular economy R&D to develop innovative techniques for agricultural waste valorization and sustainable resource management. Underpinning these sustainable land-use objectives, the plan explicitly sets a quantitative target to expand the combined area of organic farming and Good Agricultural Practices (GAP) to 1,040,000 hectares by 2028.

Energy Efficiency 2030 Strategy and 2nd National Energy Efficiency Action Plan (2024-2030) address the strategic intersection of agricultural productivity, climate resilience, and resource optimization by framing energy efficiency as a core vector for securing national food supply chains. To incentivize and establish an environmentally sound investment landscape within the primary sector, the government deploys an array of agricultural subsidy instruments that feature systematically expanding financial allocations from year to year. Anchored within this regulatory framework, the Good Agricultural Practices legislation and its corresponding projects empower



producers to secure formal compliance certifications through institutions authorized by the MoAF to oversee the strict audit and registration process. These standardized methodologies serve as a critical vector for elevating agricultural productivity, product quality, and long-term food security by introducing complete supply chain traceability, environmental sustainability, and bio-safety protocols that safeguard human health, livestock welfare, and localized ecosystems.

Through the **Instrument for Pre-Accession Assistance for Rural Development (IPARD)** Program, targeted financial and technical support are provided within the scope of agri-environment measures to advance management of soil cover and erosion control, enhancement of biodiversity—specifically targeting great bustard population conservation—and promotion of organic farming as well as conservation farming practices.

Through the Farmer Registration System (FRS), a comprehensive national database was established in 2014 to facilitate the distribution of state agricultural support in a highly controlled, auditable, and traceable manner, thereby laying the foundation for the development of sound, data-driven agricultural policies. The system functions as a centralized repository that meticulously maintains detailed records of farmers engaged in agricultural activities, as well as key operational assets such as land parcels, farm address information, cropping patterns, and average yields. Furthermore, this integrated digital platform serves as the primary mechanism through which agricultural subsidies and sustainability support programs are systematically administered, monitored, and verified across the country.

In addition to the core tracking database, Türkiye utilizes several specialized **Agricultural Information Systems** to manage its agricultural ecosystem, including the Farmer Informing Service, Türkvat (the national livestock identification and tracking system), the Organic Agricultural Information System (OTBIS), the Greenhouse Registry System, and the Beekeeping Registry System. Together, these integrated Agricultural Information Systems provide the comprehensive inventories and data infrastructure necessary to systematically track, monitor, and regulate diverse agricultural activities nationwide. By capturing real-time farm-level metrics, these digital platforms collectively enhance supply chain traceability, ensure compliance with environmental standards, and strengthen institutional accountability across all state subsidy and support mechanisms.

To regulate, promote, and expand ecological farming practices, organic agriculture is systematically supported under the **Organic Agricultural Law** and driven by targeted financial incentives implemented by the MoAF. A cornerstone of this framework is the OTBIS, which was launched in 2005 to serve as a centralized digital repository for real-time tracking, holding updated statistics on organic crop and livestock products, registered producers, certified processing facilities, and specific organic land use. To ensure policy coherence and cross-verification, OTBIS is fully integrated with the overarching Farmer Registry System, allowing the government to track compliance and prevent data duplication. Beyond data management, national organic agriculture legislation and its corresponding programs provide robust financial mechanisms to support organic farmers, offering direct cash grants and specialized low-interest-rate loans to offset transition costs and stimulate green capital investments in the agricultural sector.

Organic agriculture represents a highly sustainable farming system built upon the highest standards of traceability, environmental responsibility, and consumer reliability. Under both national and international statutory frameworks, every single stage of the organic supply chain—spanning from farm to fork—is subject to rigorous regulatory audits, making formal third-party certification mandatory for all market-bound products. By avoiding synthetic chemical inputs and prioritizing ecological balance, these agricultural practices serve as a critical defense mechanism to mitigate



the destructive impacts of climate change, curb environmental pollution, safeguard localized biodiversity, and reinforce the long-term resilience of vital ecosystems.

Organic Agriculture Expansion and Control Project serves as a strategic initiative designed to scale the domestic organic farming sector while bolstering its global competitiveness. The overarching objectives of the project focus on elevating the income levels of primary producers by generating high-value organic commodities tailored for both domestic and international markets, securing a healthy and balanced nutritional supply for the nation's population, and systematically expanding organic product diversity. To maximize the efficiency and market yield of these ecological goods, the program mandates production methodologies that strictly align with international standards while simultaneously reinforcing the institutional capacity of national control and certification frameworks. A foundational pillar of the project centers on establishing comprehensive supply chain traceability from farm to table. Beyond directly financing localized agricultural transitions, the framework maintains continuous oversight and support through a multi-layered infrastructure consisting of rigorous compliance audits, specialized technical training for producers, and future-oriented R&D studies aimed at advancing organic farming innovation.

4.2.6.1 Control of Nitrate Use

Türkiye has amended the By-Law on Protection of Waters Against Pollution Caused by Nitrates from Agricultural Sources²⁴³ with the By-Law Amending the Regulation on Protection of Waters Against Pollution Caused by Nitrates from Agricultural Sources²⁴⁴. Furthermore, the Communiqué on the Identification of Nitrate-Vulnerable Zones, Environmentally Friendly Agricultural Practices, and the Implementation, Monitoring, and Reporting of the Nitrate Action Plan (Communiqué No: 2025/17)²⁴⁵ has been published and entered into force. Türkiye has begun monitoring nitrate levels through the Nitrate Information System (NIBIS), identified Nitrate Vulnerable Zones, and prepared and published Nitrate Action Plans (NAPs). To monitor the effectiveness of these nitrate action plans, the Nitrate Monitoring System (NEPİZ) became operational in 2025. It's expected that the by-law will significantly decrease the amount of nitrate used in agriculture and thus contribute to decreasing GHG emissions of Türkiye in the agriculture sector.

4.2.6.2 Analysis Based Fertilizer Use

The By-Law on Chemical Fertilizer Control²⁴⁶ (No. 2015/42), which entered into force in 2015, establishes comprehensive technical regulations governing the production, importation, and consumption of chemical fertilizers. This regulatory framework is designed to enforce standardized market controls, ensure strict compliance with national safety rules, and maintain systematic traceability records, thereby enabling crucial preventive measures across the agricultural supply chain.

243. Official Gazette. "Regulation on the Protection of Waters Against Pollution Caused by Nitrates from Agricultural Sources." In Official Gazette, No. 29779. 2016. <https://www.resmigazete.gov.tr/eskiler/2016/07/20160723-2.htm>.

244. Official Gazette. "Regulation Amending the Regulation on the Protection of Waters Against Pollution Caused by Nitrates from Agricultural Sources." In Official Gazette, No. 33045. 2025. <https://www.resmigazete.gov.tr/eskiler/2025/10/20251012-1.htm>.

245. Official Gazette. "Communiqué on the Identification of Nitrate Vulnerable Zones, Environmentally-Friendly Agricultural Practices and the Implementation, Monitoring and Reporting of the Nitrate Action Plan (Communiqué No: 2025/17)." In Official Gazette, No. 33045. 2025. <https://www.resmigazete.gov.tr/eskiler/2025/10/20251012-4.htm>.

246. Official Gazette. "Communiqué on the Sale, Transport and Stock Notification Control of Chemical Fertilizers Containing Nitrate Nitrogen (Communiqué No: 2015/42)." In Official Gazette, No. 29498. 2015. <https://www.resmigazete.gov.tr/eskiler/2015/10/20151010-5.htm>.



The Programme of Extending Analysis-Based Fertilizer Use offers targeted financial incentives to farmers to utilize professional fertilizer and soil analysis services at accredited laboratories, while also providing expert advisory support to ensure the precise and adequate application of nutrients. By replacing conventional, indiscriminate application methods with data-driven fertilization strategies, this initiative is expected to substantially contribute to the reduction of N₂O emissions typically generated by unsustainable agricultural soil management practices.

Under the framework of the Fertilizer Usage Control Programme, Agricultural Credit Cooperatives spearheaded systematic informational and guidance initiatives for technical personnel to standardize the determination of fertilizer types, application methods, precise volumes, and optimal timing. To support this technical transition, agricultural engineers underwent rigorous in-service training programs, enabling them to specialize in fertilizer composition, localized fertilization methodologies, and the precision calibration of specialized fertilization machinery and tools. By deploying these trained specialists to the field, the programme successfully prevented producers from engaging in indiscriminate or unconscious fertilizer application, directly supporting national efforts to reduce N₂O emissions from agricultural soils and contributing to the achievement of Türkiye's NDC mitigation targets. Furthermore, focused R&D studies were executed to optimize the use of controlled-release chemical fertilizers, leading to the strategic integration of organic fertilizers into the national fertilization program. Collectively, these coordinated actions minimized over-reliance on synthetic chemical inputs, decreased hazardous chemical runoff into surrounding ecosystems, and significantly advanced long-term, sustainable soil fertility.

4.2.6.3 Agriculture-based Specialized Organized Industrial Zones (TDIOSB)

Türkiye actively promotes the establishment of Agriculture-Based Specialized Organized Industrial Zones (TDIOSB) specializing in advanced plant production and greenhouse cultivation nationwide. To fuel these zones sustainably, the MoAF provides targeted incentives for integrating renewable energy infrastructure—such as geothermal, solar, and wind power—to meet large-scale heating requirements. By strategically clustering TDIOSB projects within high-yield geothermal fields, the state secures environmentally friendly, year-round food production. This methodology utilizes cheap, localized thermal energy to dramatically lower operational costs while eliminating the heavy reliance on fossil fuels, which have historically caused extensive environmental pollution in conventional greenhouse farming. To scale and modernize this sustainable infrastructure, the initiative is backed by the Turkey Climate Intelligent and Competitive Agricultural Growth Project (TUCSAP), a joint venture executed by the MoAF and the World Bank. A core sub-component of the TUCSAP framework is specifically designed to strengthen climate resilience, elevate crop yields, and maximize resource-use efficiency within the horticultural production lines of these specialized industrial zones. Under this partnership, the government has set a target to establish a massive, state-of-the-art Greenhouse TDIOSB covering an area of 3,036,787 m², fully heated by circular geothermal resources. Furthermore, to evaluate long-term viability and ensure compliance with national safety codes, the government utilizes the By-Law on Geothermal Resources and Natural Mineral Waters, along with the Governing Regulations of the Law on Geothermal Resources and Natural Mineral Waters, to conduct rigorous, ongoing investigations into the economic, social, and environmental outcomes of geothermal greenhouse facilities operating.

4.2.6.4 Land Consolidation

Under the statutory framework of the legislation regarding Soil Conservation and Land Use and Changes, Türkiye systematically regulates agricultural property structures to ensure each land parcel retains a sufficient baseline size to yield a sustainable operational income. A primary



directive of this policy is to strictly prohibit and prevent the division of arable lands into minor, fragmented fractions that are economically unfeasible to operate. By legally preventing the fragmentation of agricultural parcels, the country achieves a multi-layered reduction in GHG emissions. This environmental benefit is realized through the optimized, large-scale application of modern agricultural inputs and infrastructure—specifically maximizing the efficiency of land utilization, water networks, specialized energy inputs, calibrated fertilizers, and heavy machinery. Within national climate tracking protocols, the specific monitoring of GHG emissions reductions resulting from this land-preservation measure is engineered to be verified through the audited contraction of total machinery and tractor operation hours.

Beyond lowering machinery runtimes, preventing parcel division structurally alters localized irrigation practices, shifting operations away from fragmented surface irrigation toward unified systems that dramatically minimize water distribution losses and maximize overall irrigation efficiency. Empirical data further underscores the logistical and emission-saving value of these interventions. Combining consolidated land structures with optimized nitrogen fertilizer application rates and advanced conservation tillage techniques, the agricultural sector is positioned to secure higher crop yields per unit area while simultaneously driving down macro-level N₂O and CO₂ emissions.

In this context, land consolidation works are carried out on an area of 9.70 million ha by the General Directorate of DSI. As of the end of January 2026, the registered area in Türkiye has been realized as 7.81 million ha. In 2025, consolidation registration works were completed on 225,690 ha of land. The 2028 target of the MoAF in land consolidation and on-farm services is to complete the consolidation works on an area of 10 million ha.

4.2.6.5 Environmentally Based Agricultural Land Protection Programme (ÇATAK)

The Environmentally Based Agricultural Land Protection Programme (ÇATAK) serves as a premier benchmark for national agri-environmental initiatives designed to reconcile intensive agricultural production with environmental stewardship. Implemented across regions experiencing high-density farming activities, the program establishes mandatory preventative safeguards aimed at elevating soil and water quality, securing the long-term sustainability of renewable natural resources, and mitigating the degrading impacts of industrial agriculture. To achieve these ecological objectives, ÇATAK systematically mandates the adoption of "Minimum Soil Tillage Agriculture" practices to restore soil structural integrity, alongside the deployment of precise irrigation methodologies engineered to conserve vital energy and water resources. Beyond its core engineering directives, the program functions as a socio-economic catalyst by raising ecological awareness among primary producers and boosting net agricultural incomes through a structural reduction in operational input costs.

As the first national framework specifically engineered to counteract the adverse environmental footprints of conventional agricultural practices, ÇATAK is projected to drive down macro-level CH₄ and CO₂ emissions through the widespread adoption of its conservation techniques. Structurally, the program shares significant operational and policy similarities with the EU's agri-environmental measures integrated within its broader rural development frameworks.

4.2.6.6 Sustainable Use of Agricultural Waste

To accelerate its transition toward a climate-resilient and circular economy, Türkiye systematically promotes the sustainable utilization of agricultural biomass as a primary vector for driving green growth. A major cornerstone of this strategy is the large-scale diversion of livestock manure away



from conventional, open-air storage systems—which historically have acted as significant sources of localized pollution—and directing it into advanced biomass and biogas power plants. By intercepting raw manure and processing it through anaerobic digestion facilities, this integrated waste-to-energy model achieves a dual environmental benefit: it generates reliable, renewable base-load electricity and thermal energy for the national grid while reducing agricultural GHG emissions. Specifically, this methodology captures volatile organic compounds and directly prevents the uncontrolled release of potent CH₄ and N₂O gases from the livestock sector into the atmosphere. Furthermore, the high-nutrient byproduct generated during the anaerobic digestion process is recycled into stabilized organic fertilizer, substituting synthetic chemical inputs, restoring organic matter to national soils, and locking in a closed-loop system that supports both long-term soil fertility and national emissions-reduction targets.

4.2.6.7 Reducing GHG Emissions from Livestock

Activities conducted within the framework of Pasture Law, Animal Breeding Law, the Law on Veterinary Services, Plant Health, Food and Feed, and Specialized Organized Industry Zones based on agriculture have a direct impact on the reduction of CH₄ gas in the stock farming sector.

Regulatory actions executed under the statutory frameworks of the Pasture Law, the Animal Breeding Law, the Law on Veterinary Services, Plant Health, Food and Feed, and the establishment of Agriculture-Based Specialized Organized Industrial Zones collectively exert a direct, mitigating impact on CH₄ emissions within the livestock sector. By legally protecting grazing lands, optimizing herd genetics, improving animal health and feed efficiency, and clustering livestock operations into modern industrial zones, these integrated legislative measures systematically curb enteric fermentation and improve manure management, thereby driving down the country's macro-level agricultural GHG footprint.

4.2.6.8 Program of Supporting Rural Development Investments

Support activities are being carried out in all 81 provinces within the scope of the Program of Supporting Rural Development Investments to avoid excessive use of production inputs such as irrigation water, energy, and fertilizers by extending the use of modern irrigation machinery and equipment developed for agricultural activities, helping to protect the quality and quantity of soil and water resources, contributing to improved quality and productivity in production, and reducing labor needs. For real and legal entity applicants, grant support is provided separately at determined rates of 50%–75%, depending on the type of investment and applicant category. The programme has evolved into its third phase (IPARD-III, 2021–2027), jointly financed by Türkiye and the EU. The European Commission approved the IPARD III programme with an EU budget of €430 million, and together with national public and private contributions, total investment in rural areas is expected to exceed EUR 1 billion over the 2021–2027 period. IPARD-III currently covers all 81 provinces, aiming to modernize agriculture, increase rural incomes, and expand food production and processing capacity. To date, IPARD-III has supported approximately 26,000 projects and created nearly 105,000 jobs nationwide.

On irrigation specifically, DSI investments in 2025 brought 70,213 hectares of land under irrigation, with projected annual economic contributions of TL 11.7 billion and the creation of approximately 64,000 employment opportunities in the agricultural sector. Despite this progress, as of 2023 approximately 73% of Türkiye's water supply is used for irrigation, and it has been estimated that this could be halved if all farmers shifted to drip irrigation. Farmers remain reluctant primarily due to installation costs, and greater government support has been called for.



Within the scope of the Programme, solar energy continues to be supported as an energy source for agricultural irrigation systems. Support can be provided specifically for modern agricultural solar irrigation systems to meet the energy needed for irrigation in locations without grid electricity, and up to 75% grant support is available for renewable energy investments under the IPARD Program. Starting in 2024, grant support of up to 50% has also been extended to investments in smart agricultural technologies compatible with climate change, such as precision farming systems. The fundamental cost advantage of solar irrigation systems—near-zero fuel and operating costs relative to diesel alternatives—remains unchanged. Agrivoltaic systems offer an opportunity to combine agricultural production with solar energy generation. TENMAK could contribute to this field through pilot studies and the use of nuclear and isotopic techniques to develop climate-resilient crop varieties, improve water and nutrient use efficiency, and support sustainable agricultural production.

Table 30 presents the strategic matrix of policies and specific mitigation measures enacted by Türkiye within its agricultural sector to systematically reduce GHG emissions.



Table 30 – Agriculture sector policies and measures

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1 - Control of Nitrate Use	Agriculture	N ₂ O	Protection of Waters Against Pollution Caused by Nitrates from Agricultural Sources	Regulatory	Implemented	2016	MoAF	NE
2 - Extending Analysis-Based Fertilizer Use	Agriculture	N ₂ O	Reducing N ₂ O emissions through the promotion of efficient fertilizer use	Economic	Implemented	2017	MoAF	NE
3 - Agriculture-based Specialized Organized Industrial Zones (TDIOSB)	Agriculture	CO ₂	Reduction of fossil fuel-based energy consumption in agricultural production	Infrastructure	Implemented	2017	MoAF	NE
4 - Land Consolidation	Agriculture	CO ₂	Increasing energy efficiency in agricultural production	Regulatory	Implemented	2017	MoAF	NE
5 – Environmentally Based Agricultural Land Protection Programme (ÇATAK)	Agriculture	CO ₂ , CH ₄ , N ₂ O	Improving soil structure and reducing carbon emissions by adopting “Minimum Soil Tillage Agriculture” practices, saving energy and water through efficient irrigation practices	Regulatory, economic, other	Implemented	2006	MoAF	NE
6 - Sustainable Use of Agricultural Waste	Agriculture	N ₂ O, CH ₄	Sustainable management of agricultural waste, including material recycling and energy recovery	Regulatory	Implemented	2011	MoAF, MENR, MoEUCC	NE
7 - Reducing GHG Emissions from Livestock	Agriculture	N ₂ O, CH ₄	Decreasing GHG emissions from livestock	Regulatory	Adopted	2022	MoAF	NE
8 - Program of Supporting Rural Development Investments	Agriculture	CO ₂ , CH ₄ , N ₂ O	Reducing GHG emissions by promoting the efficient use of irrigation water, energy, and fertilizer; helping to protect the quality and quantity of the soil; contributing to the improvement of quality and productivity and reducing labor need	Economic, regulatory, informative, other	Implemented	2017	MoAF	NE



4.2.7 LAND USE, LAND USE CHANGE AND FORESTRY (LULUCF)

Overview

Protection of forests and the expansion of forest areas have always been a part of Türkiye's strategies and action plans. Türkiye's forest stock has shown an increasing trend over the last decades. In response to global and national demands, the management of the economic, ecological, social, and cultural functions of forests within ecosystem integrity, and the management of forests according to sustainable forest management principles, is the basic approach of today's forestry approach.

Land Use, Land Use Change, and Forestry (LULUCF) focus within this sector is the enhancement of carbon sinks, which is pursued through extensive afforestation, sustainable land use, and the restoration of ecosystems. The legal and strategic framework for LULUCF is strengthened by the Climate Law, which includes specific provisions for biodiversity conservation, and the developing green taxonomy, which aims to facilitate sustainable finance for the protection and restoration of ecosystems.

Under the **12th National Development Plan**, Türkiye prioritizes the establishment of climate-resilient forest ecosystems alongside the development of advanced management plans specifically engineered to expand national carbon sink functions. This comprehensive macro-level framework aims to maximize the multi-dimensional contributions of forests toward mitigating natural disasters, combating severe drought and desertification, safeguarding localized biodiversity, protecting critical water resources, and balancing land degradation. Concurrently, the policy seeks to amplify the positive cascading effects of healthy forest ecosystems across the national health, food, eco-tourism, and renewable energy sectors. To support the transition toward a circular economy, the plan introduces targeted incentives to prolong the lifecycle of harvested wood and forest products, systematically driving up their reuse and recycling rates. On the regulatory and market fronts, the state focuses on developing voluntary carbon markets and robust green certification frameworks tailored to the forestry sector, while providing institutional backing to accelerate the internationalization and export capacity of domestic forestry enterprises. Finally, to ensure global compatibility, national forestry statistics will be fully harmonized with international reporting standards, while the country simultaneously scales up its preventative infrastructure and operational firefighting capacities to combat the escalating threat of forest fires. Under the Medium Term Program (2024-2026), Article 25, contribute to combatting climate change in forestry as "Within the framework of sustainable forest management, forest resources will be protected and developed, new carbon sinks will continue to be created, and industrial plantation activities will be continued in suitable areas."

The long-term strategy 2053 for this sector is structured under three main pillars: proactive restoration and conservation, the transition to a high value-added circular bioeconomy, and the promotion of R&D and innovation. Through proactive restoration, Türkiye aims to enhance the quality and quantity of its forests by implementing ecosystem-based functional planning and selecting fire-resistant species for afforestation and rehabilitation efforts. This strategy also extends to urban environments, where the establishment of green belts and ecological corridors is planned to improve air quality and mitigate risks such as floods and urban heat islands.

The **Climate Change Mitigation Strategy and Action Plan (2024-2030)** outlines five core strategies to maximize the sector's mitigation potential while supporting biodiversity and a circular bioeconomy. The first and most fundamental strategy is increasing annual GHG sequestration by protecting ecosystems and expanding sink areas. This involves transitioning to a proactive,



basin-scale approach for afforestation and restoration, guided by a scientific roadmap to ensure that activities are resilient to long-term climate impacts. Key actions include identifying potential afforestation sites using remote sensing, combating land degradation and erosion, and increasing the proportion of woody green spaces in urban areas through cooperation with municipalities. Furthermore, the plan aims to increase the total amount of protected land and marine areas to 30% by 2030, in line with international biodiversity frameworks. Strengthening forest fire management—including early detection and effective response—is also prioritized to prevent significant emission spikes like those seen in 2021. The strategy also emphasizes a transition to a high value-added circular bioeconomy for forestry and agricultural enterprises. This pillar focuses on the efficient use of wood raw materials and reducing production pressure on natural forests by encouraging industrial plantations and fast-growing species. Specific support is directed toward SMEs, particularly those led by women and young entrepreneurs, to develop non-wood forest products and enter international markets. Additionally, incentives are provided to the forest industry to increase the recycling and recovery of materials, thereby extending the life of carbon stored in harvested wood products. To support these goals, Türkiye plans to double project funding for R&D and innovation in the LULUCF sector by 2030 compared to 2020 levels. This research focuses on utilizing advanced technologies such as artificial intelligence (AI), drones, and robotics for precision monitoring and productivity improvements. Emerging fields such as blue carbon—the sequestration of carbon in coastal and marine ecosystems—are also slated for research and pilot projects. Complementing these efforts is the development of a robust technological infrastructure, including early warning systems for droughts, floods, and forest fires, as well as high-resolution remote sensing for the verification of emission and sequestration data. Finally, the plan highlights the importance of capacity building and professional training in carbon management. This includes establishing specialized climate change units within relevant institutions to oversee ecosystem-based policies and international reporting obligations. Training programs are designed for a wide range of stakeholders—from forest engineers to farmers and local government personnel—covering topics such as climate-friendly forestry, river corridor restoration, and monitoring of desertification. By integrating these scientific, institutional, and technological advancements, Türkiye aims to maintain and enhance its national carbon sinks as a vital part of its 2053 net-zero target.

The **Climate Change Adaptation Strategy and Action Plan (2024–2030)** focuses on enhancing the resilience of natural ecosystems while securing their role as vital carbon sinks. A central objective is to contribute to global efforts by increasing the share of marine and land protected areas to 30% by 2030. To support this, the government plans to integrate climate change adaptation directly into the management and development plans of existing protected areas, as well as into species and habitat protection action plans. A major pillar of the strategy involves the proactive restoration of degraded ecosystems and the establishment of ecological corridors. Policies mandate the creation of inventories of degraded and fragmented ecosystems to guide restoration efforts across the country, ensuring these areas are reconnected to allow for species migration and enhanced biodiversity. In forest management, specifically, the focus shifts toward monitoring biotic factors (such as insect and fungal pests) and abiotic factors (such as storms and heavy snowfall) that are exacerbated by climate change. Furthermore, forest fire management is being strengthened by prioritizing preventive measures and early detection systems to protect these critical carbon-sequestering assets. Legislative and institutional frameworks are also being updated to align with these goals. This includes reviewing and revising urban development and forest legislation—such as the Forest Law—to ensure the priority purpose is nature conservation and to limit land-use changes that negatively impact biodiversity. There is a concerted effort to establish a roadmap for the sustainable management and use of forest and agricultural resources, balancing economic



needs with the necessity of maintaining ecosystem health. Additionally, the government aims to increase public awareness through climate and nature literacy programs, updating curricula from pre-school to postgraduate levels to emphasize the importance of protecting ecosystems. In urban environments, LULUCF policies emphasize the expansion of green and blue infrastructure to mitigate hazards like urban heat islands and floods. Strategic actions include creating new urban forests, parks, and green corridors that connect industrial areas to settlements or run along urban peripheries. These green spaces are not only intended for ecological resilience but also serve as potential emergency shelters and improve urban air quality. Furthermore, efforts are being made to implement urban agriculture initiatives and establish gardens on productive land within cities to promote sustainable land use at the local level.

The **National Forestry Programme (2004–2023)** was developed with support from the Food and Agriculture Organization (FAO) and entered into force in 2004, covering a 20-year period. Its objectives included sustainable management of forest resources, protection of biodiversity and natural habitats, expansion and improvement of forest areas, and the promotion of ecological, economic, social, and cultural forest-based benefits, including the fair sharing of these benefits among stakeholders. The programme's term concluded in 2023, and Türkiye's Forest General Directorate has since noted that this programme has expired and called for a new one to be prepared. A successor National Forestry Programme (2024–2043) is confirmed to be in preparation, and while it is expected to place greater emphasis on climate change adaptation and carbon sink capacity given Türkiye's broader climate policy direction, this specific thematic emphasis has not yet been confirmed through a published draft or official source, as the programme's content remains undisclosed while under preparation.

The **National Strategy and Action Plan to Combat Desertification (2024–2030)** establishes a comprehensive operational framework designed to reinforce and expand Türkiye's forest lands while mitigating land degradation. A primary directive of the strategy focuses on the engineering of detailed restoration plans for both general pastures and specialized in-forest grazing lands, coupled with empirical productivity analyses to ensure sustainable land utilization. To build a robust scientific baseline for these conservation efforts, the plan mandates extensive research initiatives aimed at capturing and mapping localized soil quality parameters. Concurrently, targeted erosion control activities are systematically deployed across vulnerable geographic sites identified as high-priority zones based on erosion maps. To actively enhance national carbon sink capacities, the strategy prioritizes the revitalization of degraded woodlands, converting them into highly productive forest ecosystems through coordinated land rehabilitation and aggressive afforestation campaigns. This forward-looking ecological framework also drives scientific research into the compounding impacts of climate change, desertification, and land degradation on regional biodiversity and delicate ecosystems. To translate these research findings into practice, biodiversity and critical ecosystem services are being directly integrated into operational forest management methodologies and continuously monitored for compliance. Furthermore, the plan scales up immediate defensive measures against catastrophic disruptions by reinforcing preventative protocols against forest fires and expanding the country's tactical firefighting and response capacities. Finally, the framework institutes a rigorous monitoring paradigm to track the long-term health of forest ecosystems, mandating the application of natural or nature-friendly biological solutions to combat diseases and pests while preserving the organic integrity of forest reserves.

The **Strategic Plan of the General Directorate of Forestry (2024–2028)** serves as the definitive institutional framework for national forestry planning, fully aligned with the overarching directives



of Türkiye's 12th National Development Plan. This forward-looking strategic roadmap establishes highly specific performance targets aimed at modernizing land stewardship and enhancing ecological resilience. A cornerstone of the plan involves safeguarding forest ecosystem health by ensuring that designated conservation forests are managed in strict compliance with their protective status, while simultaneously scaling up legal enforcement against illicit interventions and expanding nature-compatible, biological pest control methodologies. To brace ecosystems against localized climate impacts, the plan mandates the systematic mapping of high-biodiversity forest zones to draft localized conservation objectives, alongside targeted research to identify drought- and salinity-resistant genetic resources to upgrade national seed and seedling production infrastructures. The strategic plan also prioritizes the intensive expansion of carbon sequestration capacities and overall biomass quality through advanced silvicultural maintenance measures, setting an ambitious structural target to increase total productive forest areas to 14,150,000 hectares by 2028. Driven by the 12th Development Plan's macro-goals, these actions are explicitly engineered to enhance forest climate adaptation and maximize national carbon sink functionalities. To institutionalize sustainability, the framework outlines the expansion of Sustainable Forest Management (SFM) criteria and indicators to encompass 60 major forest enterprises across the country. This systemic modernization is further reinforced by technical infrastructure upgrades, specifically integrating remote sensing and AI-based decision support tools into the core Forest Information System (ORBİS). Finally, to foster economic diversification and public integration, the plan scales up sustainable forestry's socio-cultural value by multiplying approved certified ecotourism management areas from a baseline of 140 in 2025 up to 200 distinct zones by the 2028 target milestone.²⁴⁷

All policy documents target effective protection of forests against various factors, including fires and harmful diseases, soil conservation, afforestation, rehabilitation studies, extending monitoring practices, extension of sustainable forest management practices, raising awareness among the public, and development of the institutional capacities of relevant institutions.

Comprehensive rehabilitation efforts, afforestation campaigns, and transformations in forest management practices in Türkiye have led to distinct changes in forest areas, productivity, and carbon sequestration capacity over the recent decades.

The carbon sink potential of Türkiye has demonstrated a remarkable increase during this process. The LULUCF sector represents a net removal category in Türkiye's GHG inventory, with forests forming the backbone of this sector. Total net removals from the LULUCF sector stood at -66.4 Mt CO₂ eq. in 1990, while this figure was recorded as -67.1 Mt CO₂ eq. in 2024. As of 2024, the 23 million hectares of forest area accounted for a net removal of 55.18 Mt CO₂ eq. from the atmosphere. When Harvested Wood Products (HWP) are included, the sector's total removals reach 68.77 Mt CO₂ eq.; subtracting 1.67 Mt CO₂ eq. of emissions originating from other land-use types results in a net sectoral removal of 67.09 Mt CO₂ eq.

Certain fluctuations in removal capacity were also experienced throughout this period. Between 2011 and 2018, as a result of rehabilitation projects initiated in the early 2000s, rejuvenated stands entered a rapid growth phase, leading to a sharp surge in annual increment volumes. Conversely, between 2019 and 2022, the carbon removal capacity of forests suffered a temporary decline due to intensive salvage logging operations, rising raw material demands from an expanding timber industry, and climate-change-induced mega wildfires—particularly the 2021 fires, which alone

247. General Directorate of Forestry. (2026). Distribution of Ecotourism Areas by Provinces, 2023--2025. [https://www.ogm.gov.tr/tr/e-kutuphane-sitesi/Ormancilikistatistikleri/3.9 Ekoturizm alanlarının il düzeyinde dağılımı, 2023-2025.xlsx](https://www.ogm.gov.tr/tr/e-kutuphane-sitesi/Ormancilikistatistikleri/3.9%20Ekoturizm%20alanlarinin%20il%20d%C3%BCzeyinde%20da%C4%9Fılımı,%202023-2025.xlsx)



generated approximately 10 Mt CO₂ eq. in emissions under the Forest Land Remaining Forest Land category. By 2024, this trend was reversed as harvest volumes returned to historical averages and annual increment values recovered, reinforcing the carbon sequestration capacity.

Identified as key categories within the LULUCF sector, Forest Land Remaining Forest Land (FL-FL) and Harvested Wood Products (HWP) remain the primary drivers of carbon removals. Additionally, Land Converted to Forest Land (L-FL) provides a significant contribution to removals, largely driven by major afforestation campaigns that have successfully converted grasslands, uncultivated lands, and agricultural areas into forest lands.

The landmark **Climate Council** held in 2022 placed a critical policy focus on the strategic management and climate resilience of the LULUCF sector. To unlock the full potential of the LULUCF as primary drivers of negative emissions, a series of definitive policy targets and recommendations were formulated. Foremost among these directives is the mandate to systematically alleviate human and industrial pressures on vital carbon sink areas while actively expanding the scope of protected habitats through the lens of sustainable land management. Additionally, the recommendations prioritize robust interventions designed to halt ongoing land degradation, alongside comprehensive conservation measures to protect and physically increase the volume of natural carbon sinks nationwide. To secure long-term landscape integrity, the Council advocated for the institutional strengthening of existing policies governing Land Degradation Neutrality (LDN). This comprehensive approach extends beyond woodlands to enforce protective and restorative standards across all vital ecological assets, including agricultural territories, grazing lands, and vulnerable wetlands. On the active development front, future forestry initiatives are directed to shift toward ecosystem-based reforestation models, which ensure that newly planted areas mirror native biodiversity and localized climate-adaptive traits rather than existing as monoculture plantations. Finally, acknowledging the escalating climate risks of extreme weather, the framework calls for a structural upgrade of national firefighting capacities, specifically mandating an increase in state-of-the-art technological equipment, logistical assets, and specialized field personnel to defend existing forest carbon pools from catastrophic wildfire disruptions.

4.2.7.1 Expanding Forest Areas

The 30% total forest land target set under the 11th Development Plan (2019–2023) was successfully achieved by 2023. The successor 12th Development Plan (2024–2028) maintains area expansion objectives while enhancing climate resilience, targeting an increase in carbon sink capacity through improved adaptation of forests to climate change.

4.2.7.2 Effective Protection of Forests

The **12th Development Plan (2024–2028)** carries forward and updates the forestry targets as follows: completion of the national forest inventory remains ongoing, with new inventory preparations continuing into the current period; firefighting and resilience capacity has been substantially reinforced, including through a USD 400 million World Bank-funded Türkiye Climate Resilient Forests Project launched in 2024; afforestation and rehabilitation activities continue with an expanded climate framing, prioritizing increased carbon sink capacity through forest adaptation to climate change; and industrial plantation promotion is explicitly continued, with the 12th Plan committing to support private-sector industrial afforestation using improved and fast-growing species.



4.2.7.3 Protection and Restoration of Marine Seagrass Ecosystems (Blue Carbon)

Recognizing the vital role of coastal and marine ecosystems in climate change mitigation and adaptation (blue carbon), Türkiye has expanded its LULUCF policy scope to include the systematic mapping, protection, and active restoration of marine seagrass meadows. Marine seagrasses serve as exceptional carbon sinks—possessing up to 35 times higher carbon sequestration capacity than tropical forests—while generating significant volumes of oxygen (ranging from 4 to over 20 liters per square meter daily), preventing coastal erosion, improving water clarity, and providing habitat for marine biodiversity. To harness these critical ecosystem services and counter degradation caused by climate change and anthropogenic pressures, such as maritime tourism, targeted marine restoration initiatives have been executed.

Completed in 2024, the "Determination of Seagrass Distribution Areas in the Sea of Marmara" (MAR-ÇAYIR) project established a comprehensive spatial baseline across 216 marine field stations, encompassing the Marmara coastline, the Princes' Islands, the Marmara Islands, and the Dardanelles and Bosphorus straits. The project mapped key native species—including *Cymodocea nodosa* (the most widespread), *Posidonia oceanica*, *Zostera marina*, and *Zostera noltii*—to formulate conservation strategies and contribute to the broader ecosystem rehabilitation of the Sea of Marmara. Furthermore, the initiative successfully executed pilot sediment-based transplantation of *Cymodocea nodosa* patches (25x25 cm) at a depth of 3 meters off Edincik Altı (Bandırma), utilizing protective grid structures to monitor root anchoring and growth dynamics.

Concurrently, to address intense pressure from yacht tourism and rising sea temperatures in the Mediterranean, Türkiye implemented the "Determination of Distribution, Mapping, and Transplantation of Seagrasses Project" within the Fethiye-Göcek Special Environmental Protection Area (SEPA). Focusing on the Mediterranean endemic species *Posidonia oceanica* across depths of 0 to 40 meters in Göcek Bay, the project established high-resolution spatial mapping and pilot transplantation across five selected trial sites. Coordinated by the MoEUCC, this initiative demonstrates a multi-stakeholder governance model through direct collaboration between public authorities, universities, and NGOs. Ongoing monitoring across these transplantation sites evaluates root attachment success and growth rates to guide long-term conservation measures and safeguard marine biodiversity.

Table 31 contains the strategic matrix of policies and targeted mitigation measures enacted by Türkiye within its LULUCF sector to systematically enhance carbon sequestration and reduce GHG emissions.

**Table 31 – LULUCF sector policies and measures**

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1 - Expanding Forest Areas	Forestry / LULUCF	CO ₂	Extension and improvement of existing forest areas and carbon sink	Regulatory	Implemented	2004	MoAF	NE
2 - Effective Protection of Forests	Forestry / LULUCF	CO ₂	Protection of the forests from forest fires and other threats	Regulatory	Implemented	2004	MoAF	NE
3- Protection and Restoration of Marine Seagrass Ecosystems (Blue Carbon)	Forestry / LULUCF	CO ₂	Expanding Türkiye's blue carbon sink capacity through the active protection and restoration of marine seagrass ecosystems	Research	Implemented	2024	MoEUCC	NE



4.2.8 WASTE

Overview

GHG emissions from Türkiye's waste sector accounted for 2.6% of the total national GHG emissions (excluding LULUCF) in 2024, amounting to 15.4 Mt CO₂ eq.. Although sectoral emissions have registered an increase of 49.7% compared to 1990 levels, they have entered a definitive stabilization and leveling-off period in recent years, primarily driven by major structural and operational improvements in managed landfill sites. Within the sector, the vast majority of emissions originate from solid waste disposal, which commands a 61.4% share, followed by wastewater treatment and discharge at 38.5%, while the combined share of the biological treatment of solid waste and the open burning or incineration of waste remains extremely minor at 0.14% and 0.05%, respectively. Because CH₄ represents the dominant GHG in this category—comprising approximately 85% of the total waste inventory—Türkiye has directed substantial investments toward CH₄ gas recovery facilities, which successfully expanded recovered CH₄ volumes from just 42 kt CO₂ eq. in 2002 to a significant 12.8 Mt CO₂ eq. in 2024, thereby heavily suppressing net sectoral emissions. This mitigation trajectory is further supported by tight regulatory enforcement, most notably the implementation of the Waste Management Regulation in 2015, which triggered a sharp 93.7% decline in emissions from the open burning of waste since 1990. Moving forward, waste management continues to serve as an integrated environmental protection and public health priority through statutory mechanisms like the National Waste Management and Action Plan, which guides local authorities toward circular economy principles, expanded recycling, wastewater CH₄ recovery initiatives—which have achieved a 506% increase since 1998—and waste-to-energy utilization to effectively decouple national population growth from waste-sector emission increases.²⁴⁸

In the **12th National Development Plan**, Türkiye establishes comprehensive targets to enhance national waste recovery rates and expand the proportion of the municipal population supported by regular landfill services. The overarching framework aims to systematically minimize the generation of both solid waste and wastewater, divert refuse away from landfills, and prioritize biological recovery methods as direct alternatives to traditional landfilling. To reduce GHG emissions from the waste sector, the plan enforces technical interventions such as capturing or flaring CH₄ emissions at disposal sites and wastewater facilities, rehabilitating obsolete dumpsites, optimizing sorting at the source, and accelerating the deployment of advanced nitrogen removal technologies in wastewater treatment plants. Additionally, the plan aims to reinforce the national zero waste management system, catalyze green transformation, facilitate the transition toward a circular economy, and secure the sustainable management of vital soil and water resources.

The **Climate Change Mitigation Strategy and Action Plan (2024–2030)** outlines several direct measures to reduce emissions, starting with the prevention and reduction of waste and wastewater through the preparation of a National Waste Prevention Plan and targeted studies to minimize food waste. For waste that is generated, the strategy focuses on improving recycling and recovery rates by expanding separate collections at the source, implementing a deposit return system for beverage packaging, and increasing the capacity of biological treatment facilities for biodegradable waste. Furthermore, the plan aims to convert waste that is not suitable for material recovery into refuse-derived fuel (RDF) or treat it using thermal technologies for energy recovery, thereby diverting it from landfills. Wastewater management is another critical priority, with a strategic goal to increase the reuse rate of treated wastewater to 15% by 2030.

²⁴⁸. NID, 2026.



In the **Second NDC**, Türkiye's waste-related strategies are anchored in a zero-waste approach and sustainability principles, aiming to drive an economy-wide and societal transformation toward a low-carbon future. These policies specifically focus on reducing waste generation at the source, improving separation and recycling to divert materials from landfills, and optimizing resource efficiency across the nation. Central to this framework are the National Waste Management Strategy and Plan (2025–2035) and the National Circular Economy Strategy and Action Plan (2025–2028), which align short-term actions with the long-term objective of achieving net-zero emissions by 2053. Furthermore, the transition to a circular economy is institutionalized as a core environmental objective within the national Green Taxonomy and the Green Deal Action Plan, ensuring that waste management is integrated into broader economic and financial systems. The cornerstone of these policies is the zero-waste approach, which prioritizes preventing waste generation at the source and maximizing the recovery of materials to support a low-carbon, circular economy. Key national targets include reaching a 60% municipal waste recovery rate by 2035 and completely ending the landfilling of untreated municipal waste by 2053. To guide this transition, the government has established the National Waste Management and Action Plan (2023–2035) and is developing a National Circular Economy Strategy and Action Plan (2025–2028) to address the entire life cycle of products, from design to secondary raw material use.

The **National Waste Management Strategy and Plan (2025–2035)**²⁴⁹ drives climate mitigation in the waste sector by focusing on organic waste diversion, landfill gas capture, and circular economy strategies. Key targets include reducing total municipal waste landfilling to a maximum of 10% and achieving 65% household waste recycling by 2035 to reduce CH₄ emissions. This strategy establishes a hierarchical waste management framework systematically structured around a definitive sequence of priorities, beginning with source prevention and reduction, followed by reuse, recycling and recovery, energy recovery, and ultimately concluding with environmentally sound disposal. The overarching strategic objective of this macro-level policy is to decouple national waste generation from economic growth, minimize the aggregate environmental footprint of waste, and maximize the economic value recovered from materials.

Within the **National Circular Economy Strategy and Action Plan (2025–2028)**²⁵⁰, Türkiye's transition to a circular economy is a strategic component of its goal to reach net-zero emissions by 2053. The National Circular Economy Strategy and Action Plan aligns waste management with climate mitigation by prioritizing the waste hierarchy—prevention, reuse, and recycling—to reduce the volume of waste sent to landfills and incineration. Key legislative actions include mandating the use of recycled materials and establishing regulations to prevent the incineration of biomass that can be utilized for material recovery. Specific climate-focused waste management measures are targeted at priority sectors such as food, textiles, and construction. The strategy aims to reduce per capita food waste by 50% by 2030, directly addressing CH₄ emissions from organic decomposition. In the textile and packaging sectors, mandatory Extended Producer Responsibility (EPR) and minimum recycled content requirements are designed to lower production-related carbon footprints. Furthermore, the management of demolition waste is prioritized to mitigate the environmental impacts of urban transformation and disaster recovery.

²⁴⁹. MoEUCC. "National Waste Management Strategy and Plan (2025–2035)." Ankara, Türkiye, 2025.

²⁵⁰. MoEUCC. 2025_c. "National Circular Economy Strategy and Action Plan (UDESEP) 2025–2028." Ankara, Türkiye, 2025. https://webdosya.csb.gov.tr/db/cygm/haberler/udesepp_eng-20251020103224.pdf.



4.2.8.1 Zero Waste Policy

Türkiye started the Zero Waste Project and adopted the by-law on Zero Waste²⁵¹ in 2019. The objective of the by-law is to recognize the general rules and principles regarding the establishment, dissemination, development, monitoring, financing, recording, and certification of the zero-waste management system. The by-law aims for waste prevention as the main priority and regulates the segregation of the waste at the source and separate collection of recyclable wastes. With the implementation of the By-Law, a reduction in the amount of waste sent to landfills will also decrease. Eleven operational guidelines have been prepared by the MoEUCC to guide the realization of the works related to the establishment, operation, and monitoring of a sustainable zero waste management system. Provincial Zero Waste Management System Plans were prepared in 2020 by 81 provinces, containing measures for establishing a zero-waste management system within the province. As part of the Zero Waste Project, targeted training on zero waste practices has also been delivered to women, including women's guesthouses staff and residents, to strengthen awareness and participation in waste prevention and recycling.

Since the launch of the project in 2017, 90 Mt of recyclable waste has been brought back into the economy. The national recovery/recycling rate, which was 13% in 2017, has reached 35%, keeping Türkiye on track to achieve its long-term target of 60% by 2035. The recovery of these materials generated a total economic gain of 180 billion TL, while 108 Mt of CO₂ eq. GHG emissions were prevented. To prevent all negative effects caused by plastic bags, a legal arrangement has been made for the payment of plastic bags for transportation purposes at the sale points such as markets and stores as of 1 January 2019. Through this policy, between 2019 and 2023 the formation of 1,012,699 tons of plastic waste was prevented. With this reduction, the import of plastic raw materials necessary for the production of plastic bags in Türkiye has been prevented, and approximately 6.98 billion Turkish liras have been saved, as well as approximately 31,500 tons of GHG emissions have been prevented.

Türkiye also aims to increase its waste recovery rates through increasing waste-derived fuel usage in its manufacturing industry.

Türkiye launched the Zero Waste Project in 2017 and then formalized the initiative through the By-law on Zero Waste²⁵², which established the general principles for the establishment, dissemination, development, funding, monitoring, recording, and certification of the zero-waste management system, prioritizing waste prevention and source segregation of recyclables. To operationalize the system, the then MoEUCC published 11 technical implementation guidelines covering local governments, industrial zones, airports, shopping centers, and other sectors. Following this, Provincial Zero Waste Management System Plans were progressively prepared for all 81 provinces, in line with the regulation's phased 2020–2022 implementation timeline.

4.2.8.2 Decreasing the Amount of Municipal Waste Sent to Landfills

The waste management hierarchy serves as a structural tool to define the operational priorities of resource preservation, transforming the traditional perception of waste by treating it as a valuable economic resource while evaluating environmental protection processes from the most appropriate

251. Official Gazette. “Zero Waste Regulation.” Ankara, Türkiye, 2019. <https://www.resmigazete.gov.tr/eskiler/2019/07/20190712-9.htm>.

252. Official Gazette. “Zero Waste Regulation.” Ankara, Türkiye, 2019. <https://www.resmigazete.gov.tr/eskiler/2019/07/20190712-9.htm>.



to the least appropriate intervention. This framework establishes an explicit order of preference for systemic action, utilizing a pyramidal scheme designed to minimize waste generation and ensure the sustainable stewardship of resources. Within this ideal hierarchy, preventing and reducing waste directly at its point of generation, followed closely by the immediate reuse of products where prevention is impossible, constitute the primary and most critical phases. Materials that cannot be diverted through reuse must be systematically directed toward recycling, material recovery, or thermal energy recovery to ensure their reintegration into the domestic economy. Ultimately, the final disposal of waste in landfills is reserved strictly as a last resort and should be used only when no viable recovery or recycling methodologies are technologically or economically feasible.

In alignment with these structural principles, Türkiye has significantly transformed its municipal waste management infrastructure over the past several decades. Prioritizing the transition away from unregulated dumpsites, the country has achieved a major expansion in its network of engineered sanitary landfills, with the total number of operational facilities surging from just two in 1994 to 94 active installations today. This modernized waste infrastructure currently provides regular, environmentally sound disposal and storage services to 1,248 municipalities, effectively covering 94.5% of the nation's total urban population. Looking forward, this infrastructural baseline serves as a stepping stone for the country's long-term circular economy mandates; under its comprehensive climate strategy, Türkiye aims to completely phase out and terminate the landfilling of all municipal waste that has not been subjected to advanced pre-treatment processing by the 2053 net-zero milestone target.

4.2.8.3 Actions implemented under Wastewater Treatment Action Plan

The Wastewater Treatment Action Plan (2017–2023), prepared in accordance with the Environment Law and the Strategic Plan of the MoEUCC, aimed to strengthen Türkiye's wastewater treatment capacity and promote the reuse of wastewater and cleaner production technologies that contribute to climate change mitigation.

Between 1998 and 2024, the number of biogas facilities with CH₄ recovery at domestic wastewater treatment plants increased from 1 to a peak of 25 in 2020, before stabilizing at 23 facilities in 2022–2024. In these facilities, recovered CH₄ grew from 3.6 kt in 1998 to 30.5 kt in 2015, before declining to 21.6 kt in 2024—a trend partly attributable to facility-level operational changes and a comprehensive recalculation of recovery data for the period 1998–2023. Overall, CH₄ recovery from domestic wastewater treatment increased by 506%, from 100 kt CO₂ eq. in 1998 to 605 kt CO₂ eq. in 2024. Emissions from energy production using recovered CH₄ at these facilities are reported under the Public Electricity and Heat Production category.²⁵³

4.2.8.4 Establishment of Deposit Return Scheme

Türkiye is setting up a nationwide **deposit management system** for the collection and recycling of waste, specifically targeting single-use beverage containers made from recyclable materials such as plastics, aluminum, and glass. Türkiye Environment Agency (TÜÇA) was established in 2020, and one of the main responsibilities of the Agency is the establishment of the deposit management system. The impact of the system will be visible in the next reporting cycles to the UNFCCC.

253. NID, 2026.



4.2.8.5 Expanding RDF Production from Municipal Waste Unsuitable for Recycling or Recovery

The foundational framework of sustainable resource stewardship relies on an ideal waste management hierarchy, which dictates that preventing and minimizing waste directly at its point of source generation, followed immediately by the active reuse of products when prevention is unachievable, constitute the highest-priority operational phases. Materials that cannot be successfully diverted through reuse must be systematically funneled into recycling networks, material recovery systems, or transformed via thermal energy recovery to ensure their productive reintegration back into the national economy. Landfilling or final disposal is reserved strictly as a last resort, acceptable only when all other upper-tier recovery methods have been entirely exhausted. To operationalize this hierarchy, the rate of municipal waste recycling must be significantly accelerated across the country. In alignment with Türkiye's long-term trajectory toward the 2053 Net Zero Emission Target, the official national milestone for the municipal waste recycling rate has been established at 60% by the year 2035. To successfully meet this ambitious climate and circular economy benchmark, strategic infrastructure plans mandate a rapid expansion in both the absolute number and processing capacity of Refuse-Derived Fuel (RDF) facilities. By aggressively scaling up the volume of municipal waste channeled into these industrial recovery systems, the state intends to drastically reduce the total aggregate tonnage of untreated organic and solid waste currently routed to managed landfills.

Table 32 contains the strategic matrix of policies and targeted mitigation measures enacted by Türkiye within its waste sector to systematically lower the country's GHG emissions.



Table 32 – Waste sector policies and measures

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1- Zero Waste Policy	Waste Management / Waste	CO ₂ , CH ₄ , N ₂ O, F-Gases	Prevention of waste and re-use/recycling/recovery of waste	Regulatory, other	Implemented	2018	MoEUCC	NE
2 - Decreasing the sending amount of municipal waste to landfills	Waste Management / Waste	CH ₄ , N ₂ O	Reducing methane emissions from landfills and increasing the material recovery rates according to the circular economy principles	Regulatory, economic, other	Implemented	2011	MoEUCC, MENR and Municipalities	NE
3 - Actions implemented under Wastewater Treatment Action Plan	Waste Management / Waste	CH ₄ , N ₂ O	Reducing GHG emissions through reuse of wastewater and promotion of clean technologies for wastewater treatment plants	Regulatory, other	Implemented	2015	MoEUCC, MENR and Municipalities	NE
4 - Establishment of deposit management system	Waste Management / Waste	CH ₄ , N ₂ O	Reducing GHG emissions through recycling of waste made from recyclable materials such as plastics and glass	Economic, other	Adopted	2020	MoEUCC, TÜÇA	NE
5- Expanding RDF production from municipal waste unsuitable for recycling or recovery.	Waste Management / Waste	CH ₄ , N ₂ O	Decreasing the amount of waste sent to landfills	Regulatory, economic, other	Implemented	2015	MoEUCC, MENR and Municipalities	NE



4.2.9 POLICIES AND MEASURES IN ACCORDANCE WITH ARTICLE 2

4.2.9.1 Collection of Maritime Transport Fuel Consumption Data

Amendments to MARPOL Annex VI establishing a mandatory Data Collection System (DCS) for ships' fuel oil consumption were adopted in October 2016 via Resolution MEPC.278(70) and entered into force on 1 March 2018, requiring merchant ships of 5,000 gross tonnage and above to collect consumption data for each fuel oil type used, along with proxies for transport work, in support of the IMO's broader energy-efficiency monitoring framework.²⁵⁴ Ahead of the data collection start date of 1 January 2019, Türkiye's MoTI formally directed its authorized classification societies, via a 4 September 2018 circular, to implement the required monitoring and reporting protocols for Turkish-flagged vessels above the threshold.²⁵⁵ Beyond this compliance work, Türkiye is a founding member of the Organization of the Black Sea Economic Cooperation (BSEC) and participates in its Working Group on Transport and related bodies, such as the ad hoc working group on the Motorways of the Sea—a role it most prominently led during its 2012 BSEC Chairmanship-in-Office; as of 2026, however, Türkiye's active BSEC working-group coordinators lie in education, anti-crime cooperation, and information/communication technologies.²⁵⁶

4.2.9.2 Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

In Türkiye, the Directorate General of Civil Aviation (SHGM), under the MoTI, serves as the designated ICAO CAEP and CORSIA focal point and the technical authority responsible for implementing ICAO decisions domestically.²⁵⁷ Türkiye remains one of the 44 member states of the European Civil Aviation Conference (ECAC), of which it has been a founding member since 1955.²⁵⁸

By mid-2018, around 68 states, including Türkiye, representing more than 87% of international aviation activity, had volunteered to join CORSIA's pilot and first phases;²⁵⁹ participation has since grown steadily, reaching 130 states from 1 January 2026 under the sixth edition of ICAO's "CORSIA States for Chapter 3 State Pairs," published on 1 August 2025.²⁶⁰

CORSIA's baseline has evolved since the scheme's original design: the 41st ICAO Assembly adopted Resolution A41-22, setting the baseline at 100% of 2019 emissions for the pilot phase (2021–2023) and 85% of 2019 emissions for the first and second phases (2024–2035), replacing the original goal of carbon-neutral growth from 2020. The scheme undergoes periodic review by the ICAO Council every three years; in June 2025, the 235th Session of the Council considered CAEP's final technical inputs on the 2025 CORSIA periodic review and endorsed the Council report to the 42nd Session of the ICAO Assembly (A42-WP/28, dated August 2025), which concluded in autumn 2025.²⁶¹

CORSIA's Standards and Recommended Practices (SARPs) were approved by the ICAO Council on 27 June 2018 as Annex 16, Volume IV. In Türkiye, TÜRKAK accredited its first CORSIA verification

254. IMO. "Data Collection System." 2026.

255. MoTI. 2022_a. Republic of Türkiye Ministry of Transport and Infrastructure. Instructions on Authorization Requests Regarding Ship Fuel Consumption Data Collection and Reporting. Ankara, Türkiye, 2022.

256. MoFA. 2026. Republic of Türkiye Ministry of Foreign Affairs. "The Black Sea Economic Cooperation." 2026.

257. Directorate General of Civil Aviation. "Sustainable Aviation Fuels." 2026.

258. European Civil Aviation Conference. "Türkiye: Member State Information and Statistics." 2026.

259. ICAO. Explanation of Assembly Resolution. 2017.

260. ICAO. States for Chapter 3 State Pairs. 6th ed. 2025.

261. ICAO. "Periodic Review." 2026.



body under ISO 14065:2013 on 25 June 2021, and later became one of the first two accreditation bodies in Europe to bring ISO/IEC 17029 within the scope of the European Accreditation Multilateral Recognition Arrangement, transitioning to ISO/IEC 17029:2019 and ISO 14065:2020.

4.2.9.3 Aviation Sector 2050 Net-zero Carbon Emission Initiative

Several Turkish carriers have aligned with IATA's "Fly Net Zero" resolution, adopted at the 77th IATA AGM in Boston on 4 October 2021, committing the global aviation industry to net-zero carbon emissions by 2050²⁶² — a corporate target distinct from Türkiye's own national net-zero pledge of 2053. Türkiye maintains active participation in ICAO, ECAC, EUROCONTROL, the RASG-EUR (referred to in Turkish official documents as the "North Atlantic Regional Aviation Safety Group"), and JAA TO. To reduce aviation emissions, Türkiye's Directorate General of Civil Aviation (SHGM) issued the Sustainable Aviation Fuel Directive (SHT-SAF) on 26 June 2025, which entered into force on 2 July 2025, mandating SAF blending and consumption targets for international flights. In accordance with the rules set out in the directive, a target for CO₂ emission reduction (in grams) per liter of jet fuel consumed has been established, and projections have been made on a yearly basis based on the goal of achieving a 5% emission reduction through the use of SAF by 2030²⁶³ Airspace modernization is driven by the SMART project—properly named "Systematic Modernization of ATM Resources"—launched by the General Directorate of State Airports Authority (DHMI) under the MoTI, which consolidated Turkish air traffic control into a single Ankara-based center in 2015.²⁶⁴ Domestic carriers are also reducing fuel burn through fleet renewal, while triple-runway operations at Istanbul Airport have cut taxi times by up to 10.2% and taxi fuel burn by up to 14.4%.²⁶⁵

4.2.9.4 Minimization of Adverse Effects in Accordance with Art. 2 of the Kyoto Protocol

Under the UNFCCC framework, Kyoto Protocol Article 2, paragraph 3 requires Annex I Parties to strive to implement policies and measures in ways that minimize adverse effects on climate change, international trade, and other Parties—particularly those identified in Convention Article 4, paragraphs 8 and 9, and taking into account the principles of Article 3. However, this provision has limited practical relevance for Türkiye: although listed in Annex I of the Convention, Türkiye was not included in Annex B of the Kyoto Protocol and therefore has no quantified emission reduction obligations under either commitment period. Since the Kyoto Protocol's second commitment period ended in 2020, Türkiye's current climate obligations instead derive from the Paris Agreement, which it ratified in 2021 alongside declaring a 2053 net-zero emissions target. Türkiye's economy-wide mitigation approach is documented in its Updated First NDC, submitted on 13 April 2023, committing to a 41% emissions reduction relative to the business-as-usual scenario by 2030 (695 Mt CO₂ eq.), covering the energy, industry, transport, buildings, agriculture, waste, and LULUCF sectors. This has since been extended by Türkiye's Second NDC (NDC 3.0), submitted in November 2025, targeting a 466 Mt CO₂ eq. reduction and a 2035 emissions cap of 643 Mt CO₂ eq. on the pathway to 2053 net-zero.

²⁶². International Air Transport Association. "Fly Net Zero: Commitment to Net-Zero Carbon Emissions by 2050." 2026.

²⁶³. Directorate General of Civil Aviation. Announcement Regarding The Minimum Emission Reduction Amount Per Liter Associated With The Use Of Sustainable Aviation Fuel 2025.

²⁶⁴. State Airports Authority. Strategic Plan 2024--2028. Ankara, Türkiye, 2024.

²⁶⁵. State Airports Authority. "Triple Runway Operations Have Been in Service for One Year." 2026.



4.2.9.5 Minimization of Adverse Impacts in Accordance with Article 3, Paragraph 14 of the Kyoto Protocol

Because Türkiye is registered as an Annex I Party without any quantified emission limitation or reduction commitments inscribed in Annex B of the Kyoto Protocol, the country is under no legal obligation to provide official reporting on the minimization of adverse impacts pursuant to Article 3, paragraph 14, of the Kyoto Protocol.

Table 33 presents a comprehensive matrix of Türkiye's national policies and targeted mitigation measures implemented under Article 2 to systematically reduce the country's GHG emissions.

**Table 33 – Policies and measures in accordance with Article 2**

PaM	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact 2030
1 - Collection of maritime transport fuel consumption data	International Travel	CO ₂	Collection of fuel consumption data for each type of fuel used in maritime	Regulatory, economic	Implemented	2016	MoTI	NE
2 - Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)	International Travel	CO ₂	National actions in accordance with the international efforts to limit the international aviation emissions to 85% of 2019 international emission levels	Regulatory, economic	Implemented	2018	Directorate General of Civil Aviation	NE
3 - 2050 Net-zero Carbon Emission Initiative	International Travel	CO ₂	National actions in accordance with the international efforts to achieve net-zero carbon aviation in 2050	Regulatory, economic	Adopted	2022	Directorate General of Civil Aviation	NE



4.2.10 POLICIES AND MEASURES NO LONGER IN PLACE

4.2.10.1 Promotion of Phasing Out of Old Vehicles

Türkiye's vehicle taxation framework has moved away from temporary, broad-based scrapping incentives toward targeted measures that support 2053 Net Zero Emission Target. The provisional tax relief mechanisms implemented in the late 2010s—specifically the Special Consumption Tax (SCT) exemption for renewing old commercial vehicles under Provisional Article 7 of the SCT Law No. 4760, as well as the age-based scrapping incentives under Provisional Article 1 of Law No. 7103—officially expired in June and December 2019, respectively. Following these expirations, no general scrap incentive programs or flat SCT exemptions for conventional internal combustion engine commercial vehicles have been reinstated. Instead, the government has integrated environmental criteria directly into the national fiscal architecture. While traditional scrap incentives remain inactive, current regulations apply significantly lower, graduated SCT brackets exclusively to zero-emission and electric transport alternatives, thereby using targeted tax policy to accelerate the retirement of carbon-intensive commercial fleets and drive the green modernization of urban logistics.

4.2.10.2 Establishment of Voluntary Carbon Market

Under Türkiye's evolving climate policy and Article 6 alignment, the objective has transitioned from a purely voluntary framework to a state-backed, regulated national carbon crediting system that supports national NDC goals.



5 PROGRESS TRACKING FOR ACHIEVING NDC AND PROJECTIONS

This chapter provides the information necessary to track progress in implementing and achieving Türkiye's NDC under Article 4 of the Paris Agreement, developed in strict accordance with the Modalities, Procedures, and Guidelines (MPGs) adopted under Decision 18/CMA.1.²⁶⁶

This chapter details Türkiye's NDC 3.0 mitigation target—which aims to limit net GHG emissions to 643 Mt CO₂ eq. by 2035—and identifies net national GHG emissions as the primary indicator for tracking. It outlines a comprehensive policy framework, including the landmark Climate Law (No. 7552), while utilizing the Climate, Land, Energy, and Water systems (CLEWs) modeling framework to provide credible emission projections toward the 2035 goal. By aligning narrative descriptions with Common Tabular Format (CTF) tables, Türkiye ensures a transparent and robust "methodological chain" that connects inventory results, policy implementation, and future projections.

One of the objectives of this chapter is to demonstrate substantive improvements in reporting by directly addressing the findings from the technical expert review of Türkiye's initial transparency report.²⁶⁷ Specifically, this chapter incorporates enhancements recommended under "Section C" of that review, such as providing more detailed information on institutional arrangements for monitoring and archiving progress, clarifying the distinction between formal NDC targets and long-term visions (2053 net-zero goals), and strengthening the transparent linkage between Policies and Measures (PaMs) and their impact on achieving the national mitigation target.²⁶⁸

5.1 NATIONAL CIRCUMSTANCES AND INSTITUTIONAL ARRANGEMENTS RELATED TO NDC IMPLEMENTATION

Türkiye ratified the Paris Agreement on 10 November 2021 and, in doing so, formally announced its national vision of net-zero GHG emissions by 2053. Türkiye lies within the Mediterranean Basin, a region identified by the IPCC (AR6, WGII) as one of the most climate-vulnerable in the world, characterized by above-average warming and more frequent and prolonged drought episodes relative to most other regions.

5.1.1 Institutional Arrangements

The MoEUCC serves as the primary national competent authority on environment and climate change governance. The DoCC, established in 2021 as an affiliated institution under the MoEUCC, coordinates the preparation of national climate policies, leads Türkiye's UNFCCC negotiations, and oversees the formulation of NDCs. Specifically, the Mitigation Department within the DoCC acts as the core operational unit responsible for leading NDC development, managing domestic implementation, and establishing the institutional procedures to track progress made in implementing and achieving NDC targets.

²⁶⁶. UNFCCC. (2018). Decision 18/CMA.1. Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement, (March), 1–65.

²⁶⁷. UNFCCC. Report on the Technical Expert Review of the First Biennial Transparency Report of Türkiye: Addendum. no. FCCC/ETF/TERR.1/2024/TUR/Add.1. Bonn, Germany, 2025. https://unfccc.int/sites/default/files/resource/terr1_2024_TURa01.pdf.

²⁶⁸. Per Türkiye's flexibility submission, Türkiye applies the flexibility provisions available to developing country Parties for MPG paragraphs 85, 95 and 93–101 (via para 102), reflecting identified capacity constraints (emissions accounting expertise, institutional data-collection frameworks, projection/modelling capacity, financial resources).



To ensure methodological consistency and procedural rigor in tracking emission trajectories against NDC baselines, TurkStat serves as the official national entity responsible for compiling, documenting, and archiving the NID and annual GHG inventories. TurkStat operates in close technical collaboration with key line ministries and institutions, maintaining a centralized legal and administrative archiving framework that guarantees data transparency, accuracy, and quality control.

At the inter-institutional level, the CCACB, chaired by the MoEUCC, guides national climate strategy, approves NDCs, and steers cross-sectoral mitigation and adaptation measures. Türkiye has institutionalized multi-tiered administrative and procedural arrangements under the CCACB framework to govern the tracking, domestic monitoring, reporting, archiving of information, and stakeholder engagement related to NDC implementation.

Following the enactment of the Climate Law, Türkiye established Provincial Climate Change and Adaptation Coordination Boards across all 81 provinces, a framework officially operationalized through the regulation published in the Official Gazette on August 4, 2026.²⁶⁹ Chaired by provincial governors, these local boards are legally tasked with the preparation, implementation, monitoring, and evaluation of mandatory Provincial Climate Change Action Plans, thereby ensuring seamless vertical integration between national NDC targets and local climate execution.

5.1.2 Key policy and legal instruments underpinning NDC implementation

Climate Law is Türkiye's first comprehensive framework climate legislation, establishing the legal basis for a national ETS, MRV/emission-permit obligations for covered installations, the Green Taxonomy, and mandatory Provincial Climate Change Action Plans.

The **Climate Law** establishes **NDC implementation** as a central pillar of Türkiye's legal and strategic framework for climate action. The relevant articles and issues are as follows:

Foundational Definition and Scope

- **Article 2 (Definitions):** The law defines the **NDC** as a document periodically prepared by the DoCC in coordination with relevant institutions. It includes GHG emissions reduction and climate adaptation targets and commitments submitted to the Secretariat of the UN Framework Convention on Climate Change.
- **International Carbon Markets:** These markets are explicitly defined as mechanisms created to reach the targets set within the NDC under international agreements.

Guiding Principles

- **Article 3 (Principles):** The legislation stipulates that the NDC must be prepared in alignment with the net-zero emission target while simultaneously considering the country's development priorities and special circumstances.

Implementation and Sectoral Targets

- **Article 5 (Mitigation Activities):** The **NDC** serves as the primary directive for reducing GHG emissions. The law mandates that sectoral mitigation activities specified in the NDC be carried

²⁶⁹. Official Gazette. (2026). Regulation on Local Climate Change Action Plans and Provincial Climate Change Coordination Boards. <https://www.resmigazete.gov.tr/eskiler/2026/08/20260804-1.htm>



out by relevant institutions within their legislated duties. To reach these targets, existing institutional responsibilities may be reviewed, and new regulations can be enacted by public authorities in line with the **NDC** and the net-zero target.

- **Sectoral Obligations:** Institutions must take specific reduction measures in sectors identified in the NDC, ensuring these actions are consistent with just transition requirements.
- **Article 6 (Adaptation Activities):** Similarly, adaptation activities are required to be carried out in accordance with the NDC to prevent climate-related losses and minimize risks. Like mitigation, sectoral adaptation policies in the NDC are implemented by authorized institutions, whose duties can be updated to meet specified goals.

Regulatory and Financial Tools

- **Article 8 (Implementation Tools):** The law states that the procedures and principles for various implementation tools—including climate finance and technology development—must be determined by the relevant public institutions in direct alignment with the NDC and long-term climate change policy documents.

In essence, the NDC acts as the **legal benchmark** for defining sectoral responsibilities, guiding national mitigation strategies, and authorizing participation in international carbon pricing mechanisms.

Climate Change Mitigation Strategy and Action Plan (2024–2030) is the principal implementation vehicle for the **NDC**; 49 strategies and 260 actions across seven mitigation sectors (renewable energy expansion, electrification, energy and resource efficiency, sustainable transport modes, sustainable land and forest management, circular economy/waste management, and cross-cutting themes including the national ETS and just transition). It was developed in close coordination with NDC updates to ensure that national targets are directly supported by actionable sectoral policies.

Climate Change Adaptation Strategy and Action Plan (2024–2030) serves as a direct implementation framework for the adaptation goals outlined in the country's Updated **NDC** (NDC 2.0).²⁷⁰ Recognizing that adaptation is as critical as mitigation, Türkiye included a dedicated adaptation section in its updated NDC, committing to a range of initiatives including vulnerability and risk assessments, information systems development, and the creation of legal and policy instruments. This plan fulfills these commitments through 40 strategic goals and 129 actions across eleven priority sectors, aiming to build a more resilient, sustainable, and greener nation. To bridge national NDC targets with local implementation, a primary cross-cutting measure is the drafting of **Local Climate Change Action Plans** for all 81 provinces by 2030. After the preparation of the plan, policies related to the preparation and implementation of Local Climate Change Action Plans were supported by the Climate Law. This is complemented by a focus on social development, which integrates climate measures into socio-economic development strategies and promotes social protection policies to enhance the resilience of vulnerable groups. These efforts are underpinned by a commitment to evidence-based decision-making, regular monitoring and evaluation via an online system, and the integration of adaptation into all national policy and strategy documents.

Türkiye's **LTS** is designed as a forward-looking roadmap to achieve the goals set out in its **NDCs**, providing a strategic vision to guide the country toward its 2053 net-zero emission target. The LTS

²⁷⁰ The mitigation and adaptation strategies and action plans were prepared and adopted prior to the second NDC, they were directly aligned with the Updated First NDC.



was developed in parallel with the **Updated First NDC** and incorporates the 2024–2030 Mitigation and Adaptation Strategy and Action Plans (2024–2030) as its primary implementation and monitoring tools. By aligning long-term development with these medium-term commitments, the strategy ensures that sectoral transformations across the economy are consistent with international obligations under the Paris Agreement. The mitigation strategies within the LTS directly support NDC targets through comprehensive measures in seven primary sectors. In addition to sectoral efforts, cross-cutting implementation tools, most notably the establishment of a national ETS, the introduction of a National Green Taxonomy, and a Climate Finance Strategy, are supporting just transition and serving as implementation tools for the NDC.

Implementation of strategies and action plans is tracked through a dedicated monitoring system hosted on the Climate Portal,²⁷¹ through which responsible institutions report progress against assigned targets and actions, enabling systematic monitoring, evaluation, and reporting by DoCC.

5.2 DESCRIPTION OF THE SECOND NDC (3.0)

Türkiye’s Second NDC (NDC 3.0) sets a single-year economy-wide GHG mitigation target for 2035, expressed relative to a national Reference (business-as-usual, BAU) Scenario, consistent with Article 4.8, Article 13 of the Paris Agreement²⁷² and Decisions 4/CMA.1²⁷³ and 18/CMA.1²⁷⁴. The key parameters are listed in Table 34.

Table 34 – Key parameters for the NDC

Parameter	Value / description
Reference year	2018
Reference indicator	Net GHG emissions, Mt CO ₂ eq. (incl. LULUCF)
Reference-year value	462.9 Mt CO ₂ eq. (per Türkiye's 2026 National Inventory Document, NID)
Data source	2026 National Inventory Document (NID)
Time frame	Single-year target: 2035
Scope / coverage	Economy-wide; all IPCC sectors covered in the NID (Energy; IPPU; Agriculture; Waste; LULUCF)
Gases covered	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆
Target type	Economy-wide GHG reduction relative to a national Reference (BAU) Scenario
Recalculation policy	Reference indicators are subject to recalculation for methodological improvements per Decision 18/CMA.1; recalculations to be transparently reflected in the NID and reported in Türkiye's BTRs
Article 6	Türkiye reserves the right to use voluntary cooperation under Article 6; a decision has not yet been taken. If used, corresponding-adjustment procedures and CMA reporting guidelines under Article 6 will be applied

271. DoCC. “Climate Action Monitoring Systems.” 2026.

272. UNFCCC. “Adoption of the Paris Agreement.” 2015. <http://unfccc.int/resource/docs/2015/cop21/eng/I09r01.pdf>.

273. UNFCCC. Decision of 4/CMA.1 Further Guidance in Relation to the Mitigation Section of the Paris Agreement. 2018. https://unfccc.int/sites/default/files/resource/4-CMA.1_English.pdf.

274. DoCC. “Climate Action Monitoring Systems.” 2026.



5.3 PROJECTIONS OF GHG EMISSIONS AND REMOVALS

Türkiye's Second NDC establishes GHG emission projections under Business-as-Usual (BAU) and Mitigation scenarios, both using 2018 as the reference year—consistent with data reported in Türkiye's National Inventory Document—and extending through 2035, the NDC's target year, with the Mitigation Scenario covering energy, industry, transport, buildings, agriculture, waste, and LULUCF sectors.²⁷⁵ The accounting approach is based on the national GHG inventory. By doing so, scope, coverage, data sources, assumptions, methodologies, and metrics are fully consistent between Türkiye's NDC 3.0 and the GHG inventory. The methodologies used ensure transparency, accuracy, completeness, consistency, and comparability as far as can be achieved and avoid any double-counting of emissions and removals, consistent with decisions 4/CMA.1 and 18/CMA.1. These projections were produced using the CLEWs modelling framework, built on the Open Source Energy Modelling System (OSeMOSYS), an integrated approach for assessing sectoral interactions consistent with the 2006 IPCC Guidelines (including the 2019 Refinement); GHG values are reported in CO₂ eq. using 100-year Global Warming Potential values from the IPCC Fifth Assessment Report (AR5), as agreed under Decision 18/CMA.1, paragraph 37.²⁷⁶ The projections were carried out through a rigorous, science-based, and comprehensive process, drawing on the latest available data, sectoral expertise, national development plans, and climate policy objectives. This integrated approach ensures that the resulting projections are technically sound, internally consistent, and aligned with Türkiye's long-term vision for the 2053 net-zero emissions goal. Türkiye applies the flexibility provision under Decision 18/CMA.1, paragraph 102, for all reporting items under paragraphs 93–101, self-determining an improvement timeline running from basic methodology adoption and capacity-building in 2025–2026 to more detailed, long-term projection modelling by 2027–2028.²⁷⁷

The projections were developed using the Climate, Land, Energy and Water Systems (CLEWS)²⁷⁸ modelling framework, implemented through the Open Source Energy Modelling System (OSeMOSYS) tool. The CLEWS framework is an integrated systems approach that enables the assessment of sectoral interactions and provides a robust analytical basis for evaluating mitigation pathways. The projections were carried out through a rigorous, science-based, and comprehensive process, drawing on the latest available data, sectoral expertise, national development plans, and climate policy objectives. This integrated approach ensures that the resulting projections are technically sound, internally consistent, and aligned with Türkiye's long-term vision for the 2053 net-zero emissions goal.

275. UNFCCC. Republic of Türkiye The Second Nationally Determined Contribution. 2025. [https://unfccc.int/sites/default/files/2025-11/The Second NDC of Türkiye.pdf](https://unfccc.int/sites/default/files/2025-11/The%20Second%20NDC%20of%20T%C3%BCrkiye.pdf).

276. UNFCCC. (2018). Decision 18/CMA.1. Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement, (March), 1–65.

277. UNFCCC. Flexibility Provisions for Türkiye under 18/CMA.1. 2025

278. Under Decision 18/CMA.1, paragraph 102, Türkiye applies flexibility to all reporting items under paragraphs 93–101, permitting the use of less detailed methodology or coverage in light of its capacity constraints.



Table 35 – GHG emissions in reference and mitigation scenarios

Scenario	2035 GHG Emission Level
Reference Scenario ("without measures"-equivalent baseline)	1,109 Mt CO ₂ eq.
Mitigation Scenario / NDC target ("with measures"-equivalent)	643 Mt CO ₂ eq. (i.e., 466 Mt CO ₂ eq. below the Reference Scenario)

The primary data sources for the projections include Türkiye's national energy balance tables, TurkStat statistics, and the NIR by TurkStat, as well as techno-economic parameters from the International Energy Agency (IEA). Emission factors used to estimate GHG emissions are based on the NIR published by TurkStat, the 2006 IPCC Guidelines, and collected data provided by various national institutions. Global warming potential on a 100-year timescale used for the calculation of CO₂ eq. emissions is in accordance with the IPCC's Fifth Assessment Report (AR5).

The key parameters used to estimate the projections of GHG emissions are presented in Table 36. Türkiye has undergone substantial demographic and economic transformation: population rose from 56.5 million (1990) to 85.66 million (2024) and is projected to reach 98.6 million by 2050; GDP at current prices rose from USD 149.2 billion (1990) to USD 1.36 trillion (2024).²⁷⁹ According to the Second NDC, population of the country is projected to reach 91.25 million by 2035.

Table 36 – Key parameters used in the projections²⁸⁰ of the Second NDC (NDC 3.0)

Key underlying assumptions and parameters	Unit, as applicable	Most recent year in the Party's national inventory report, or the most recent year for which data are available	Projections of underlying assumption/parameters		
			2025	2030	2035
		2024			
Population	Millions	85.66	86.31	88.72	91.25
Population growth rate	%	NA	0.55	0.55	0.57

5.3.1 BUSINESS-AS-USUAL SCENARIO (WITHOUT MEASURES)

This scenario projects GHG emissions from the 2018 reference year to 2035, assuming that no additional mitigation measures introduced after 2018 are implemented. It represents a reference pathway that reflects expected socioeconomic and sectoral developments in the absence of climate policy interventions. GHG emissions for 1990-2024 and projected emissions for 2035 are listed in Table 37 based on the type of GHG and sectors.

²⁷⁹. MoTF. 2025. Republic of Türkiye Ministry of Treasury and Finance. Update on Turkish Economy. 2025.

²⁸⁰. Türkiye applies the flexibility provisions available to developing country Parties for MPG paragraphs 92-102 of 18/CMA.1, capacity constraints for projection and modelling.

Table 37 – GHG emission projections-BaU (without measures) scenario (Mt CO₂ eq.)

Year	1990	2000	2010	2020	2024	2025	2030	2035
By Sector								
Energy	116.76	183.83	245.44	291.41	317.02	423.37	609.70	785.75
Transport	26.91	36.41	45.35	80.59	102.87	105.87	137.37	170.43
IPPU	23.09	26.64	49.73	68.94	75.65	81.06	91.77	101.80
Agriculture	51.85	46.03	47.68	76.44	73.54	75.15	80.20	84.62
LULUCF	-66.43	-68.18	-72.12	-57.75	-67.09	-67.79	-64.62	-61.44
Waste Management	10.32	14.61	18.21	16.59	15.44	22.80	25.25	28.16
By Gas								
CO ₂ emissions (with LULUCF)	88.48	164.94	246.37	360.56	400.50	513.22	732.82	943.48
CO ₂ emissions (without LULUCF)	155.05	233.40	318.55	418.52	467.81	581.01	797.44	1,004.92
CH ₄ emissions (with LULUCF)	51.35	51.78	60.23	73.26	71.00	82.83	94.61	106.15
CH ₄ emissions (without LULUCF)	51.26	51.60	60.20	73.14	70.87	82.83	94.61	106.15
N ₂ O emissions (with LULUCF)	22.23	22.13	24.48	36.21	36.22	34.04	38.03	41.76
N ₂ O emissions (without LULUCF)	22.18	22.03	24.45	36.11	36.13	34.04	38.03	41.76
HFCs	NA,NO	0.11	2.79	6.01	9.51	10.14	13.93	17.56
PFCs	0.42	0.37	0.35	0.01	0.01	0.02	0.02	0.03
SF ₆	NO	0.01	0.07	0.17	0.18	0.20	0.27	0.34
NF ₃	NO	NO	NO	NO	NO	NO	NO	NO
Total with / without LULUCF								
Total (with LULUCF)	162.49	239.34	334.29	476.22	517.43	640.44	879.67	1,109.32
Total (without LULUCF)	228.92	307.52	406.41	533.96	584.52	708.23	944.29	1,170.76

5.3.2 MITIGATION SCENARIO (WITH MEASURES)

With measures scenario (WM), the projects GHG emissions from the 2018 reference year to 2035 by incorporating a comprehensive set of mitigation measures across the mitigation sectors. Table 38 represents the results of the scenario with emissions listed for selected years between and including 1990 to 2024 are realized emissions while the figures for 2025, 2030 and 2035 represent the estimations of the WM scenario. The 2035 target in Türkiye's Second NDC is economy-wide and not sector-specific; however, the figures provided in Table 38 are sectoral estimates intended to illustrate anticipated contributions across different sectors.



Table 38 – GHG emission projections- Mitigation (with measures) scenario (Mt CO₂ eq.)

Year	1990	2000	2010	2020	2024	2025	2030	2035
By Sector								
Energy	116.76	183.83	245.44	291.41	317.02	330.10	376.15	395.80
Transport	26.91	36.41	45.35	80.59	102.87	98.98	114.76	127.11
IPPU	23.09	26.64	49.73	68.94	75.65	78.38	85.04	89.92
Agriculture	51.85	46.03	47.68	76.44	73.54	75.15	79.98	84.21
LULUCF	-66.43	-68.18	-72.12	-57.75	-67.09	-69.75	-70.06	-70.37
Waste Management	10.32	14.61	18.21	16.59	15.44	19.99	17.97	16.67
By Gas								
CO ₂ emissions (with LULUCF)	88.48	164.94	246.37	360.56	400.50	412.60	477.17	511.83
CO ₂ emissions (without LULUCF)	155.05	233.40	318.55	418.52	467.81	482.35	547.23	582.20
CH ₄ emissions (with LULUCF)	51.35	51.78	60.23	73.26	71.00	77.37	80.41	82.84
CH ₄ emissions (without LULUCF)	51.26	51.60	60.20	73.14	70.87	77.37	80.41	82.84
N ₂ O emissions (with LULUCF)	22.23	22.13	24.48	36.21	36.22	32.85	34.90	36.55
N ₂ O emissions (without LULUCF)	22.18	22.03	24.45	36.11	36.13	32.85	34.90	36.55
HFCs	NA,NO	0.11	2.79	6.01	9.51	9.82	11.13	11.86
PFCs	0.42	0.37	0.35	0.01	0.01	0.01	0.02	0.02
SF ₆	NA,NO	0.01	0.07	0.17	0.18	0.18	0.22	0.23
NF ₃	NO	NO	NO	NO	NO	NO	NO	NO
Total with / without LULUCF								
Total (with LULUCF)	162.49	239.34	334.29	476.22	517.43	532.85	603.85	643.34
Total (without LULUCF)	228.92	307.52	406.41	533.96	584.52	602.60	673.91	713.70

Türkiye's sectoral 2030 emission targets have undergone substantial revision across the three iterations of its NDC, reflecting both improved emissions modelling and evolving mitigation ambition. As shown in Table 39, the Energy sector (excluding transport) accounts for the largest single reduction across NDC years, with its target emissions level falling from 738.27 Mt CO₂ eq. under the First NDC (NDC 1.0) to 416.95 Mt CO₂ eq. under the Updated First NDC (NDC 2.0), and further to 376.15 Mt CO₂ eq. under the Second NDC's (NDC 3.0) 2030 target—a decline of roughly 49% relative to the original First NDC figure. This pattern followed, though less steeply, in Transport (135.99 → 121.53 → 114.76 Mt CO₂ eq.) and most pronouncedly in IPPU, which fell from 169.75 to 97.81 to 85.04 Mt CO₂ eq., a reduction of exceeding 49%.



By contrast, the agriculture sector shows a consistent upward revision, rising from 59.28 Mt CO₂ eq. in the First NDC to 82.87 Mt CO₂ eq. in the Updated First NDC and 79.98 Mt CO₂ eq. in the Second NDC's 2030 target, reflecting a more realistic baseline projection for agricultural emissions as national inventory and modelling capacity improved. The LULUCF sector remains a net sink throughout all three NDC cycles, though its magnitude fluctuates—from -69.71 Mt CO₂ eq. (First NDC) to a notably smaller sink of -40.01 Mt CO₂ eq. (Updated First NDC), before strengthening again to -70.06 Mt CO₂ eq. under the Second NDC's 2030 target, indicating a methodological or policy-driven revaluation of the sector's absorption capacity rather than a monotonic trend. Waste management targets declined moderately from 31.40 to 16.33 to 17.97 Mt CO₂ eq. across the same period.

Looking ahead to the Second NDC's 2035 target, most sectors show a modest increase relative to their 2030 counterparts under the same NDC—Energy rises to 395.80 Mt CO₂ eq., Transport to 127.11 Mt CO₂ eq., IPPU to 89.92 Mt CO₂ eq., and Agriculture to 84.21 Mt CO₂ eq.—consistent with continued, if decelerating, economic and demographic growth extending the emissions trajectory five years further. The LULUCF sink deepens marginally to -70.37 Mt CO₂ eq., while Waste edges down slightly to 16.67 Mt CO₂ eq. Overall, the sectoral trajectory illustrates Türkiye's progressively more stringent decarbonization pathway for its 2030 target across successive NDC cycles, while the 2035 figures reflect the extended and more ambitious scope of the Second NDC (NDC 3.0) framework.

Table 39 – Sectoral comparison of targets of First, Updated First and Second NDC of Türkiye

Sector	First NDC 2030 Target	Updated First NDC 2030 Target	Second NDC 2030 Target	Second NDC (NDC 3.0) 2035 Target
Energy (excluding transport)	738.27	416.95	376.15	395,80
Transport	135.99	121.53	114.76	127,11
IPPU	169.75	97.81	85.04	89.92
Agriculture	59.28	82.87	79.98	84.21
LULUCF	-69.71	-40.01	-70.06	-70.37
Waste management	31.40	16.33	17.97	16.67

5.3.3 Progress Made Towards the NDC

Türkiye implements its Second NDC (NDC 3.0) primarily through the 2053 LTS, the Climate Change Mitigation Strategy and Action Plan (2024–2030), the Climate Change Adaptation Strategy and Action Plan (2024–2030) supported by a wide architecture of cross-cutting legislation and sector-specific strategies. Chapter 4 provides the PaMs; it is expanded into full CTF Table 5 entries once sectoral inputs are consolidated.²⁸¹

281. Türkiye applies the flexibility provision of paragraph 85 in reporting expected/achieved GHG emission reductions from actions, policies, and measures. This is due to limited technical expertise in emissions accounting, as well as capacity constraints in systematic data collection within the current institutional framework.



Türkiye's **Updated First NDC**²⁸² and its **Second NDC (NDC 3.0)**²⁸³ represent successive milestones toward **2053 net-zero emission target** (Table 40). While the Second NDC builds directly upon the strategic framework of the Updated First NDC, it introduces a more contemporary analytical foundation and sets further-reaching targets informed by global outcomes. The successive and progressive connections between these two documents are defined by the following key aspects:

- **Updated First NDC (2030 Target):** This document commits Türkiye to reducing its GHG emissions by **41% by 2030** compared to a Business-as-Usual (BAU) scenario. This BAU scenario was originally grounded in **2012** data.
- **Second NDC (2035 Target):** Building on this progression, the Second NDC sets a target to limit total GHG emissions to **643 Mt CO₂ eq. by 2035**. This represents an **increased level of ambition**, targeting a reduction of **466 Mt CO₂ eq.** compared to a new 2035 BAU scenario.
- **Updated Reference Year:** A significant relationship between the two is the shift in data; the Second NDC updates the reference year from 2012 to **2018** to provide a more realistic and contemporary projection based on recent technological and economic shifts.

Alignment with Global and Long-Term Strategies

- **Global Stocktake (GST):** While the Updated First NDC was developed following the Glasgow Climate Pact, the Second NDC was explicitly informed by the outcomes of the **First GST** to ensure its contribution to global efforts is scientifically grounded and updated.
- **2053 Long-Term Climate Strategy (LTS):** The Second NDC is built upon the specific policy directions and sectoral transformations established in Türkiye's LTS, which was submitted to the UNFCCC in late 2024.

Consistency in Implementation and Scope

- **Shared Implementation Tools:** Both NDCs utilize the same primary policy instruments for their execution: the Climate Change Mitigation Strategy and Action Plan (2024–2030) and the Climate Change Adaptation Strategy and Action Plan (2024–2030). These plans will be revised as necessary to maintain alignment with the newer commitments in the Second NDC.
- **Sectoral Coverage:** Both documents maintain a consistent, economy-wide scope, covering all key IPCC sectors, including Energy, Industry, Transport, Buildings, Agriculture, Waste, and LULUCF.

Requirement for Support

- Both the Updated First and Second NDCs underscore that achieving these ambitious targets is contingent upon access to adequate international finance, technology transfer, and capacity-building support, as Türkiye implements these agreements as a developing country.

²⁸². UNFCCC. Republic of Türkiye Updated First Nationally Determined Contribution. 2023. https://unfccc.int/sites/default/files/NDC/2023-04/TÜRKİYE_UPDATED_1st_NDC_EN.pdf.

²⁸³. UNFCCC. Republic of Türkiye The Second Nationally Determined Contribution. 2025. [https://unfccc.int/sites/default/files/2025-11/The Second NDC of Türkiye.pdf](https://unfccc.int/sites/default/files/2025-11/The%20Second%20NDC%20of%20Türkiye.pdf).

**Table 40 – Main progresses between First (Updated) and Second NDC**

	First NDC (updated) – 2030	Second NDC – 2035
Reference year for scenario	2012 data	2018 data
Reference Scenario level (incl. LULUCF) Mt CO ₂ eq.	1,175	1,109
NDC target vs. Reference Scenario	480 Mt CO ₂ eq.	466 Mt CO ₂ eq.
Resulting emission level target, Mt CO ₂ eq.	695	643

5.3.3.1 Key Indicators of the Second NDC

In accordance with paragraph 65 of the MPGs under Decision 18/CMA.1,²⁸⁴ Türkiye has identified total net national GHG emissions (Mt CO₂ eq., covering all IPCC sectors, including LULUCF, as the primary key indicator for tracking progress toward its NDC under Article 4 of the Paris Agreement, with a target level of 643 Mt CO₂ eq. by 2035.²⁸⁵ This single, quantified, top-down indicator is consistent with the structure of Türkiye's target Table 41 and directly reflects the design of Türkiye's NDC, which is formulated as an economy-wide, emissions reduction relative to a BAU reference scenario, encompassing all IPCC sectors and categories — energy, IPPU, agriculture, waste, and LULUCF — included in Türkiye's National Inventory Document.²⁸⁶

Table 41 – Projection of key Indicator to track progress

Key indicator(s)c	Unit, as applicable	Most recent year in the Party's national inventory report, or the most recent year for which data are available	Projections of underlying assumption/parameters		
			2025	2030	2035
Total Net Greenhouse Gases Emissions	Mt CO ₂ eq.	51743	532.85	603.85	643.34

284. UNFCCC. (2018). Decision 18/CMA.1. Modalities, Procedures and Guidelines for the Transparency Framework for Action and Support Referred to in Article 13 of the Paris Agreement, (March), 1-65.

285. UNFCCC. Republic of Türkiye The Second Nationally Determined Contribution. 2025. [https://unfccc.int/sites/default/files/2025-11/The Second NDC of Türkiye.pdf](https://unfccc.int/sites/default/files/2025-11/The%20Second%20NDC%20of%20T%C3%BCrkiye.pdf).

286. TurkStat. "Greenhouse Gas Inventory of Türkiye 1990--2024: National Inventory Document for Submission under the United Nations Framework Convention on Climate Change." Ankara, Türkiye, 2026. https://unfccc.int/sites/default/files/resource/TUR_NID_2026.pdf.



Table 42 – Tracking progress made in implementing and achieving the NDC under Article 4 of the Paris Agreement

	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate (paras. 67 and 77(a)(i) of the MPGs)	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)	Target level ^b	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
Indicator(s) selected to track progress of the NDC or portion of NDC under Article 4 of the Paris Agreement (paras. 65 and 77(a) of the MPGs):		2018	2024		2035	2024
Total Net Greenhouse Gases Emissions	kt CO ₂ eq.	462,978.90	517,427.67	643,337.00		
Where applicable, total GHG emissions and removals consistent with the coverage of the NDC (para. 77(b) of the MPGs)	kt CO ₂ eq.		516,930.00			497,67 kt CO ₂ eq (0.0962%) (According to projected GHG emissions in the NDC 3.0, the additional amount of emissions realized for 2024)
Contribution from the LULUCF sector for each year of the target period or target year, if not included in the inventory time series of total net GHG emissions and removals, as applicable (para. 77(c) of the MPGs)	kt CO ₂ eq.		-67,093.67			
Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 of the Paris Agreement, or authorizes the use of mitigation outcomes for international mitigation purposes other than achievement of the NDC, shall provide (para. 77(d) of the MPGs):						



6 CLIMATE CHANGE IMPACTS AND ADAPTATION

6.1 NATIONAL CIRCUMSTANCES, INSTITUTIONAL ARRANGEMENTS, AND LEGAL FRAMEWORKS

Türkiye has established a robust institutional framework to address the impacts of climate change and adaptation, supported by a comprehensive range of policies, strategies, plans, and legislative instruments. The institutional landscape comprises various government ministries, agencies, and local authorities, each playing a distinct role in planning, coordinating, and implementing climate adaptation actions across different sectors. The key institutions involved in these efforts include the Ministry of Environment, Urbanization, and Climate Change (MoEUCC), the Directorate of Climate Change (DoCC), Ministry of Agriculture and Forestry (MoAF), the Directorate General of Water Management (DGWM), the General Directorate of State Hydraulic Works (DSI), the General Directorate of Agricultural Reform, the General Directorate of Nature Conservation and National Parks, the Agriculture and Rural Development Support Institution, the General Directorate of Fisheries and Aquaculture, the General Directorate of Combating Desertification and Erosion (GDCDE), the Turkish Water Institute (SUEN), the Disaster and Emergency Management Presidency (AFAD), the TSMS, the Ministry of Culture and Tourism (MoCT), the Ministry of Health (MoH), the Ministry of Energy and Natural Resources, the MoIT and the MoTI and TUBITAK-MAM. These institutions play crucial roles in formulating and implementing climate adaptation strategies across various sectors.

6.1.1 National Circumstances

Türkiye has strengthened its adaptive capacity through the development of institutional arrangements, the integration of adaptation considerations into policy frameworks, and the implementation of sector-specific strategies. In this context, the **National Climate Change Adaptation Strategy and Action Plan (2024-2030)** sets out a framework for addressing climate change impacts and managing climate related risks across key priority sectors, including water resources management, agriculture and food security, biodiversity and ecosystem services, public health, urban areas, tourism and cultural heritage, energy, industry, and transportation and communication, social development, and disaster risk reduction. In line with the emerging legislative framework for **Local Climate Change Action Plans (LCCAPs)**, Türkiye is moving toward making the preparation of LCCAPs mandatory across all 81 provinces. In this context, preparations have been initiated for six pilot provinces, which are expected to provide practical examples for the nationwide implementation of LCCAPs. To support this process and ensure methodological consistency, a technical guidance document has been developed, together with a complementary methodology document, to enable provinces to conduct climate risk analyses based on a common approach. These documents have not yet been formally adopted and are expected to be further refined based on the lessons learned from the pilot provinces before being used to guide LCCAP preparation across all 81 provinces. Despite these advances, further efforts are needed to strengthen local-level capacities, mobilize adequate financing for adaptation initiatives, and promote coordinated governance across sectors.

6.1.2 Institutional Arrangements

Türkiye has established a comprehensive and evolving institutional framework to address climate change adaptation in a coordinated, multi-level and cross-sectoral manner. Adaptation governance is designed to ensure policy coherence, effective implementation, stakeholder participation, and



alignment with national development objectives and international commitments under the Paris Agreement.

At the national level, climate change adaptation is coordinated by the MoEUCC through the DoCC. This institutional arrangement reflects Türkiye's approach to addressing climate change as a systemic challenge that intersects environmental protection, urban development, infrastructure planning, disaster risk management, and socio-economic development.

Türkiye follows a whole-of-government and whole-of-society approach, recognizing that climate risks cut across administrative boundaries and sectoral mandates.

The DoCC serves as the central authority responsible for coordinating national climate change policies, including adaptation. Its key responsibilities related to adaptation include:

- Coordinating the preparation, implementation, and monitoring of national adaptation strategies and action plans
- Supporting the integration (mainstreaming) of adaptation into sectoral policies, development plans, and spatial planning instruments
- Coordinating national reporting under the UNFCCC, including NCs and BTRs
- Facilitating inter-institutional coordination and stakeholder engagement on adaptation
- Strengthening national and local adaptation capacity through guidance, technical support, and information sharing

The Directorate acts as the primary interface between scientific knowledge, policy formulation, and implementation, ensuring that adaptation policies are informed by climate data, projections, and risk assessments.

In addition to these coordination responsibilities, Article 792/D(f) of Presidential Decree No. 85 assigns the DoCC the responsibility to undertake or commission modelling and risk assessment studies to determine climate change impacts and to prepare climate risk maps. This mandate provides an institutional basis for the development of national, regional, and local climate projections, vulnerability assessments, and climate risk analyses.

To support the regional and sectoral climate risk assessment process, a Working Group on Climate Change Risk Assessment Data Layers was established under the coordination of the General Directorate of Geographic Information Systems. The Working Group brings together public institutions responsible for climate, disaster risk management, water, agriculture, forestry, biodiversity, health, energy, transport, industry, social policy, tourism, cultural heritage, statistics, and spatial planning. Its activities focus on identifying the spatial and sectoral datasets required for vulnerability and risk assessments, reviewing data already available through the Türkiye National Geographic Information System (TUCBS), clarifying data definitions and formats, and facilitating inter-institutional data sharing.

Climate Law No. 7552 further strengthens multi-level climate governance by establishing a clearer legal basis for national and local climate action, including adaptation. The Law provides for Provincial CCCBs and supports the preparation of Local Climate Change Action Plans as province-wide instruments addressing both mitigation and adaptation. These arrangements are expected to improve vertical coordination between national and local institutions and support the integration of climate-related priorities into provincial planning and implementation processes.



Effective adaptation governance in Türkiye is supported by structured inter-institutional coordination mechanisms. The CCACB plays a central role in facilitating cooperation among relevant ministries, public institutions, and agencies.

Key institutions involved in adaptation governance include, inter alia:

- Ministry of Agriculture and Forestry (MoAF)
- Directorate General of Water Management (DGWM)
- Directorate General of State Hydraulic Works (DSI)
- Disaster and Emergency Management Presidency (AFAD)
- Turkish State Meteorological Service (TSMS)
- Ministry of Health (MoH)
- Ministry of Energy and Natural Resources (MENR)
- Ministry of Industry and Technology (MoIT)
- Ministry of Transport and Infrastructure (MoTI)
- Ministry of Culture and Tourism (MoCT)
- Ministry of National Education (MoNE)
- Research institutions and universities

These institutions contribute to adaptation planning and implementation within their respective mandates, ensuring that climate risks are addressed across water management, agriculture, forestry, health, energy, transport, tourism, industry, and disaster risk reduction. Inter-institutional coordination supports the harmonization of sectoral adaptation actions, reduces overlaps and gaps, and enhances the efficiency and effectiveness of public investments.

Local governments are recognized as key actors in adaptation implementation, given their responsibilities for urban planning, infrastructure, service delivery, and disaster risk management.

Türkiye supports local adaptation through:

- The development of Local Climate Change Adaptation Strategy and Action Plans in line with the Regulation on Local Climate Change Action Plans, which establishes the legal and institutional basis for local-level climate action planning in Türkiye
- Implementation of the EU Partnership for Local Climate Action in Türkiye Project (Local Climate Action Project), which promotes integrated local climate action by supporting municipalities in the preparation of local climate action plans
- Capacity-building programmes for municipalities and local administrations
- Technical guidance and coordination mechanisms linking national and local levels
- This multi-level governance approach ensures that adaptation measures are tailored to local conditions while remaining aligned with national priorities and frameworks.
- Stakeholder participation is an integral component of Türkiye's adaptation governance. Public institutions engage with:
 - Academic and research institutions
 - Non-governmental organizations
 - Professional chambers and civil society organizations
 - The private sector and financial institutions



Engagement mechanisms include consultations, workshops, technical working groups, project steering committees, and capacity-building activities. This participatory approach enhances policy relevance, social acceptance, and knowledge sharing, and contributes to inclusive and equitable adaptation outcomes.

Türkiye places strong emphasis on strengthening the science-policy interface for adaptation. Climate research institutions, meteorological services, and universities provide climate data, projections, vulnerability assessments, and decision-support tools that inform policy development and implementation.

The integration of scientific knowledge into adaptation governance supports evidence-based decision-making and adaptive management under conditions of uncertainty.

6.1.3 Legal Frameworks

Türkiye's adaptation efforts are guided by several key policy documents and legal frameworks, including:

- **Climate Law No. 7552:** Climate Law No. 7552, which entered into force in July 2025, represents a significant legal development for Türkiye's climate governance. The Law establishes a legal framework for climate change mitigation and adaptation, including related planning and implementation instruments, monitoring, reporting, permitting, inspection, revenues, and institutional arrangements. For adaptation, the Law strengthens the legal basis for integrating climate change considerations into public plans, programmes, strategies, investment processes, and other policy instruments. It also provides a basis for the preparation, implementation, monitoring, and updating of national and local climate-related planning instruments.
- **Legislation and technical guidance for Local Climate Change Action Plans (LCCAPs):** The framework established under Climate Law No. 7552 is expected to be operationalized through secondary legislation, technical guidance, common methodologies, and implementation tools for Local Climate Change Action Plans. These instruments are intended to support a more consistent approach to local climate risk assessment, local GHG inventory, mitigation and adaptation planning, institutional coordination, monitoring, and reporting across provinces.
- **Climate Change Adaptation Strategy and Action Plan (2024-2030):** The plan, which is currently being updated, sets out Türkiye's strategic framework for strengthening resilience to climate change impacts. It aims to mainstream adaptation considerations into national policies and development planning, enhance coordination among relevant sectors and institutions, and support the establishment of effective monitoring and evaluation mechanisms. The plan also defines sector-specific adaptation priorities and actions in key areas, including water resources management, agriculture and food security, biodiversity and ecosystem services, public health, urban areas, tourism and cultural heritage, energy, industry, and transportation and communication, social development, and disaster risk reduction.
- **Local Climate Change Action Plans (LCCAPs):** As reported in the **First BTR (BTR1)**, LCCAPs have been completed for four pilot cities: Konya, Muğla, Sakarya, and Samsun. In addition, preparatory work has been initiated for six further pilot provinces: Antalya, Isparta, Kastamonu, Kahramanmaraş, Ordu, and Elazığ. These plans provide a localized framework for climate adaptation by incorporating high-resolution climate projections, vulnerability and risk assessments, thereby addressing the differentiated climate risks and adaptation needs of each locality.



- **National Development Plans:** As reported in the **BTR1**, Türkiye's national development planning framework also supports climate adaptation and resilience-building. The **12th Development Plan (2024-2028)** and the **Medium-Term Program (2024-2026)** integrate climate-related priorities into broader development objectives, including reducing greenhouse gas emissions, strengthening climate resilience, and contributing to the **2053 Net Zero Emission Target**. These policy documents also support alignment with Türkiye's international commitments under the Paris Agreement while promoting sustainable development. In this context, the 12th Development Plan includes measures relevant to flood risk management, such as the completion and updating of **Flood Management Plans** and the development of legislation to reduce flood impacts and prevent interventions in stream beds.
- **MoAF Strategic Plan (2024-2028):** This plan also highlights the goal of increasing climate change adaptation capacity and resilience. The plan integrates legal frameworks that enhance water efficiency, mitigate the negative impacts of floods & droughts, promote sustainable agricultural practices, and improve disaster preparedness in the agricultural sector. These objectives are aligned with national climate adaptation strategies, ensuring that legal measures are tailored to sector-specific needs.
- **The National Water Plan (2026-2035):** The plan establishes a comprehensive framework to enhance Türkiye's climate adaptation capacity and ensure sustainable water management. It focuses on water efficiency, basin-based management, climate risk preparedness, and resilient infrastructure. The Plan adopts a water-energy-food-ecosystem nexus approach to strengthen policy coherence and resource efficiency, while promoting financing optimization through coordinated use of public, private, and international resources. It also supports data-driven decision-making and contributes to tracking progress under the Paris Agreement's transparency framework.

As reported in the **BTR1**, Türkiye's legal and policy framework supports the integration of climate change considerations across key sectors, including water management, agriculture, biodiversity and ecosystems, energy, and transportation. The report highlights the importance of strengthening legal and institutional arrangements for effective climate adaptation, particularly in areas such as disaster risk management, water efficiency, and biodiversity conservation.

6.2 IMPACTS, RISKS AND VULNERABILITIES

6.2.1 Impacts

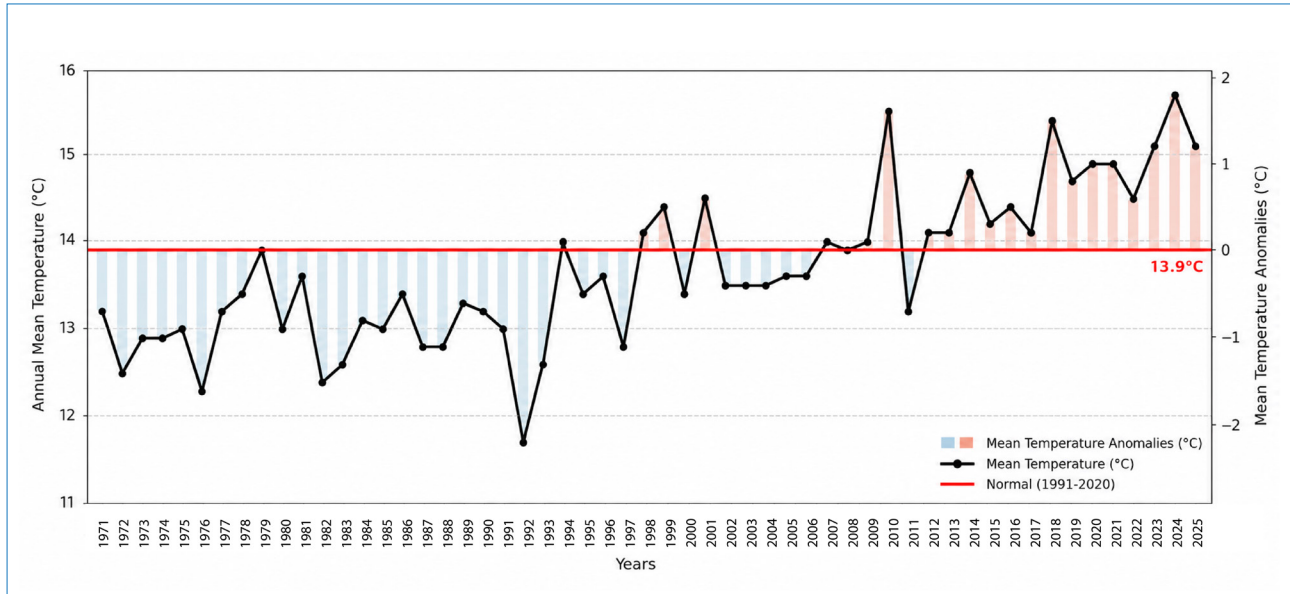
6.2.1.1 Observed Impacts

The TSMS has compiled a set of climatological observations indicating that precipitation decreases while temperatures rise during the warmer months. According to TSMS, the long-term annual mean temperature in Türkiye for the 1991-2020 reference period (new normal period), is 13.9°C, which is an increase from the 13.5°C in the 1981-2010 period, and 13.2°C in the 1971-2000 period (Figure 61)²⁸⁷. In 2025, Türkiye experienced its fifth warmest year on record since 1971, with a mean temperature of 15.1°C. This was 1.2°C above the 1991-2020 average of 13.9°C. Monthly mean temperatures in 2025 were above normal except in February and April. Overall, temperature anomalies were positive in the winter, spring, summer, and autumn seasons.

²⁸⁷. MGM. 2025. https://www.mgm.gov.tr/eng/Yearly-Climate/State_of_the_Climate_in_Turkey_in_2025.pdf



Figure 61 – Annual mean temperature of Türkiye



In recent decades, Türkiye has also seen some of the warmest seasons on record. For example, both the winter and summer of 2024 were the warmest on record, and the hottest spring on record occurred in 2018. The hottest autumn on record took place in 2020, as shown in Table 43, which provides an overview of seasonal and annual temperature trends in Türkiye.

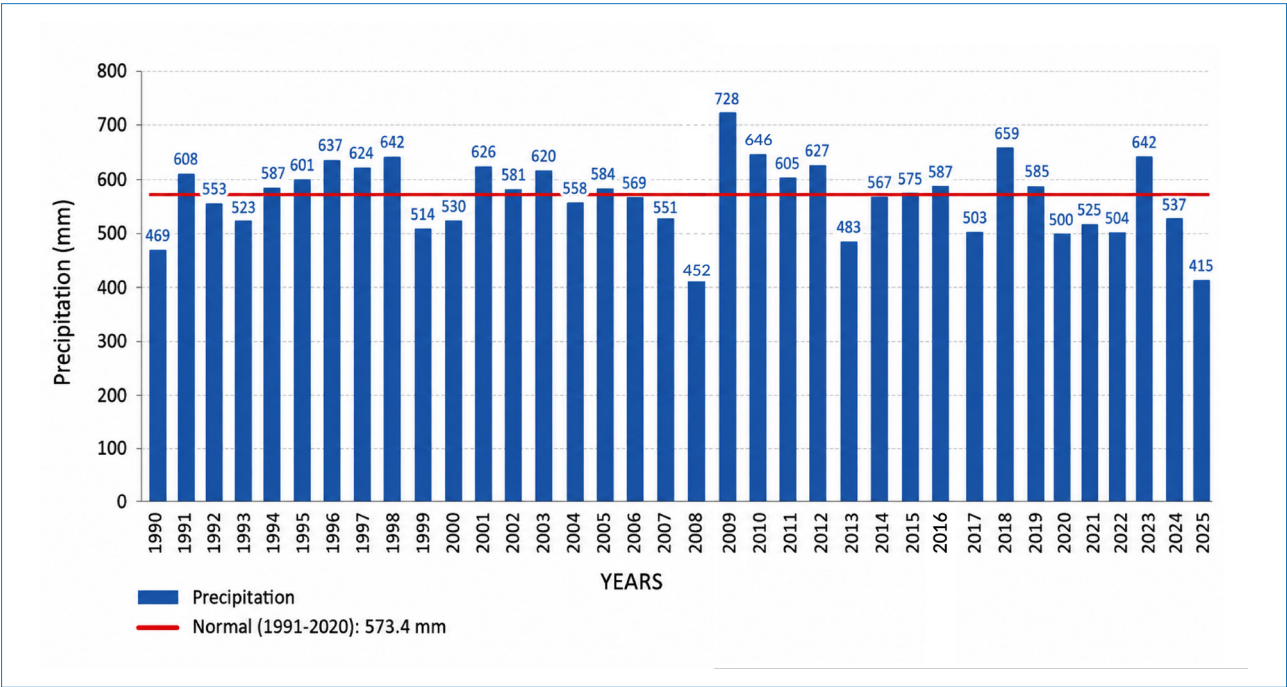
Table 43 – Ranking of the seasonal and annual warmest decades

Winter			Spring			Summer			Autumn			Average		
Year	Temperature	Anomaly	Year	Temperature	Anomaly	Year	Temperature	Anomaly	Year	Temperature	Anomaly	Year	Temperature	Anomaly
2010	6.5	2.6	2018	14.9	2.5	2010	25.1	1.1	2023	17.4	2.1	2010	15.5	1.6
2018	6.3	2.4	1989	14.0	1.6	2012	24.9	0.9	2020	17.4	2.1	2018	15.4	1.5
2021	5.8	1.9	2008	13.8	1.4	2016	24.8	0.8	2012	16.8	1.5	2023	15.1	1.2
2023	5.2	1.3	2016	13.7	1.3	2007	24.8	0.8	2019	16.7	1.4	2021	14.9	1.0
2011	5.1	1.2	2013	13.7	1.3	2023	24.7	0.7	2015	16.7	1.4	2020	14.9	1.0
1999	5.1	1.2	2014	13.6	1.2	2021	24.7	0.7	2010	16.7	1.4	2014	14.8	0.9
1979	5.0	1.1	2001	13.6	1.2	2017	24.7	0.7	2022	16.5	1.2	2019	14.7	0.8
2015	4.7	0.8	2010	13.4	1.0	2018	24.6	0.6	2018	16.3	1.0	2022	14.5	0.6
2013	4.7	0.8	2021	13.2	0.8	2022	24.6	0.6	1998	16.0	0.7	2001	14.5	0.6
2019	4.6	0.7	2020	13.1	0.7	2001	24.6	0.6	1994	16.0	0.7	2016	14.4	0.5



The annual mean areal precipitation in Türkiye between 1991-2020 period was 573.4 mm, according to TSMS measurements, as shown by the precipitation time series in Figure 62. When reviewing long-term precipitation averages in Türkiye, it is observed that dry and wet periods follow one another. For the examined period, the year 2025 (414.9 mm) was one of the driest on record, while the wettest year was 2009 (728.3 mm)²⁸⁸.

Figure 62 – Annual mean areal precipitation of Türkiye



Türkiye has experienced notable variations in precipitation patterns, as given in Table 44. The table highlights the anomalies in monthly, seasonal, and annual precipitation compared to long-term averages. Positive anomalies indicate periods with above-average precipitation, while negative anomalies signify below-average precipitation. Notably, April with a 26.5% anomaly, and October, with an 8.2% anomaly, experienced higher precipitation than average, indicating wetter conditions. In contrast, June saw the lowest monthly precipitation anomaly at -62.8%, indicating an exceptionally dry month. On a seasonal scale, the summer season experienced a notably low anomaly of -53.2%. Considering the historical records, 2009 stands out as the wettest year on record, indicating that it was a particularly wet year overall. Conversely, 2025 recorded a notably low annual anomaly of -27.6%, making it the driest year on record.

288. https://www.mgm.gov.tr/eng/Yearly-Climate/State_of_the_Climate_in_Turkey_in_2025.pdf



Table 44 – Ranking of the monthly, seasonal and annual wettest and driest years

PRECIPITATION				
PERIOD	2025 [mm]	2025 ANOMALY [%]	YEAR OF RECORD ⁸	YEAR OF RECORD ⁸
January	26.8	-61.6	1981	2001
February	40.0	-33.1	2009	1989
March	28.8	-53.0	1996	1986
April	72.7	26.5	2011	1989
May	48.2	-8.6	1993	2021
June	12.5	-62.8	1992	2001
July	9.6	-38.6	2009	2000
August	7.9	-46.7	1997	1998
September	21.4	-14.2	2008	1984
October	53.5	8.2	2010	1993
November	33.4	-42.7	1983	2010
December	60.1	-20.6	2001	1972
Spring	149.7	-12.7	2023	1989
Summer	30.0	-53.2	1972	2025

6.2.1.2 Expected Impacts

Climate Change Modelling Background

In the **EU Partnership for Local Climate Action in Türkiye Project**, funded by the EU and implemented by UNDP Türkiye, with the MoEUCC as the beneficiary, six Global Climate Models (GCMs) were selected from among 31 GCMs available in the CMIP6 archive under the SSP2-4.5 and SSP5-8.5 scenarios, based on their ability to best represent Türkiye’s climate conditions²⁸⁹.

The performance of GCMs was evaluated in two stages. The first stage includes a comparison between GCM-based temperature and precipitation datasets and the ERA5 reference dataset using monthly time series. In the second stage, the performance of climate models was assessed based on 12 extreme precipitation indices and 10 extreme temperature indices. The success of GCMs in simulating the extreme climate indices was measured using the ERA5-Land dataset, where the comparisons were made utilizing probability distributions rather than time series-based analyses. The aim of this two-stage performance evaluation is to assess the models’ abilities to simulate both basic climate features and extreme climate events in a versatile manner.

The Weather Research and Forecasting (WRF) model is a powerful numerical weather prediction model widely used for predicting weather and climate behavior. To ensure the accuracy and reliability of the model, it is crucial to compare different physical parameterization schemes that

289. https://yereliklim.org/wp-content/uploads/2024/09/A21_Yonetici-Ozeti.pdf



represent complex physical processes in the atmosphere and select the most suitable ones. The WRF model will be used for dynamic downscaling of global climate models (GCMs) from CMIP6 for Türkiye. The aim is to optimize the combinations of different physics schemes available in the WRF model in order to achieve successful precipitation simulations tailored to the geography of Türkiye. The selected 6 GCMs were downscaled to a 3 km resolution using the WRF model through dynamical downscaling methods.

The regional modelling configuration consists of three nested domains with horizontal resolutions of 27 km, 9 km, and 3 km. The highest-resolution 3 km domain is centered on Türkiye to support detailed national, regional, and local assessments, while the wider 9 km and 27 km domains are used to represent the larger-scale atmospheric processes and regional interactions affecting the country.

The simulations cover the 1985-2015 reference period and the 2015-2100 projection period under both emission scenarios. The modelling work is supported by high-performance computing resources, including the MareNostrum 5 supercomputer at the Barcelona Supercomputing Center. This infrastructure enables the continuous implementation of high-resolution regional climate simulations extending to the end of the century.

Expected Changes in Türkiye (to be updated when the 6-model mean ensemble is released)

Under the “Local Climate Action Project”, high-resolution climate projections were produced for Türkiye using six global climate models: **MPI-ESM1-2-HR, MRI-ESM2-0, EC-Earth3-Veg., HadGEM3-GC31, CMCC-ESM2, and NorESM2-MM**. Each global climate model was dynamically downscaled using the WRF regional climate model to a spatial resolution of 3 km. With a spatial resolution of 3 km, the project is the most comprehensive climate modelling study conducted for Türkiye, incorporating six different climate models and two emission scenarios.

The use of six global climate models enables the projected changes to be assessed across a broad range of possible future climate conditions. Rather than relying on the results of a single model, the modelling framework makes it possible to identify the signals consistently reproduced by different models. It also makes it possible to identify the variables and regions for which uncertainty exists. Projected changes in temperature, precipitation, and average wind speed were assessed for the 2015-2100 projection period under the SSP2-4.5 and SSP5-8.5 scenarios, in comparison with the 1985-2014 reference period. The projections were evaluated for the near-term (2015-2040), mid-term (2041-2070) and long-term (2071-2100) periods. The initial findings obtained from the climate model outputs are summarized below:

Despite differences in the magnitude and spatial distribution of the projected changes, the six models generally indicate a warming trend across Türkiye. While there is relatively strong consensus on temperature, there is some variation in the magnitude and regional patterns of warming among the models. Most simulations indicate greater warming over time, with higher temperature increases typically associated with the SSP5-8.5 scenario than with the SSP2-4.5 scenario, reflecting the influence of future greenhouse gas emissions on projected temperature changes.

During the near-term period, the models generally project moderate warming across much of Türkiye, although the magnitude and location of the greatest increases vary between individual simulations. Some models suggest stronger warming in the east and southeast of the country. During the medium-term, temperature increases become more widespread and extreme in all model results. By the end of the century, all six models project substantial warming across Türkiye,



particularly under SSP5-8.5, with the strongest increases generally concentrated in Central, Eastern, and Southeastern Anatolia.

While the overall warming signal is common to all models, its magnitude varies depending on the model and scenario. Some models, including EC-Earth3-Veg, HadGEM3-GC31, and CMCC-ESM2, project particularly strong late-century warming under the SSP5-8.5 scenario, whereas NorESM2-MM generally indicates comparatively more moderate increases. MPI-ESM1-2-HR and MRI-ESM2-0 also project significant warming, particularly under the high-emission scenario. These differences highlight the importance of considering the full range of six models rather than interpreting the projections through the results of a single model.

The spatial distribution of warming is broadly consistent across the model simulations. Coastal areas, particularly in the Marmara, Aegean, Mediterranean, and Black Sea regions, generally experience lower temperature increases than the interior and eastern parts of Türkiye. In most models, eastern and south-eastern Anatolia emerge as areas where warming may be more pronounced. The projected rise in average temperature is also expected to affect temperature extremes, leading to an increase in the frequency, duration, and intensity of heatwaves.

In comparison with temperature, precipitation projections demonstrate increased variability among the six models. This reflects the more complex influence of atmospheric circulation, topography, and regional climate processes on precipitation. Nevertheless, most models indicate a general tendency toward drying across the Aegean and Mediterranean regions, particularly during the mid- and long-term periods. Under the SSP5-8.5 scenario, the projected reductions generally become more pronounced and, according to some models, extend toward the Marmara, Central Anatolia, and Southeastern Anatolia regions.

The magnitude and spatial extent of reductions in precipitation differ across the models. MPI-ESM1-2-HR, MRI-ESM2-0, HadGEM3-GC31, CMCC-ESM2, and NorESM2-MM all generally indicate a decrease in precipitation across western and southern Türkiye during at least some of the projected periods. EC-Earth3-Veg also shows a tendency toward drying in these regions, although the direction and intensity of changes vary across periods. The models broadly agree on decreasing precipitation in the Aegean and Mediterranean regions, suggesting that these areas may face increasing pressure on water resources, agricultural production, ecosystems, and urban water supply.

In contrast, several model simulations project increases in annual precipitation across parts of the eastern Black Sea region, eastern Anatolia, and north-eastern Türkiye. However, the location, magnitude, and timing of these increases vary considerably among the models. NorESM2-MM projects relatively widespread increases in northern and eastern Türkiye during certain periods, whereas other models generally show more localized increases, particularly along the eastern Black Sea coast. Some model results also suggest that the direction of precipitation change may differ between near-, mid-, and long-term periods.

Therefore, the differences between the six models are more significant for precipitation than for temperature. While the models generally agree on a decrease in precipitation in western and southern Türkiye, they disagree on the direction and magnitude of changes in the north and east. Consequently, precipitation projections should be interpreted by considering both the common signals and the range of results produced by the individual models.

The overall precipitation pattern suggests that the existing climatic contrasts across Türkiye may become more pronounced over the period of this century. While the western and southern regions



are expected to become more arid, parts of the north and east may see an increase in annual precipitation. However, higher annual precipitation does not necessarily imply lower climate risk. Changes in the seasonal distribution, frequency, and intensity of precipitation could lead to both extended dry periods and intense, short-duration precipitation events becoming more common.

Projected changes in average wind speed are smaller in magnitude than those in temperature and precipitation, and there is considerable spatial variability among the models. Nevertheless, several simulations indicate slight increases in average wind speed in parts of the Aegean, Marmara, Central Anatolia, and Black Sea regions. The northern Aegean and Marmara regions are among those where increasing wind speeds are most frequently predicted by different models, particularly in the medium and long term.

By contrast, several models predict a decrease in average wind speeds in parts of the Mediterranean, eastern Anatolia, and south-eastern Anatolia. In some simulations, the magnitude of these reductions increases during the second half of the century, particularly under the SSP5-8.5 scenario. However, the direction and magnitude of the projected changes in wind speed differ among the individual models, and localized increases and decreases may occur within the same geographical region. These patterns emphasize the importance of evaluating changes in wind speed in relation to regional characteristics and local climate dynamics.

Overall, the six-model assessment provides a coherent overview of the progressive increase in temperatures across Türkiye, with stronger warming under the SSP5-8.5 scenario toward the end of the century. The model results also generally indicate a decrease in precipitation in western and southern Türkiye, an increase in precipitation in parts of northern and eastern Türkiye, and comparatively limited, yet regionally differentiated, changes in average wind speed.

A key strength of the study is the use of six different global climate models at a spatial resolution of 3 km. This modelling framework captures a wider range of potential future climate conditions, facilitates the identification of robust climate signals, and enables the assessment of model-related uncertainties more systematically. While temperature projections show strong agreement among the models, precipitation and wind speed projections exhibit greater variability between models and across different regions.

The findings presented in this section are based on the individual outputs of the six climate models. The assessment will be updated following the completion of the six-model ensemble analysis. These results will provide a more robust representation of common climate change signals across the models, reducing the influence of model-specific variations on the overall assessment.

6.2.2 Vulnerability and Risk Assessment

As reported in the BTR1, Türkiye has carried out national and sectoral studies to assess climate-related vulnerability and risks. These studies highlighted that social and economic losses associated with extreme weather and climate events are increasing and that Türkiye faces medium to high climate change risks due to its climatic and geographical characteristics. Previous national assessments, including the Enhancing Adaptation Action in Türkiye Project, the Climate Promise Project, and the Climate Change Disaster Management Project, contributed to the development of sectoral vulnerability and risk analyses, regional adaptation priorities, nature-based solution options, multi-layered hazard maps, and national-scale vulnerability assessments.

Building on these earlier studies, sectoral vulnerability and risk assessment efforts presented in the BTR1 are planned to be further updated under the Local Climate Action Project. In this



context, the high-resolution 3 km regional climate projections produced within the project will be used together with an updated vulnerability and risk assessment methodology. The updated assessments are expected to cover Türkiye's 12 NUTS-1 regions and six pilot provinces across eleven sectors, enabling a more spatially detailed and methodologically consistent evaluation of climate risks at both regional and provincial levels. This approach is expected to provide a stronger basis for identifying climate hazards, exposure, sensitivity, adaptive capacity, and priority adaptation needs in a more localized manner.

The methodology for the updated regional and sectoral assessments is being refined in line with the **IPCC 6th Assessment Report (AR6)**²⁹⁰. It builds on the interaction of climate hazard, exposure, and vulnerability, including sensitivity and adaptive capacity, and also incorporates climate responses to reflect how adaptation and risk-management interventions may influence the level and distribution of risk over time.

Climate indices are being developed for priority hazards, including drought, heavy precipitation and flooding, heatwaves, forest fire weather conditions, cold waves, and extreme winds. The proposed analytical approach also foresees the assessment and classification of risks at the district level and the preparation of province-level summaries. These outputs are expected to support the identification of priority areas, sectors, and adaptation actions for Local Climate Change Action Plans.

The updated assessments remained under preparation during the reporting period. Accordingly, the information reported at this stage relates primarily to methodological development, data preparation, and institutional coordination rather than to completed regional risk results.

6.2.2.1 Water Resources Management

As reported in the BTR1 and the Eight NC Report, water resources in Türkiye are highly exposed to drought and heavy precipitation. The water resources sector is one of the sectors most vulnerable to climate change in Türkiye and has strong interlinkages with agriculture, energy, ecosystems, settlements, and public health. In this context, the use of water resources, particularly by the agricultural sector, has been assessed to identify vulnerability and risk. The vulnerability and risk assessment examined the risks posed to water resources by drought and heavy precipitation hazards for both the current and future periods.

The assessment indicates that drought risk for water resources is currently high or very high in Western Marmara, the southern provinces of Central Anatolia, the Eastern Mediterranean provinces, Southeastern Anatolia, and most of Eastern Anatolia. In the Aegean coastal provinces, drought risk is generally moderate. Future risk scenarios based on current sector indicators and climate projections suggest that drought risk in the Eastern Mediterranean, Southeastern Anatolia, and Eastern Anatolia is expected to remain significant.

For heavy precipitation, the current risk is extremely high in the Eastern Mediterranean region and in the western and eastern Black Sea coastal provinces. Significant heavy precipitation risk is also observed along the coasts of Northeastern Marmara, the Mediterranean, and Aegean regions, as well as in the western provinces of Southeastern Anatolia. The risk is moderate in the Central Black Sea region and generally low in the interior parts of the country. After the 2060s, heavy precipitation risk is expected to reach extremely high levels, particularly in northern Marmara.

290. IPCC, 2022. Point of Departure and Key Concepts. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change



6.2.2.2 Agriculture and Food Security

Türkiye is highly vulnerable to the impacts of climate change on agriculture and related food sectors due to its geographical location and climatic characteristics. Changes in average climate parameters and the increasing frequency and intensity of drought, heavy precipitation, and windstorms directly affect crop production, livestock activities, and food security. Within the vulnerability and risk assessment, drought risk in the agricultural sector was analyzed for the current and future periods.

For crop yields, high and very high drought risk is currently observed in the western and eastern parts of Central Anatolia, the eastern provinces of Eastern Anatolia, and several provinces along the Eastern Mediterranean coast. Drought risk is lowest in Eastern Marmara and the Central Black Sea, low along the Aegean coast, and moderate in the remaining regions. In future periods, drought risk in the agricultural sector is expected to increase gradually, particularly in the Eastern Aegean Region.

For the livestock sector, current drought risk is high in areas where livestock activities are concentrated, including Eastern Anatolia, Southeastern Anatolia, Central Anatolia, and the Mediterranean coasts. In future periods, drought risk is expected to spread across almost the entire southern half of the country.

6.2.2.3 Disaster Risk Management

As reported in Türkiye's BTR1, Türkiye is exposed to a broad range of climate-related hazards due to its geographical, topographical, and climatic characteristics. Floods, landslides, droughts, forest fires, storms, and other extreme weather events are among the most relevant climate-related disaster risks. National reporting under the Sendai Framework indicates that hydro-meteorological hazards have become increasingly prominent, with flood risks particularly evident in the Kızılırmak, Yeşilirmak, Fırat, and Eastern Black Sea basins. Major flood events have affected the Black Sea region, including Giresun, Rize, Artvin, Bartın, Kastamonu, and Sinop, while landslides remain frequent in the Eastern, Central, and Western Black Sea regions due to steep topography and surface conditions. Storms and extreme winds are particularly observed in the North Aegean and the western and central Mediterranean regions.²⁹¹

Floods and flash floods have continued to pose a recurrent disaster risk in the period following the 2021 Western Black Sea floods. Major post-2021 events included the March 2023 floods in Şanlıurfa and Adıyaman, as well as the September 2023 floods in İstanbul and Kırklareli. During the March 2023 event, daily rainfall in Şanlıurfa reached 119 mm, exceeding the station's previous long-term daily maximum of 90.5 mm. The floods resulted in 21 fatalities and damaged more than 3,000 homes, workplaces, vehicles, and household assets. In 2023, severe rainfall and flood events accounted for 38 per cent of all extreme meteorological events recorded in Türkiye.²⁹² Türkiye has continued to strengthen flood risk management through meteorological early-warning systems, national and local risk-reduction planning, river rehabilitation activities, and coordinated preparedness and emergency-response arrangements.²⁹³

Forest fires have also remained a significant disaster risk, particularly in the Aegean and Mediterranean regions. The major 2021 fires severely affected Antalya and Muğla, including

²⁹¹. AFAD, 2022. Mid-Term Review of the Sendai Framework: National Report of Türkiye. p.6

²⁹². Turkish State Meteorological Service (MGM), 2023 Year Climate Assessment, 2024, pp. 20–23.

²⁹³. Risk Azaltma Faaliyetleri Kapsamında Dere Islahı Çalışmalarına Dair İş Birliği Protokolü, 2024.



Manavgat, Marmaris, Köyceğiz, and Milas. In subsequent years, significant fires also affected Çanakkale, İzmir, Bursa, and Karabük. According to the General Directorate of Forestry, the forest area damaged by fires increased from 12,799 hectares in 2022 to 15,520 hectares in 2023, 27,485 hectares in 2024, and 81,473 hectares in 2025.²⁹⁴ Türkiye has continued to enhance wildfire risk management through fire monitoring and early-warning systems, aerial and ground response capacity, inter-agency coordination, and post-fire rehabilitation measures.²⁹⁵

6.2.2.4 Biodiversity and Ecosystem Services

Biodiversity and ecosystem services include multiple subcomponents, each of which may be affected differently by climate change. In Türkiye's national-level vulnerability and risk assessment, drought risk was analyzed for species diversity, carbon storage, and wetland ecosystem services for the current and future periods.

For species diversity, drought risk is currently very high in the Eastern Mediterranean, the south of Central Anatolia, the west of Southeastern Anatolia, and the northern provinces of Eastern Anatolia. Drought also threatens species diversity along the West Marmara coastline, the South Aegean-Mediterranean coastline, and the east of Central Anatolia. In future periods, risk levels in the southern part of the country are expected to become high to extremely high.

For the carbon storage ecosystem service, drought risk is currently extremely high in the Eastern Black Sea, Western Marmara, and Western Mediterranean regions. The risk is also very high in the coastal provinces of the Northern and Southern Aegean and the Eastern Mediterranean. Although drought risk is generally lower in northern regions, carbon storage is still exposed to medium-to-high risk there due to the concentration of forest resources and wood production. In the future, drought risk for carbon storage is expected to expand and reach high to very high levels in the Western Black Sea provinces.

For wetland ecosystems, the highest and very highest drought risk levels are observed in Central Anatolia, Eastern Anatolia, and Southeastern Anatolia. In future periods, the risk is expected to increase particularly in Eastern Anatolia and may reach extremely high levels. These risks may lead to reduced ecosystem services, biodiversity loss, and increased reed fires in provinces where wetland ecosystems are highly exposed to drought.

6.2.2.5 Coastal Areas

Türkiye's coastal areas are under pressure from population density, migration, urbanization, tourism, and infrastructure development. Climate change is expected to affect coastal areas through increases in sea water temperature, sea level, and acidification, as well as decreases in oxygen concentration. These changes may affect marine ecosystems through the decline of seagrass, coral, and phytoplankton, the spread of invasive species, and negative impacts on species reproduction.

Coastal cities and tourism areas are particularly vulnerable. In many coastal areas, water demand is partly met through groundwater resources; excessive use may lead to saltwater intrusion and negatively affect water resources used for agriculture. Sea-level change is monitored through the Turkish National Sea Level Monitoring Network (TUDES). In addition, Coastal Vulnerability Index (CVI) analysis is being applied to coastal and delta regions in Türkiye to assess sea-level rise and related disaster risks.

²⁹⁴. General Directorate of Forestry (OGM), 2025 Annual Activity Report, 2026, Table 17, p. 35.

²⁹⁵. General Directorate of Forestry (OGM), 2025 Annual Activity Report, 2026, pp. 34–35.



Studies indicate that delta areas are among the locations most vulnerable to land loss from sea-level rise. Adana, Çanakkale, Samsun, Balıkesir, and Aydın are among the regions identified as having the highest land-loss risk. CVI analysis supports the identification of coastal areas most exposed to sea-level rise and related hazards and helps guide measures to reduce negative impacts.

6.2.2.6 Public Health

Climate change affects public health through several pathways. Increasing temperatures, heatwaves, cold waves, air pollution, water insecurity, food safety risks, and natural disasters may increase health risks. Infectious and vector-borne diseases are expected to rise, and the distribution and virulence of vectors and pathogenic microorganisms associated with diseases such as malaria, dengue fever, yellow fever, and Lyme disease may increase. Climate change may also contribute to increases in zoonotic diseases, respiratory tract infections, allergic diseases, obesity, chronic heart disease, diabetes, hypertension, depression, and mental health deterioration.

Food poisoning, acute gastroenteritis, and contamination risks may increase where food safety cannot be ensured. In areas where water security is weak, water-borne infections and diseases such as cholera, typhoid fever, paratyphoid, and viral gastroenteritis may increase. Climate-related migration may also create health risks for both displaced and host populations, although mobility may reduce risks when used as an adaptation strategy.

Preparedness for heavy precipitation, extreme temperatures, heatwaves, cold waves, floods, and forest fires is essential for reducing climate-related health impacts. Strengthening early warning response systems, syndromic surveillance, vulnerability and risk assessment, risk communication, inter-agency coordination, and preparedness capacity is therefore critical.

The heatwave risk assessment for the health sector indicates that the Eastern Mediterranean, Southeastern Anatolia, and southern parts of Eastern Anatolia currently face the highest heatwave risk, based on population density and health management capacity. The risk is also high in the hinterland of the Aegean and southern Central Anatolia and decreases towards the north. In future periods, heatwave risk in the southern part of the country is expected to become high to extremely high.

6.2.2.7 Urban Areas

Urban areas in Türkiye are increasingly exposed to climate-related hazards due to population growth, urban expansion, and settlement development in risk-prone areas. Cities located on steep terrain or in flood-prone areas are particularly vulnerable to heavy precipitation. Black Sea cities stand out due to settlement expansion in high-risk locations and the severe impacts of recent flood events. Coastal cities in the Mediterranean and Aegean regions may also experience significant losses from heavy precipitation and windstorms.

Heatwaves represent a major threat in cities with dense populations, limited natural areas, insufficient air corridors, and reduced surface water visibility. Metropolitan cities are particularly exposed due to their urban form, high density, and growth patterns. In this context, the vulnerability and risk assessment focused on heavy precipitation and heatwave hazards in urban areas.

Current heavy precipitation risk in the urban sector is high or very high in the Black Sea, Aegean, Mediterranean, and Southeastern Anatolia regions, as well as in the south of Eastern Anatolia. The highest hazard levels are observed in cities east of the Western Black Sea, in the Eastern Mediterranean, and in northern coastal areas. In future periods, almost all coastal cities, except



those in the Marmara and Southeast regions, are expected to face high or very high heavy precipitation risk.

Current heatwave risk in urban areas is extremely high, particularly in cities in the southern half of the country. Risk levels generally decrease toward the north. In future periods, cities in Southeastern Anatolia are expected to face very high risk, while other southern cities are expected to remain at high risk.

Under the Local Climate Action Project, the vulnerability and risk assessment methodology will be applied to both urban and rural settlements in order to provide a more comprehensive assessment of climate-related risks affecting settlements across different spatial and socio-economic contexts.

6.2.2.8 Tourism and Cultural Heritage

As reported in the BTR1, climate change poses growing risks to tourism and cultural heritage in Türkiye, particularly through heatwaves, forest fires, heavy precipitation, and flooding. Heatwave risk is currently extremely high in the Southern Aegean and Mediterranean coasts, the south of Central Anatolia, the Eastern Mediterranean, and the western provinces of Southeastern Anatolia. Risk levels are also high in the coastal and interior parts of the Aegean, Southwest Marmara, Ankara and surrounding provinces, and the northern part of Southeastern Anatolia. In future periods, heatwave risk is expected to spread toward the north and northeast of Central Anatolia.

Wildfire likelihood increases when drought and extreme heat occur together. Although the 2021 Aegean and Mediterranean fires damaged natural heritage sites, cultural heritage sites did not experience substantial damage. However, natural and cultural values are closely connected in tourism. Climate hazards related to temperature may affect cultural heritage sites through soot accumulation, cracking, fragmentation, thermal expansion and contraction, and changes in stone materials at macro and micro scales.

Floods triggered by drought conditions, unexpected heavy rains, and groundwater changes also represent risks to cultural monuments, particularly in sloping terrain and coastal areas. Flooding may damage museums, archives, archaeological excavation sites, and historic structures, especially those made of organic or unfired earthen materials. The loss or degradation of cultural heritage values may also reduce the diversity of tourism activities and destinations.

Recent work undertaken by the MoCT provides further province-level insights into these risks. The 2024 study on vulnerability and risk analysis and adaptation planning for Çanakkale, Mersin, and Kayseri assessed climate risks for summer tourism in Çanakkale and Mersin and for winter tourism in Mersin and Kayseri. The findings indicate that tourism activities in Çanakkale may be affected by heatwaves, heavy precipitation, and forest fires, while coastal, nature, cultural, and winter tourism activities in Mersin face risks associated with heatwaves, forest fires, heavy precipitation, and changing winter conditions. In Kayseri, winter tourism, particularly around Erciyes, is exposed to increasing risks linked to declining snow availability and changing winter temperatures.

Together, these findings reinforce the need to integrate climate resilience into tourism planning, destination management, cultural heritage conservation, and related investment decisions. Building on this evidence, the Local Climate Action Project will assess tourism and cultural heritage under separate sectoral headings, enabling a more detailed evaluation of sector-specific climate risks, vulnerabilities, and adaptation needs.



6.2.2.9 Energy

Climate change is expected to affect the energy sector through impacts on energy resources, energy infrastructure, and energy demand. In Türkiye's vulnerability and risk assessment, heatwave and drought risks were analyzed for the energy sector. Rising average temperatures influence both energy supply and consumption. Heatwaves may increase peak electricity demand and damage electricity transmission and distribution lines.

Changes in precipitation, temperature, vegetation, and humidity may also affect power plant design parameters and operational conditions. These changes may lead to efficiency losses, water access constraints, and increased costs. Climate change risks may affect energy security and create uncertainty for investors and financial institutions in the energy market. Additional investments may be required to address efficiency and operational losses linked to changing temperature and humidity conditions.

The heatwave risk assessment indicates that the current risk is extremely high in southern provinces, particularly in the Mediterranean Region, the southern provinces of Central Anatolia, including Ankara and surrounding provinces, and the Aegean coast. Risk levels are lower in the northern half of the country. In future periods, heatwave risk is expected to increase particularly in eastern Central Anatolia, Southeastern Anatolia, and Eastern Anatolia.

Drought and water scarcity negatively affect energy resources, particularly hydroelectric power plants dependent on water availability. Current drought risk in the energy sector is extremely high along the Eastern and Southeastern Anatolia lines where hydroelectric power plants are located on Türkiye's largest rivers. The risk is also extremely high in the Eastern Mediterranean and Southwestern Marmara, high in the Mediterranean and Central Anatolia, and moderate in the Aegean. Future drought risk is expected to follow a pattern similar to the current period.

Although Türkiye does not yet have a nuclear power plant in operation, climate-related vulnerability and risk assessment studies are carried out for nuclear power plants in line with national legislation and International Atomic Energy Agency documentation and recommendations. For the Akkuyu Nuclear Power Plant site, comprehensive coastal flooding investigations were conducted, including tsunamis, seiches, storm surges, tides, waves, and sea-level rise due to global warming. Extreme meteorological hazards such as storms, heavy precipitation, extreme air and water temperatures, lightning, small tornadoes, and waterspouts were also examined.

6.2.2.10 Industry

The industrial sector is affected by climate hazards that are becoming more frequent and intense, including drought, heavy precipitation, and heat waves. Climate change may affect industries dependent on agriculture and water resources, alter heating and cooling energy demand, disrupt energy supply, and cause short-term job losses during extreme weather events. Accordingly, vulnerability and risk analysis for the industrial sector focused on drought and heavy precipitation hazards.

For heavy precipitation, current risk is high, particularly in Organized Industrial Zones and locations with high numbers of industrial workers. High and extremely high risk levels are observed in provinces around the Black Sea, Aegean, and Mediterranean coasts. Risk is also elevated in the Western Mediterranean and its hinterlands, as well as in eastern Central Anatolia. Future heavy precipitation risk is expected to follow a pattern similar to the current period.



For drought, current risk is very high in western Central Anatolia, the Northern Central Aegean, the Eastern Mediterranean, and Southeastern Anatolia. Drought risk is significantly lower in northern regions. In future periods, a similar spatial pattern is expected, with increasing risk in the central Aegean Region.

6.2.2.11 Transportation and Communication

Climate hazards can damage and disrupt transportation and communication infrastructure and services, with cascading consequences for economic and social activities, education, health, and emergency services. The vulnerability and risk assessment for the transportation and communication sectors primarily focuses on heavy precipitation and heat waves.

For transportation, heavy precipitation risk is high and very high along the Central and Eastern Black Sea, Aegean, and Mediterranean coasts, the south of Central Anatolia, and the east of Southeastern Anatolia. Future risk is expected to follow a similar pattern, with Southeastern Anatolia reaching high risk levels. Heatwave risk for transportation is currently high and very high in western and southern Türkiye. In the future, the risk is expected to decline in the northwest and shift toward the southern half of the country.

For communication, current heavy precipitation risk is high and very high in the coastal provinces of the Central and Eastern Black Sea, Aegean, and Mediterranean regions. In future periods, risk is expected to increase by one level in the North Aegean and Western Mediterranean provinces. Current heatwave risk in the communication sector is high in the Aegean, Eastern Mediterranean, and Southeastern Anatolia, while it is low in the northeast. In future periods, Southeastern Anatolia is expected to reach very high risk levels, while the South Aegean is expected to maintain high and very high risk levels.

Climate change also has implications for maritime transport and ports through sea-level rise, storm surges, waves, winds, fluvial and pluvial flooding, and other hazards. Ports are of strategic socio-economic importance for Türkiye's external trade, food and energy security, tourism, and disaster risk reduction. Strengthening the climate resilience of ports is therefore important for sustainable development, regional connectivity, and the blue economy. Regulations and projects related to marine energy efficiency, decarbonization, and renewable energy resources may provide co-benefits for both climate change mitigation and adaptation.

Following the completion of the updated vulnerability and risk assessments, a more detailed and consistent basis is expected to be available for identifying regional and provincial adaptation priorities.

6.3 ADAPTATION PRIORITIES AND BARRIERS

This section outlines Türkiye's domestic adaptation priorities, progress in advancing these priorities, and the main challenges, gaps, and barriers affecting the implementation of adaptation actions. Türkiye's approach brings together sectoral policies, basin-based planning, local climate action, risk assessment, climate information systems, and investment measures to address climate-related risks across key sectors.

6.3.1 Domestic Adaptation Priorities and Progress

Türkiye continues to strengthen its national adaptation framework through the ongoing update of the **National Climate Change Adaptation Strategy and Action Plan** and the further development of national, sectoral, and local planning processes. As reported in the BTR1, the **12th Development**



Plan (2024-2028) and the **Medium-Term Program** provide an overarching policy context for climate-related action, including disaster-resilient settlements, environmental protection, natural resource management, and improved environmental data and monitoring systems.

Building on the vulnerability and risk assessment work reported in the BTR1, the ongoing **EU Partnership for Local Climate Action in Türkiye Project** will support updated assessments across 11 priority sectors in Türkiye's 12 NUTS-1 regions and six pilot provinces. Using high-resolution climate projections and an updated vulnerability and risk assessment methodology, the project will provide a more detailed basis for identifying regional and provincial adaptation priorities in areas including water resources management, agriculture, urban and rural areas, biodiversity, energy, industry, transport, health, critical infrastructure, tourism, and cultural heritage.

The project also supports the further development of **Local Climate Change Action Plans** and local capacity for adaptation planning. Experience from the six pilot provinces, together with the technical guidance and climate risk assessment methodology developed under the project, is expected to help refine the approach before its wider application. In line with the emerging legislative framework, this process is expected to support the preparation of Local Climate Change Action Plans across all 81 provinces.

6.3.1.1 Water Resources Management

Water resources management is one of Türkiye's foremost adaptation priorities due to the increasing scarcity of water, exacerbated by climate change. To address this growing challenge, the **MoAF**, the **DGWM**, and the **DSI**, in collaboration with **TUBITAK-MAM**, have initiated several projects aimed at enhancing water efficiency and management. These efforts are critical for maintaining the balance between water supply and demand across various sectors, including municipal, industrial, agricultural, and individual uses. This also includes efforts to mitigate the impacts of climate change on water availability and water use and enhancing the country's ability to manage water-related disasters.

The **National Water Plan (2026-2035)**, coordinated by the **MoAF**, the **DGWM**, provides a comprehensive policy framework aimed at strengthening Türkiye's climate change adaptation capacity and ensuring the sustainable management of water resources. The Plan prioritizes increasing water use efficiency, expanding basin-based integrated management approaches, enhancing early warning systems against droughts and floods, and supporting investments in climate-resilient infrastructure. In addition, a water-energy-food-ecosystem nexus approach is adopted to better account for intersectoral interactions and improve policy coherence, thereby promoting overall resource efficiency and climate resilience. The Plan also emphasizes financing optimization by encouraging the more effective and coordinated use of public, private sector, and international financial resources, enabling the cost-effective implementation of priority investments.

To strengthen integrated, participatory, and river basin-based water governance, Türkiye has established a multi-level institutional coordination framework comprising the National Water Council, River Basin Water Councils, and Provincial Water Councils. These governance bodies are designed to enhance inter-institutional coordination, facilitate stakeholder participation, improve vertical and horizontal policy coherence, and ensure the effective implementation, monitoring, and evaluation of water-related policies, strategies, and basin management decisions in accordance with the principles of integrated water resources management and sustainable water governance.



One of the most comprehensive and guiding initiatives in this regard is the **Climate Change Impact on Water Resources Project**, launched by DGWM in 2013 and completed in 2016. The project assessed the impacts of climate change on surface and groundwater resources across Türkiye's 25 river basins, using high-resolution climate projection models based on RCP4.5 and RCP8.5 scenarios. Through the modelling of projected climate changes, key hydrometeorological parameters, including surface runoff and overall water potential, were analyzed. The results of the project have supported the development of water policies and contributed to decision-making processes on sustainable water use, long-term resource planning, and conservation efforts. The **Assessment of Climate Change Impacts on Snowmelt and Streamflow Project**, completed in 2019 by DGWM, examined the implications of changing snow conditions on water availability in snow-dependent basins, particularly the Upper Euphrates Basin. Its findings support longer-term water resources planning in areas where snowmelt makes a significant contribution to annual streamflow.

Building on previous work, the **Impacts of Climate Change on Water Resources and Evaluating Inter-Basin Water Transfers Project** was launched by DGWM in 2025 to further strengthen analytical and policy-oriented efforts. The project applies improved global climate models and updated scenarios to assess changes in key climate parameters, including temperature and precipitation, at multiple spatial scales, namely river basins, sub-basins, and provinces across Türkiye. By combining climate projections with water resource assessments, the project aims to assess future water potential and water-use dynamics in a comprehensive manner. In addition, it addresses the feasibility, sustainability, and policy implications of inter-basin water transfer options through an integrated, forward-looking approach that supports climate adaptation objectives.

Pursuant to the decision of the National Water Council, Lake Action Plans have been prepared through an inter-institutional coordination process for priority lakes identified as being under significant drought and climate change pressure, namely Lakes Eğirdir, Burdur, Eber, Akşehir, Bafa, Beyşehir, İznik, Seyfe, and Sapanca. These plans establish integrated, basin-specific measures to improve water quantity and quality, restore ecological integrity, strengthen climate resilience, and promote the sustainable management of lake basins through coordinated implementation, monitoring, and adaptive management. **The Lake Action Plans for Lakes Eğirdir and Burdur** have been officially published, providing a strategic roadmap for mitigating drought, excessive water abstraction, pollution, and other anthropogenic pressures while supporting the long-term conservation of these critical freshwater ecosystems.

In 2023, the **Water Efficiency Campaign** was launched by DGWM to promote zero-water-loss practices and emphasize water conservation across urban, agricultural, and industrial sectors. This campaign is pivotal in raising public awareness and encouraging responsible water use to mitigate the risks posed by climate change to Türkiye's water resources. As part of this campaign, the **Water Efficiency Strategy Document and Action Plan within the Framework of Adaptation to Changing Climate (2023-2033)** was published in May 2023 by DGWM as part of Türkiye's broader strategy to safeguard its water resources. This document outlines detailed objectives and targets aimed at reducing water losses and enhancing water efficiency by 2030 and 2050 across all sectors. Specific goals include reducing water losses in drinking water systems from the current 31.6% to 25% by 2030 and to 10% by 2050. In agriculture, which consumes the majority of Türkiye's water resources, the strategy aims to increase irrigation efficiency from 52% to 65% by 2050. The strategy also promotes the use of non-conventional water resources, such as treated wastewater and rainwater harvesting, and introduces measures to reduce individual water consumption from 154 liters per day to below 100 liters by 2050. As part of the Water Efficiency Campaign,



Water Efficiency Regulation entered into force to provide a legal framework for the actions set out in the Action Plan and other ongoing activities. The regulation introduced a comprehensive governance and **Water Efficiency Certification Scheme** to institutionalize sector-specific water efficiency practices and ensure their continuity, monitoring, and continuous improvement. Under this scheme, **Blue, Green, and Turquoise Water Efficiency Certificates** are awarded to eligible institutions and organizations based on predefined water efficiency criteria, encouraging the adoption of sustainable water management practices and promoting efficient water use across different sectors. **The Water Efficiency Information System (SVBS)** has been launched as a **GIS-based, e-Government-integrated digital platform** to register, monitor, and evaluate water use and water-efficiency practices across sectors. The system provides a centralized digital infrastructure for data collection, reporting, performance monitoring, and decision support, thereby enhancing transparency, traceability, and evidence-based water resources management.

As reported in the BTR1, DSI has advanced irrigation modernization (**Türkiye Irrigation Modernization Project**) and water-efficiency (**Water Circularity and Efficiency Improvement Project**) efforts through projects launched in 2019 and 2023. These initiatives focused on replacing water-loss-prone open-channel irrigation systems with closed and pressurized networks, improving energy efficiency through solar-powered groundwater pumping, and promoting treated wastewater reuse, resource recovery, and institutional capacity in water-stressed basins. Building on these efforts, the **Türkiye Second Irrigation Modernization and Water Efficiency Project** was launched by DSI in 2025 for a six-year implementation period. The project aims to improve irrigation efficiency through the rehabilitation and modernization of aging infrastructure. The project primarily seeks to replace open-channel irrigation networks, which are highly susceptible to substantial water losses, with closed-channel and pressurized systems. This transition is of critical importance for improving water conservation and promoting the long-term sustainability of agricultural practices. Implemented in regions such as Aksaray, Amasya, Ankara, Antalya, Karaman, and Tokat, the project demonstrates both wide regional applicability and significant potential impact. Furthermore, it aims to build upon the SUTEM program, originally developed under the first project and widely regarded as a groundbreaking advancement in the field of water accounting, while also envisaging the introduction of additional programs within the scope of this new initiative.

In addition to improving irrigation efficiency, Türkiye also promotes water-efficient crop selection and landscape planning to reduce water demand. In this context, a legal framework has been established to encourage **xeriscaping** in urban green areas, drought-tolerant plant species have been identified for Türkiye's **eight ecological regions**, and an **e-Government-integrated Landscape Monitoring System** has been launched to monitor the implementation of these practices. Türkiye is also promoting the reuse of treated wastewater to reduce pressure on freshwater resources and support more efficient water use. Under the **Treated Wastewater Reuse** Initiative, the national target is to increase the reuse rate to 15% by 2030, with treated wastewater used primarily for agricultural, industrial, and landscape irrigation. The following projects illustrate how this approach is being applied to create additional water sources in water-scarce areas. As an example of wastewater reuse for adaptation, the **Afyonkarahisar Central Wastewater Treatment Plant** discharge water irrigation project is designed to use advanced biologically treated and disinfected wastewater for pressurized sprinkler and drip irrigation. Upon completion, the project is expected to irrigate 905 ha gross and 770 ha net area, with 2.28 hm³/year of water allocated for irrigation and a project flow of 0.509 m³/s, thereby creating an additional water source in a water-scarce region. The **Konya Central Treated Wastewater Use in Irrigation Project** further demonstrates the use of non-conventional water resources in adaptation planning. Based on 2040 projections, treated wastewater discharge is expected to reach 400,000 m³/day, with 78.40 hm³ planned for storage



and a gross irrigation area of 17,983 ha. The planning note underlines that long-term storage of treated wastewater in large reservoirs may deteriorate water quality; therefore, smaller-scale, short-duration storage options are considered more suitable for integrating treated wastewater into the water cycle.

As reported in the BTR1, the **Adaptation to Climate Change in Water Resources Project** was implemented by DGWM between 2021 and 2023 to promote water efficiency in urban areas. The project supported rainwater harvesting and greywater reuse in 30 metropolitan municipalities through cost-benefit analyses, ten pilot applications, guidance documents, and training for local authorities. In parallel with these efforts, to strengthen the adaptation capacity of lakes, wetlands, and coastal areas, another major initiative launched by DGWM in 2025 under the IPA III Programme is the **Assessment of Climate Change Impacts on Lakes, Wetlands and Coastal Areas in Türkiye**. The project is designed to support climate change adaptation by improving the understanding of risks and vulnerabilities in ecosystems and regions that are particularly sensitive to climate change. It focuses on assessing the vulnerability of lakes and wetlands, as well as evaluating the implications of sea level rise for coastal areas in terms of exposure, sensitivity, and adaptive capacity. Ongoing activities include detailed analyses of sea level rise and associated risks to inform adaptation planning. In addition, the project incorporates the assessment of the economic impacts of climate change and aims to develop and promote nature-based adaptation solutions that strengthen ecosystem resilience and contribute to sustainable and climate-resilient development pathways.

As reported in the BTR1, **Drought Management Plans** were completed for all 25 river basins in 2023. The plans provide a framework for improving drought preparedness through forecasting, water-saving measures, adaptive water management, strengthened institutional capacity, and public awareness, with the aim of reducing the social, economic, and environmental impacts of drought. In addition to being prepared for droughts, which are among the most significant impacts of climate change, develop gradually, yet have extremely large and widespread effects, to minimize the adverse impacts of drought risks, and to provide early warnings to water users, the **“Drought Forecasting and Early Warning System Project,”** initiated in 2024, is planned to be completed in 2027. Cooperation on drought monitoring, forecasting, and early warning systems will focus on shared indicators, harmonized algorithms, and climate projections for drought management and emergency preparedness.

Türkiye has strengthened flood preparedness through the **Flood Forecasting and Early Warning System** in 6 River Basins (**TATUS**), which has been established to enhance flood risk management through real-time forecasting and early warning services. TATUS integrates hydrological and meteorological observations with hydraulic modelling to generate flood forecasts, inundation maps, and timely alerts for relevant authorities. The initiative supports national flood forecasting, real-time hazard mapping, and the progressive expansion of early warning coverage, strengthening institutional capacity for disaster risk reduction and climate resilience. In addition, **Flood Management Plans**, together with flood hazard and risk maps for residential and economic areas, have been prepared for 25 basins. In addition to structural measures for flood control, the Flood, **Failure, and Intervention Spatial Information System (TAMBIS)** application, developed within the framework of non-structural measures and open to citizens, has been put into use. Additionally, DSI has initiated work in basins for the installation of the **Flood Early Warning System (TEUS)** across the country. By the end of 2025, DSI’s flood protection efforts had resulted in the construction of 11,259 flood protection facilities.



Türkiye has also made substantial progress in the development of **River Basin Management Plans (RBMPs)** under the responsibility of GDWM. These plans, which integrate climate change projections, ensure the sustainable and equitable sharing of water resources across different sectors. By 2026, RBMPs had been completed for 12 of Türkiye's 25 river basins, including Meriç Ergene, Susurluk, Konya, Gediz, Küçük Menderes, Burdur, Kuzey Ege Yeşilırmak, Akarçay, Batı Akdeniz and Sakarya. The preparation of these plans for the 9 basins (Antalya, Doğu Akdeniz, Batı Karadeniz, Marmara, Kızılırmak, Doğu Karadeniz, Seyhan, Aras and Çoruh) is ongoing, and they will eventually cover all of Türkiye's river basins. These plans are essential for long-term water sustainability, especially in balancing the competing demands of agriculture, industry, and urban water users. In addition, as part of the **Gediz River Basin Management Plan, within the framework of the Sustainable and Integrated Water Resources Management in the Gediz River Basin in Turkey (GCP/TUR/905/GFF)**, measures such as forest terracing, agricultural terracing, creating green belts, pasture improvement, and rainwater harvesting have been implemented to ensure the efficient use of water and soil resources and to reduce carbon emissions.

The Project for the Establishment of an **Ecoregion Based Ecological Assessment System of Water Quality in Türkiye (ECOREG)** aims to develop an ecological water quality assessment system based on ecoregions that differ in their biological communities according to geographical, climatic, and ecological characteristics. The project also seeks to establish harmonized monitoring and assessment methodologies to be applied in water quality evaluations across the country. In addition, it aims to assess the potential impacts of climate change on water quality and on the ecological assessment system itself. The project is being implemented in four pilot river basins: Yeşilırmak, Susurluk, Büyük Menderes, and the Konya Closed Basin.

In parallel with the RBMPs, **Sectoral Water Allocation Plans (SWAPs)** are also being developed by DGWM to ensure the fair distribution of water among sectors. These plans, which are critical for maintaining sectoral water needs while addressing the impacts of climate change, have been completed for 13 basins (Seyhan, Konya, Akarçay, Gediz, Küçük Menderes, Burdur, Büyük Menderes, Batı Akdeniz, Kuzey Ege, Aras, Çoruh, Sakarya, and Susurluk) as of 2026 while studies in 8 basins (Antalya, Doğu Akdeniz, Batı Karadeniz, Marmara, Kızılırmak, Doğu Karadeniz, Meriç-Ergene, and Yeşilırmak) are still ongoing. They are a key component of Türkiye's adaptive water management strategy, ensuring that each sector receives its fair share of water while optimizing resource use in the face of climate uncertainty.

As reported in the BTR1, the **HİDROTÜRK Model Project**, initiated in 2020 by TUBITAK-MAM, supports water resources planning by modelling hydrological, hydrogeological, and ecological conditions across Türkiye's river basins. The project provides data-based support for water allocation, flood management, and drought preparedness.

Türkiye's surface water resources have been comprehensively digitized using high-resolution geospatial datasets, resulting in the development of the National Water Resources Map of Türkiye. The map provides a standardized and up-to-date spatial inventory of rivers, lakes, reservoirs, wetlands, and other surface water bodies, serving as a fundamental geospatial database for integrated water resources management (IWRM), river basin planning, water allocation, climate change adaptation, and decision-support processes. The DSI plans to complete the **Basin Master Plan Report** studies between 2026 and 2028, focusing on the impacts of climate change on water resources. This initiative aims to evaluate the impacts of climate change on both surface and groundwater. Potential changes in water resources will be assessed through the compilation of basin-scale research and the analysis of DSI's hydrogeological reports.



For each of the 25 basins, a hydrological model will be developed, calibrated, and validated for a reference period. The validated models will then be used to assess the impacts of climate change on surface water potential over the 2025-2100 period. Global and regional climate projections will be integrated with model outputs to estimate sub-basin water potential and projected changes in streamflow under climate change and drought conditions. The assessment will use up-to-date IPCC scenarios along with data from universities and relevant institutions. High-resolution datasets from climate portals will be utilized upon approval of the administration. Within a selected pilot area, three hydrological models will be tested, and their performance will be evaluated using internationally accepted criteria. The study includes comprehensive data collection (geographical, meteorological, hydrological, land use, agricultural, infrastructure, and water use data) and GIS-based analysis. All data will be delivered in standardized digital formats.

Türkiye is also applying nature-based approaches to strengthen water storage and groundwater resources. Under the **Groundwater Artificial Recharge and Underground Dams Action Plan**, 148 artificial recharge structures and underground dams had been completed by the end of 2025, particularly in water-stressed regions such as İzmir, Aydın, and Konya.

6.3.1.2 Agriculture and Food Security

Agriculture and food security are highly vulnerable to climate change in Türkiye, particularly to drought, changing precipitation patterns, land degradation, and water scarcity. Adaptation priorities therefore include improving irrigation efficiency, strengthening agricultural drought monitoring and early warning, protecting soil and water resources, and supporting agricultural practices that can better cope with climate-related impacts. These priorities are supported by the **Ministry of Agriculture and Forestry (MoAF)**, including the **General Directorate of Agricultural Reform**, the **General Directorate of Fisheries and Aquaculture**, and the **Agriculture and Rural Development Support Institution (TKDK)**, the **Ministry of Environment, Urbanisation and Climate Change (MoEUCC)** the **General Directorate of Combating Desertification and Erosion (GDCDE)** and the **Directorate of Climate Change (DoCC)**.

Through the **Instrument for Pre-Accession Assistance Rural Development (IPARD) Programme II and III**, managed by TKDK, Türkiye supports climate-smart agricultural practices, including irrigation modernization, sustainable farming methods, and nature-based approaches such as agroforestry and crop rotation. In addition, Good Agricultural Practices, organic agriculture, and agri-environment measures supported under IPARD help improve soil management, reduce erosion, protect biodiversity, and use natural resources more efficiently. Farmer registration and agricultural information systems also support the targeting and monitoring of agricultural support, production activities, and advisory and extension services.

As reported in the BTR1, Türkiye has supported climate adaptation in agriculture through measures addressing soil health, drought, water efficiency, agricultural biodiversity, and risk management. The **Soil Organic Carbon Project (SOC)**, led by the GDCDE, supports sustainable land management in Türkiye by providing agricultural producers with soil health information and promoting improved land-use practices. The project also supports the harmonization, mapping, and spatial assessment of national soil carbon data. Within this framework, a national spatial soil carbon database has been established to support soil monitoring, carbon sequestration, agricultural productivity, and climate-informed land-use planning and decision-making. The **Agricultural Drought Combat Strategy and Action Plan (2023-2027)**, the **Climate Change Adaptation Strategy and Action Plan (2024-2030)**, and water-efficiency measures promote drought preparedness, resilient crop varieties, improved irrigation practices, and the conservation of agricultural resources. **The Water**



Efficiency Strategy Document and Action Plan aims to increase irrigation efficiency to 60% by 2030. Rainwater harvesting and greywater reuse are also being promoted in metropolitan areas to help address water scarcity and reduce pressure on freshwater resources. **TARSİM Agricultural Insurance Pool** also provides financial protection against climate-related losses; in 2023, insured agricultural assets reached 683.3 billion TL and indemnity payments amounted to 8.0 billion TL. Ecosystem-based adaptation, land management, and sustainable fisheries projects implemented by MoAF, FAO, and other relevant institutions further support the protection of agricultural and marine ecosystems.

Türkiye is advancing a climate-resilient water governance approach by integrating climate change adaptation and promoting the principle of planning according to water (water-centered planning). This approach recognizes water availability and basin carrying capacity as fundamental determinants of spatial planning, sectoral development, land use, agricultural production, and investment decisions, with the aim of reducing climate-related risks and ensuring the sustainable use of water resources. Supported by integrated river basin management, climate risk and vulnerability assessments, and strengthened institutional coordination, water-centered planning contributes to improving drought and flood resilience, protecting aquatic ecosystems, enhancing water-use efficiency, and increasing the adaptive capacity of agricultural production and water-dependent sectors. Together with the ongoing update of the Climate Change Adaptation Strategy and Action Plan, this approach reinforces Türkiye's transition towards risk-informed, ecosystem-based, and climate-resilient water management. The **Strategic Plan (2024-2028)** of the MoAF emphasizes R&D activities to enhance agricultural production efficiency and quality, including models, recommendations, and systems for emission measurement, monitoring, and mitigation. It also prioritizes adaptation of agriculture to climate change impacts, agricultural drought monitoring and early warning, low-carbon agricultural practices, improved manure management, efficient fertilizer and input use, prevention of erosion in agricultural lands and rangelands, and improved utilization of agricultural waste and residues.

6.3.1.3 Disaster Risk Management

As reported in the BTR1, Türkiye's disaster risk management framework prioritizes risk reduction, preparedness, and coordinated response to climate-related and other hazards. Key institutions supporting this framework include the **Disaster and Emergency Management Presidency (AFAD)**, the **TSMS**, the **DSI**, and the **DGWM**.

AFAD leads national disaster risk governance through the **Türkiye Disaster Risk Reduction Plan (TARAP)**, the **Türkiye Disaster Response Plan (TAMP)**, and the **Türkiye Post-Disaster Recovery Plan (TASİP)**, which entered into force through Presidential Decision No. 9889. TASİP provides a framework for planning and coordinating post-disaster recovery, with the aim of restoring daily life and supporting the timely and efficient recovery of affected physical, social, economic, natural, historical, and cultural assets. These national instruments are complemented by **Provincial Disaster Risk Reduction Plans (IRAP)**, which identify local vulnerabilities and set out province-specific risk reduction measures.

AFAD also supports risk assessment and planning through the **Disaster Risk Reduction System (ARAS)**, which is used for hazard mapping and the assessment of risks associated with floods, landslides, avalanches, and other disaster types. This system helps relevant institutions identify priority risk areas and coordinate risk reduction measures at national and local levels.



The TSMS contributes to disaster preparedness through meteorological monitoring and early warning services. **The Flash Flood Guidance System (FFGS)** supports the forecasting of intense rainfall and flash-flood conditions, helping relevant institutions to take timely action in potentially affected areas. In addition, the **Forest Fires and Meteorology Early Warning System (MEUS)** which is used by the Forest Fire Department of OGM monitors meteorological conditions associated with elevated forest-fire risk and provides advance information to support preparedness, resource deployment, and timely intervention by relevant authorities.

Flood risks are systematically managed in Türkiye through **Flood Risk Management Plans** prepared and regularly updated by DGWM. Based on flood hazard and risk maps, these plans aim to reduce potential impacts on human health, economic activities, cultural heritage, and the environment. They combine structural and non-structural measures, including land-use regulation, preventive actions, and strengthened early warning systems, while promoting coordination among public institutions, local authorities, and other stakeholders. DGWM also implements the **Flood Forecasting and Early Warning System in Pilot Sub-Basins (TATUS)**, which supports the monitoring of potential flood events and the timely provision of information for risk management and response.

DSI manages flood and sediment risks through structural measures such as river training works, embankments, flood protection structures, diversion channels, and sediment-control facilities. During flood events, DSI regional units work with local authorities to clear debris from riverbeds, prevent blockages, and limit the spread of flooding. The **DSI Flood Management Centre** uses observation systems, including Level Observation Stations, to monitor changing conditions, while the **Flood Intervention Information System (TAMBIS)** collects and analyzes information on past flood events, damages, and interventions to support future planning and decision-making. Hazard mapping and preventive measures for landslide- and avalanche-prone areas further support Türkiye's multi-hazard approach to disaster risk reduction.

Furthermore, the Upper **Watershed Flood Control Action Plan (2024-2028)** is being implemented by the General Directorate of Forestry (OGM) to mitigate the impacts of flood events. Within the scope of the Plan, upper watershed flood control projects are planned to be implemented in a total of 192 watersheds. The General Directorate of Forestry also implements avalanche hazard mapping and avalanche control mitigation projects in upper watersheds.

6.3.1.4 Biodiversity and Ecosystem Services

Climate change adaptation in the biodiversity and ecosystem services sector is supported by the **Ministry of Environment, Urbanization and Climate Change (MoEUCC)**, the **Ministry of Agriculture and Forestry (MoAF)**, the **General Directorate of Nature Conservation and National Parks (GDNCNP)**, the **General Directorate of Forestry**, **General Directorate of Fisheries and Aquaculture**, and the **General Directorate of Combating Desertification and Erosion (GDCDE)**, the **Directorate General of Water Management (DGWM)**, and the **General Directorate of Agricultural Research and Policies (TAGEM)**. Key priorities include the conservation and restoration of ecosystems, combating land degradation and desertification, protecting wetlands and lakes, and strengthening ecosystem services.

In this context, **Afforestation and Carbon Sink Area Projects** implemented by the MoAF support the rehabilitation of degraded lands, erosion control, biodiversity conservation, and improved water retention. The **GEF-funded project on Contributing to Land Degradation Neutrality (LDN) Target Setting** in the Upper Sakarya Basin supports sustainable land management, restoration of degraded areas, and capacity-building for local stakeholders.



Türkiye's **National Strategy and Action Plan to Combat Desertification (2024–2030)**, coordinated by DGCDE, further supports land degradation neutrality, the restoration of agricultural, pasture, and forest lands, and the use of nature-based solutions such as afforestation and reforestation. The plan also aims to strengthen the capacity of urban and rural areas to cope with climate change impacts and promote the sustainable use of water resources. Within this framework, activities include the preparation of restoration plans and productivity assessments for pasture and in-forest pasture areas, research to improve soil quality data, and erosion-control measures in priority areas. The plan also supports the rehabilitation and afforestation of degraded forest lands, research on the combined effects of climate change, desertification, and land degradation on biodiversity and ecosystems, and the integration of biodiversity and ecosystem services into forest management and monitoring. In addition, it promotes stronger forest-fire prevention and response capacities, as well as the monitoring of forest ecosystem health and the use of natural or nature-friendly measures to address forest diseases and pests.

In addition, the **Türkiye Desertification Model, Sensitivity and Hazard Map**, developed by DGCDE, provides a national evidence base for land management and decision-making. Using 11 biophysical indicators and datasets covering the 2003-2022 period, the GIS-based model produces desertification sensitivity maps at a 30-metre spatial resolution and helps identify areas that are more vulnerable to desertification.

As reported in the BTR1, DGWM has advanced the protection and integrated management of lakes and wetlands through the **Wetland Management Plans Preparation Project** and the **Lakes and Wetlands Action Plan (2017–2023)**. These initiatives aim to protect wetland ecosystems and maintain a balance between their ecological functions and economic uses.

Türkiye has also implemented a range of biodiversity conservation initiatives through General Directorate of Nature Conservation and National Parks. These include the **Pilot Study on Valuation of Sultansazligi National Park, the National Biodiversity Inventory and Monitoring Project**, the **Project of Recording Traditional Knowledge Associated with Biological Diversity, Combatting Biopiracy Project**, and the **Technical Assistance for Strengthening the National Nature Protection System for Implementation of Natura 2000 Requirements, Improving the Management of Coastal Protected Areas and Ecosystems as Nature-based Solutions to Climate Resilience and Addressing Climate-Resilient Rural Development Issues Project**.

Efforts to address invasive alien species include the **GEF VI Project on Addressing Invasive Alien Species Threats at Key Marine Biodiversity Areas and the Conservation, Sustainable Management of Türkiye's Steppe Ecosystem Project**, as well as the **Project on Addressing Invasive Alien Species Threats in Terrestrial Areas and Inland Waters in Türkiye**. In addition, the **Turkish-German Cooperation for Integrated Climate and Biodiversity Action Project** has been launched to support integrated action on climate change and biodiversity.

Following the completion of the **MARIAS** and **TERIAS** projects, implementation of the management plans prepared for target species and pilot areas under these projects has continued through the nationally funded **"Project on the Management of Threats Posed by Invasive Alien Species."** Additionally, **"By-law on the Prevention and Management of the Introduction and Spread of Invasive Alien Species"** entered into force upon its publication in the Official Gazette dated 21 February 2026.

Under the seventh replenishment period of the **Global Environment Facility (GEF-7), the Global Biodiversity Framework Early Action Support Project**, implemented by the United Nations



Environment Programme (UNEP) within our General Directorate, was carried out to accelerate the alignment of **National Biodiversity Strategies and Action Plans (NBSAPs)** with the new Kunming-Montreal Global Biodiversity Framework, which covers the 2022-2030 period.

Under the eighth replenishment period of the **Global Environment Facility (GEF-8)**, the **Umbrella Programme to Support NBSAP Update and the Seventh National Reports**, led by UNEP, was launched. The **new National Biodiversity Strategy and Action Plan (NBSAP)** to be developed under this project is intended to serve as a high-level policy document guiding biodiversity conservation and sustainable use, as well as the effective implementation of national priorities in this field.

As reported in the BTR1, Türkiye has strengthened ecosystem monitoring and conservation through the **National Land Cover Classification and Monitoring System (UASIS)**. **UASIS** uses AI and machine-learning techniques to monitor land-cover changes and supports climate change scenarios, disaster modelling, natural resource management, and efficient land-cover classification.

The General Directorate of Fisheries and Aquaculture has implemented the **Supporting Pufferfish Fishing Project** to help control invasive pufferfish populations and reduce their negative impacts on marine biodiversity, fisheries, and the sustainability of marine ecosystems. The project addresses the spread of invasive species such as pufferfish, whose impacts may be exacerbated by climate change. To strengthen women's role in the sector, the General Directorate's Small-Scale Fisheries Support Programme also provides unit support payments that are 25% higher for women vessel owners and co-owners.

DGCDE further implements erosion control, afforestation, and disaster prevention measures to reduce soil loss and address risks associated with floods, landslides, avalanches, and rockfalls. Between 2024 and 2025, 24 projects are being carried out, including:

- 9 carbon sink area afforestation projects,
- 9 carbon sink area afforestation implementation projects,
- 2 flood and erosion control projects,
- 1 flood control implementation project,
- 1 avalanche control project,
- 1 avalanche control implementation project
- 1 avalanche hazard assessment projects.

6.3.1.5 Coastal Areas

As reported in the BTR1, Türkiye's coastal areas are exposed to climate change and human pressures, including sea level rise, coastal erosion, urbanization, tourism, and pollution. Adaptation efforts therefore focus on protecting marine and coastal ecosystems, strengthening integrated coastal management, and balancing ecological conservation with economic and social uses.

Key measures include the **Determination and Classification of Sea and Coastal Waters Project (2011-2014)**, the **Management of Urban Sewage on the Coasts of Türkiye** Project, the establishment of **Marine Protected Areas**, and the preparation of **Integrated Coastal Zone Plans**. Furthermore, the buoy management systems project, implemented under the leadership of the MoEUCC to protect seagrass meadows in Göcek and Dalaman bays in Fethiye district of Muğla province, has been completed and put into operation. Led by the MoEUCC, **Integrated Coastal Zone Plans** had been completed for approximately 93% of Türkiye's coastal zones by 2026. Since then, additional



plans have been prepared for the Aydın-Muğla, Balıkesir-Çanakkale, Edirne-Tekirdağ-Kırklareli, Ordu-Giresun-Trabzon, Zonguldak-Bartın-Kastamonu, and Kocaeli-Sakarya-Düzce coastal areas. A six-year monitoring programme has also been initiated to assess the environmental effects of man-made structures on coastal areas.

Türkiye's approach is also aligned with international frameworks, including the **Barcelona Convention**, the **Paris Agreement**, and the SDGs. Ecosystem based approaches, together with **Marine Spatial Planning and area-based Management Tools**, are considered important for conserving coastal habitats, protecting marine biodiversity, and responding to changing marine and coastal conditions.

6.3.1.6 Urban Areas

As reported in the BTR1, urban areas in Türkiye are increasingly exposed to climate-related risks due to high population density, expanding built-up areas, and complex infrastructure systems. Adaptation priorities therefore include integrating climate considerations into urban planning, strengthening local capacity, promoting ecosystem-based approaches, and supporting city level climate risk and vulnerability assessments.

The MoEUCC, together with UNDP Türkiye and other relevant institutions, has supported a range of initiatives to strengthen urban climate action. These include projects such as **Support Common Work in the Field of Climate Change, Take Urgent Action to Combat Climate Change and Its Impacts**, and the **Enhancing Adaptation Action in Türkiye Project**, as well as the ongoing EU Partnership for Local Climate Action in Türkiye. Together, these initiatives support awareness-raising, cooperation with local governments, and the development of urban adaptation measures.

Urban adaptation is also supported through spatial planning and local climate action planning processes. The **draft National Spatial Strategy Plan 2053** is being updated to incorporate region-specific development and planning priorities, including updates to GIS-based maps and spatial analyses based on institutional views. The Plan has not yet been approved and remains under revision. TUBITAK MAM has also supported the preparation of climate action plans and sustainable energy and climate action plans for provinces including Tekirdağ, Çanakkale, Yalova, and Mersin, helping local governments strengthen their capacity to address climate-related risks.

6.3.1.7 Energy

The **Ministry of Energy and Natural Resources (MENR)** plays a central role in Türkiye's adaptation efforts in the energy sector, together with relevant institutions such as the **Electricity Generation Corporation (EÜAŞ)** and the DSI. As reported in the BTR1, carbon and water footprint calculations were carried out in 2023 for selected pilot plants within EÜAŞ, with the aim of extending these assessments to other EÜAŞ plants and identifying measures to reduce environmental impacts.

Energy-sector adaptation is also closely linked to water resources management, particularly due to the role of hydropower in Türkiye's renewable energy mix. As changing precipitation patterns and reduced water availability may affect hydropower generation, Türkiye is promoting measures to improve energy storage and system flexibility. In this context, pumped-storage hydropower is being supported as an important option for balancing renewable energy generation and strengthening energy supply reliability, including through the **Gökçekaya Pumped-Storage Hydropower (PSH)** initiative and the establishment of a feed-in-tariff framework for pumped-storage systems.



DSI also contributes to energy sector adaptation through the development of floating photovoltaic systems and hybrid renewable energy applications. Floating photovoltaic (FPV) systems represent a rapidly advancing strategy in Türkiye to maximize renewable energy generation while conserving critical water resources. Over the past two years, significant regulatory and project level milestones have accelerated their deployment. Notably, recent frameworks have paved the way for new investments, enabling the widespread deployment of FPV systems on dam reservoirs, irrigation canals, artificial lakes, and other suitable water bodies. Furthermore, the MENR continues to prioritize FPVs as a key climate mitigation strategy, moving from exploration to implementation, as evidenced by projects like the **Demirköprü Dam**, which was initiated under the **YEKA model**. These advancements optimize land and water use for energy generation while maximizing the efficiency of existing grid infrastructure.

In recent years, climate-driven reductions in water availability have led to a decrease in energy generation from traditional hydroelectric power plants. To compensate for this decline and enhance overall sustainability, Türkiye has actively expanded the implementation of hybrid renewable energy solutions. By supporting existing hydroelectric facilities with solar photovoltaic power plants, wind turbines, and other renewable sources, this integration effectively balances fluctuations in energy generation. A key advantage of this hybrid approach is the efficient utilization of shared grid and facility infrastructure, which maximizes total energy output and strengthens Türkiye's energy security while minimizing the need for new transmission investments.

Türkiye is also advancing its nuclear energy programme in line with the 12th Development Plan. While nuclear power is generally less directly affected by several climate hazards, the availability and temperature of cooling water remain important considerations. Locating nuclear power plants near the sea is therefore intended to support a reliable cooling water supply and reduce potential climate related operational risks.

In conclusion, these different strategies show how Türkiye is successfully updating its energy sector. By improving traditional hydropower and expanding new solutions like floating photovoltaic systems and hybrid renewable energy plants, the country is building a much stronger grid. Adding nuclear energy to this system is also a key step, as it provides a steady power supply that is safe from weather changes. Furthermore, using renewable energy in agricultural areas and irrigation networks helps lower the overall energy demand. Over the past two years, all these steps have worked together to protect the water and energy resources of the nation while supporting economic growth.

6.3.1.8 Tourism and Cultural Heritage

Tourism and cultural heritage in Türkiye are exposed to climate related risks, particularly in coastal and tourism-intensive areas, including heatwaves, heavy precipitation, forest fires, sea level rise, and other extreme weather events. The MoCT addresses these risks by supporting the integration of climate considerations into tourism planning, tourism investments, and the management of tourism destinations.

In this context, the **Tourism Climate Index (TCI) Analysis and Climate Suitability Assessment in Çanakkale, Mersin, and Kayseri Provinces Project**, completed in July 2024, assessed current and future climate suitability for tourism activities. The study examined seasonal temperature and precipitation conditions together with key hazards, including heatwaves, heavy precipitation, forest fires, and extreme winds, and provided an evidence base for climate-informed tourism planning in the selected provinces. This work was complemented by the **Climate Risk Analysis, Vulnerability Assessment, and Adaptation Plans for Çanakkale, Mersin, and Kayseri Project**, completed in



December 2024 under the General Directorate of Investments and Enterprises of KTB. The project assessed climate risks affecting summer and winter tourism and developed adaptation measures and investment recommendations to support the long-term continuity of tourism activities. Together, these studies provide a basis for integrating climate risks into destination management, tourism development, and the protection of tourism-related natural and cultural assets.

In continuation of the vulnerability analyses, the Ministry also carried out studies on **Preparation of a Climate-Compatible Determination and Spatial Planning Guide for Culture and Tourism Protection and Development Zones and Tourism Centers** in order to address the determination process of areas declared pursuant to Tourism Promotion Law No. 2634 and the planning process of such determined areas in terms of climate suitability.

The main purpose of this study is to select one of the 6 tourism centers in Çanakkale province that has high tourism potential in line with climate risks and is suitable in terms of resilience and adaptation capacity, and to reveal the spatial representation of climate change as a continuation of the Climate Risk and Vulnerability Analyses in Çanakkale, Mersin, and Kayseri Provinces in 2024.

The study was prepared in line with the **Preparation of Determination and Spatial Planning Guide** study carried out by the Ministry, aimed at determining the conditions for the preparation of climate-compatible spatial plans for the tourism center to be selected in Çanakkale and, in this context, proposing a new climate change risk analysis study that will be the basis for spatial plans and creating a climate change-compatible spatial plan. The project was completed in December 2025.

In the analysis process, the region with the highest tourist activity among the tourism centers located in Çanakkale province and, at the same time, with the highest potential exposure to the negative effects of climate change was selected. Subsequently, a risk analysis study was conducted in this region, as determined in the **Preparation of the Announcement and Spatial Planning Guide** study carried out by the Ministry, and the results of this study were evaluated using objective methods, including a multi-criteria decision-making method. Afterwards, precautions and adaptation strategies were determined according to the risk analysis study. In the spatial planning process of the study, firstly a 1/25,000 scale master land development plan was prepared for the whole of the selected tourism center, and then a 1/5,000 scale land development plan was prepared for a selected sub-region within the tourism center. In the final stage of this section, issues related to possible implementation tools and action plans for executing the plan decisions are addressed.

6.3.1.9 Industry

Türkiye has established national policies to strengthen the adaptation capacity of the industrial sector, particularly in response to declining water availability and increasing pressure on water resources. In this context, improving water-use efficiency, reducing water losses, applying efficient water-use technologies, reusing water within the production cycle, utilizing non-conventional water resources, and adopting water-centred production planning are recognized as key adaptation practices for industry.

The **Project on Industrial Water Use Efficiency Based on NACE Codes**, conducted by the DGWM under the MoAF, supports these efforts. The project identified high water consumption areas across industries classified by NACE codes and published separate water efficiency guidance documents for 152 NACE codes. These documents, prepared alongside the **Water Efficiency Strategy Document and Action Plan within the Framework of Adaptation to Changing Climate**, set out sector-specific water-efficiency techniques and have been shared with sector representatives.



The implementation of these guidance documents is being promoted through the **Water Efficiency Regulation**. The best available techniques proposed in the sectoral guidance documents also form one of the main criteria for water efficiency certification in the industrial sector. Together, these efforts support more efficient water use in industrial production and contribute to reducing the sector's vulnerability to climate-related water scarcity.

6.3.1.10 Transportation and Communication

Transportation and communication infrastructure is exposed to climate hazards such as heavy precipitation, floods, heatwaves, storms, and sea level rise, which may affect infrastructure safety, service continuity, accessibility, and logistics. In this context, adaptation priorities for the sector include assessing climate risks for critical infrastructure, strengthening the operational preparedness of transport facilities, improving emergency response capacity, and integrating climate considerations into infrastructure planning and investment decisions.

The **MoTI** and **TUBITAK MAM** support efforts to assess and manage climate-related risks in the sector. As reported in the BTR1, the **Preparation of Climate Change Strategies for Gaziantep, Erzurum, Ordu-Giresun, and Muğla Milas-Bodrum Airports (2021-2023) Project**, supported by the General Directorate of State Airports Authority (DHMI) and TUBITAK MAM, assessed the potential impacts of climate change on selected airports. The project identified climate-sensitive areas of airport operations, developed vulnerability assessments, and proposed adaptation and mitigation measures supported by cost-benefit analysis.

Since the submission of the BTR1, work on airport climate adaptation has continued through the **Preparation of Istanbul Airport Climate Change Adaptation Action Plan (2023-2026)**, carried out with the contribution of TUBITAK MAM. This ongoing work is expected to support the identification of climate risks affecting airport infrastructure and operations and to guide adaptation measures for one of Türkiye's major transport hubs.

6.3.2 Adaptation Challenges and Gaps

Despite the progress outlined in Chapter 6.3.1, Türkiye continues to face adaptation challenges, gaps, and barriers that affect the planning, implementation, and monitoring of adaptation actions. As reported in the BTR1, these include institutional coordination gaps, limitations in the availability and sharing of reliable data, technical and financial constraints, and policy and governance gaps. Recent initiatives are expected to help address some of these challenges; however, further efforts are needed to ensure that adaptation measures are implemented consistently across sectors and at national, regional, and local levels.

6.3.2.1 Institutional Coordination and Communication

As highlighted in the BTR1, effective adaptation requires sustained coordination among national institutions, regional and local authorities, sectoral agencies, and other stakeholders. Climate-related risks often cut across water management, agriculture, energy, disaster risk reduction, biodiversity, urban development, infrastructure, health, tourism, and cultural heritage. Where institutional responsibilities, planning processes, and communication channels are not sufficiently aligned, this may lead to duplication of effort, delays in implementation, fragmented approaches, and difficulties in translating national priorities into locally appropriate actions.

The growing number of sectoral, basin level, and local planning instruments further increases the need for clear coordination mechanisms. In particular, the water-energy-food-ecosystem



nexus approach included in the **National Water Plan** requires institutions to consider competing water uses and align sectoral investment and planning decisions. Continued coordination will be important to ensure that River Basin Management Plans, Sectoral Water Allocation Plans, drought and flood management plans, ecosystem-based measures, and Local Climate Change Action Plans are implemented in a mutually consistent manner.

The ongoing EU Partnership for Local Climate Action in Türkiye is expected to contribute to addressing these challenges by supporting cooperation across national, NUTS-1 regional, and local levels. National, regional, and local datasets are being prepared for the 11 priority sectors covered by the updated vulnerability and risk assessments, while institutional data-sharing protocols are expected to provide a more structured basis for information exchange. Nevertheless, clearly defined responsibilities, regular communication, and sustained technical support will remain necessary to ensure that the resulting information is effectively used in planning and implementation processes.

The establishment of the Working Group on Climate Change Risk Assessment Data Layers represents a practical step toward addressing these coordination challenges. The Working Group provides a structured mechanism through which data-producing institutions and sectoral experts can jointly clarify data requirements, review existing datasets, identify authoritative data sources, and support subsequent validation and analysis. Its members are also expected to act as institutional contact points during the continuing risk assessment process.

6.3.2.2 Availability, Consistency and Sharing Data

As reported in the BTR1, the availability, consistency, and accessibility of climate and sectoral data remain important challenges for risk assessments, adaptation planning, and decision-making. Incomplete historical records, differences in data standards and formats, limited interoperability among information systems, and difficulties in accessing or sharing data between institutions may affect the quality, comparability, and regular updating of assessments. These issues are particularly relevant for water resources, agriculture, land degradation, biodiversity, disaster risk management, infrastructure, and local adaptation planning.

Recent initiatives are expected to strengthen the evidence base for adaptation. The preparation of national, regional, and local datasets under ongoing climate risk assessment processes is expected to help reduce data gaps and improve the consistency of information used for adaptation planning. The forthcoming technical guidance for Local Climate Change Action Plans (LCCAPs) is also expected to encourage municipalities to establish, maintain, and regularly update the local data needed for climate risk assessments and adaptation planning. However, the effective use of these datasets will depend on common standards, regular updates, and stronger coordination among the institutions that produce, manage, and use sectoral data.

The Türkiye National Geographic Information System (TUCBS), developed by the General Directorate of Geographic Information Systems under the MoEUCC, also provides an important opportunity to improve access to spatial information. By facilitating the discovery, display, and authorized sharing of geographic data held by public institutions, TUCBS can support climate risk assessments, spatial planning, and adaptation-related decision-making.

The inter-institutional data preparation process has also identified several operational challenges. These include differences in indicator definitions, uncertainty as to whether datasets should be provided in raw or processed form, variations in spatial and temporal resolution, incomplete metadata, overlapping requests for information already available through national platforms, and restrictions affecting access to or the reuse of certain datasets.



Further progress will therefore require clearer data and metadata specifications, the identification of authoritative institutional sources, regular updating arrangements, permanent institutional focal points, and closer involvement of sector experts in data selection and validation. Common standards will also be needed for input datasets, intermediate analytical products, and final vulnerability and risk assessment outputs.

Other systems and studies, including the Türkiye Desertification Model, Sensitivity and Hazard Map, the National Land Cover Classification and Monitoring System, the national spatial soil carbon database, hydrological modeling studies, and flood and drought forecasting systems, further contribute to the database for adaptation planning. However, continued efforts are needed to establish common data standards, improve interoperability, strengthen institutional data-sharing arrangements, and ensure that climate and sectoral datasets are regularly updated and accessible for planning purposes.

6.3.2.3 Technical Capacity and Financial Constraints

Technical and financial constraints remain important barriers to the implementation of adaptation actions, particularly at the local level. As reported in the BTR1, some municipalities and local institutions may face limitations in staff capacity, technical expertise, analytical tools, and financial resources needed to conduct climate risk assessments, prepare adaptation plans, implement investments, or monitor the outcomes of adaptation measures.

Many adaptation measures require substantial initial investment as well as long-term operational and maintenance capacity. These include irrigation modernization, wastewater reuse, flood protection infrastructure, drought and flood early warning systems, ecosystem restoration, afforestation, groundwater recharge, climate-resilient transport infrastructure, and energy-sector investments. Ensuring the long-term operation, maintenance, monitoring, and financing of these measures remains particularly important, especially for smaller municipalities and water-stressed regions.

Recent projects, pilot applications, and technical assistance activities have contributed to addressing these constraints through capacity-building events, stakeholder workshops, training programmes, and the preparation of guidance materials. Such activities help strengthen the ability of national and local institutions to understand climate risks, use relevant data, apply risk assessment methods, identify adaptation priorities, and develop project proposals and implementation measures. In particular, the forthcoming technical guidance and climate risk assessment methodology for Local Climate Change Action Plans are expected to support a more consistent approach to local adaptation planning. However, these tools will need to be refined based on the experience of the six pilot provinces before wider application.

6.3.2.4 Policy and Governance Gaps

Policy and governance arrangements are critical for ensuring that adaptation priorities are implemented consistently across sectors and regions. As reported in the BTR1, fragmented responsibilities, unclear implementation arrangements, and gaps in legal and institutional frameworks may reduce the effectiveness of adaptation action. These challenges can affect the integration of climate risks into sectoral policies, public investment decisions, land-use planning, water management, and local development processes.

Türkiye has taken steps to strengthen its policy and governance framework through the ongoing update of the **National Climate Change Adaptation Strategy and Action Plan**, the development



of **Local Climate Change Action Plans**, and the emerging legislative framework for their wider implementation. The **Türkiye Post-Disaster Recovery Plan (TASİP)** also provides a framework for coordinating post-disaster recovery across physical, social, economic, natural, historical, and cultural assets.

At the same time, several planning and implementation processes remain under development or are being progressively expanded. The **draft National Spatial Strategy Plan 2053** has not yet been approved and remains under revision, including updates to GIS-based maps and spatial analyses. Likewise, the wider implementation of Local Climate Change Action Plans, River Basin Management Plans, Sectoral Water Allocation Plans, water-efficiency certification mechanisms, early warning systems, and basin-level adaptation measures will require clear institutional mandates, implementation follow-up, adequate financing, and regular monitoring.

The entry into force of Climate Law No. 7552 addresses several previously identified governance and coordination gaps by providing a clearer legal basis for climate-related planning, coordination, monitoring, and local action. However, effective implementation will require the operationalization of technical guidance, common methodologies, provincial coordination mechanisms, and sufficient institutional, technical, and financial capacity at the local level.

6.4 ADAPTATION STRATEGIES, POLICIES, PLANS, GOALS, AND ACTIONS

Türkiye has been actively implementing adaptation actions in accordance with its international commitments and the global goal on adaptation as set out in Article 7, paragraph 1, of the Paris Agreement. These actions are advanced through national strategies, sectoral policies, basin-level water management instruments, disaster risk reduction and recovery frameworks, spatial planning processes, and local climate action planning.

In combination, these instruments aim to reduce exposure and vulnerability to climate-related hazards; strengthen preparedness for droughts, floods, heatwaves, forest fires, and other extreme climate and weather events; improve the management of water, land, agricultural, and ecosystem resources; and integrate climate risks into sectoral, regional, and local decision-making.

Detailed sector-specific adaptation priorities, actions, and recent progress are presented in Chapter 6.3.1. This chapter provides an overview of the main strategies, policies, plans, goals, and implementation mechanisms through which adaptation action is being advanced across different sectors and levels of governance. While several instruments are already under implementation, others remain under preparation, revision, or gradual expansion.

6.4.1 National Strategic and Policy Framework

The **National Climate Change Adaptation Strategy and Action Plan** provides the overarching national framework for strengthening adaptation across priority sectors in Türkiye. The ongoing update of the Action Plan is intended to refine the existing framework in line with Türkiye's NDC 3.0, relevant national decision-making processes, and evolving international adaptation discussions. The update is expected to strengthen the clarity, measurability, and practical application of sectoral actions, targets, institutional responsibilities, and indicators, drawing on implementation experience, monitoring results, and stakeholder inputs.

Climate Law No. 7552 strengthens the legal basis for implementing Türkiye's national adaptation framework by requiring relevant public institutions to take account of climate change strategies



and action plans in their plans, programmes, strategies, investment processes, and other policy documents. This provides a stronger basis for linking adaptation priorities with development planning, public investment, sectoral decision-making, and local implementation.

National adaptation efforts are further supported by broader development and policy instruments, including the **12th Development Plan (2024-2028)**, the **Medium-Term Program**, sectoral strategic plans, and relevant environmental, water, agriculture, disaster risk reduction, and spatial planning frameworks. Overall, these frameworks provide the policy basis for improving preparedness for climate impacts, managing natural resources more effectively, reducing disaster risks, and strengthening the consideration of climate-related risks in public investment and planning processes.

Adaptation is therefore increasingly linked with wider development priorities, including water scarcity, food security, rural development, the protection of ecosystems and natural resources, disaster preparedness, climate-informed infrastructure investment, public health, and the continuity of essential services. The **Climate Portal** also supports the monitoring of the implementation of the Climate Change Adaptation Strategy and Action Plan by enabling responsible institutions to report progress on relevant actions and targets.

6.4.2 Water Resources Management and Water Efficiency

Water resources management remains a central component of Türkiye's adaptation approach. The **National Water Plan (2026-2035)** provides a framework for improving water efficiency, strengthening basin-based integrated water management, supporting drought and flood preparedness, and promoting investments in infrastructure that can better cope with climate change impacts. The Plan also promotes a water-energy-food-ecosystem nexus approach to support more coherent planning across sectors with competing water demands.

The **Water Efficiency Strategy Document and Action Plan within the Framework of Adaptation to Changing Climate (2023-2033)** provides a national basis for reducing water losses and improving water use efficiency in urban, agricultural, and industrial sectors. The **Water Efficiency Regulation** supports the implementation of this framework through water-efficiency certification and related implementation through water efficiency certification and related measures. Water-efficient landscaping and irrigation practices in public and semi-public green spaces are also promoted through the relevant national regulatory framework.

Basin level planning instruments, including **River Basin Management Plans, Sectoral Water Allocation Plans, Drought Management Plans, Flood Management Plans**, and related monitoring and early warning systems, support the management of climate-related water risks. These instruments aim to improve the allocation and efficient use of water resources, reduce the impacts of droughts and floods, protect wetlands and aquatic ecosystems, and support more informed water-related planning and investment decisions.

Implementation measures include irrigation modernization, the transition to closed and pressurized irrigation systems, treated wastewater reuse, rainwater harvesting, greywater reuse, groundwater recharge, flood protection infrastructure, and the use of non-conventional water resources. Hydrological modelling, assessments of climate change impacts on water availability, snowmelt and streamflow studies, and climate impact assessments for lakes, wetlands, and coastal areas further contribute to the evidence base for water-related adaptation planning. Further sector-specific measures, projects, and recent developments related to water resources management are presented in Chapter 6.3.1.



6.4.3 Agriculture, Land, Forests, and Ecosystems

Adaptation in agriculture, land management, forests, and ecosystems is supported through policies and measures addressing agricultural drought, soil degradation, erosion, biodiversity loss, changing production conditions, and forest fire risks. The **Strategic Plan (2024-2028)** of the MoAF provides a basis for agricultural drought monitoring and early warning, improved resource use, soil conservation, erosion prevention, agricultural R&D, and climate-informed production practices.

The **OGM Strategic Plan (2024-2028) 2nd Strategy is Forest Biodiversity Ensuring Continuity During Climate Change** under this strategy, two targets contribute to adaptation: “Important areas in terms of forest biodiversity will be identified, conservation targets for these areas will be determined, and biodiversity will be enhanced” and “Genetic resources resistant to extreme conditions such as drought and salinity, as well as biotic and abiotic factors, will be identified, and seed and seedling production infrastructure will be developed for use in forest establishment studies”.

The **National Strategy and Action Plan to Combat Desertification (2024-2030)** supports the restoration and rehabilitation of degraded agricultural, pasture, and forest lands. Its implementation includes measures such as afforestation, reforestation, erosion control, improved pasture management, protection of soil and water resources, and the measures to strengthen the capacity of urban and rural areas to address land degradation and climate-related pressures.

Spatial information and monitoring systems also support land- and ecosystem-related adaptation action. The **Türkiye Desertification Model, Sensitivity and Hazard Map, the National Land Cover Classification and Monitoring System (UASIS)**, and the national spatial soil carbon database provide information for land-use planning, monitoring of land degradation and environmental change, soil conservation, and the identification of priority areas for improved land-management practices.

Nature-based measures such as afforestation, restoration of degraded lands, erosion control, pasture rehabilitation, wetland conservation, biodiversity protection, and invasive species management provide key adaptation benefits by enhancing soil retention, water regulation, and ecosystem resilience, while also offering mitigation co-benefits through carbon storage and reduced land degradation; these approaches are further supported by the Climate Law, which promotes ecosystem protection and the wider use of nature-based solutions in areas exposed to climate change impacts.

6.4.4 Coastal Areas and Integrated Coastal Zone Management

Türkiye addresses climate-related risks in coastal areas through integrated coastal zone management, supported by spatial planning, marine and coastal ecosystem protection, water management, biodiversity conservation, and disaster risk reduction instruments. This approach aims to balance the protection of coastal and marine ecosystems with settlement development, tourism, infrastructure, and other economic and social uses, while taking account of sea level rise, coastal erosion, flooding, changing marine conditions, and other climate-related pressures.

Integrated Coastal Zone Plans, led by the MoEUCC, provide a key mechanism for incorporating climate-related risks, environmental considerations, land use, infrastructure needs, and ecosystem protection into coastal planning and investment decisions.



Ecosystem based approaches are important for maintaining the capacity of coastal and marine ecosystems to cope with climate-related pressures. Activities related to the assessment of climate change impacts on lakes, wetlands, and coastal areas, the monitoring of environmental effects of coastal structures, the conservation of coastal ecosystems, and the use of nature-based measures contribute to this approach. Detailed measures, recent planning developments, and monitoring activities related to coastal areas are presented in Chapter 6.3.1.5.

6.4.5 Disaster Risk Reduction, Early Warning, and Risk-Informed Recovery

Disaster risk reduction and preparedness constitute a key pillar of Türkiye's adaptation framework. Core policy and planning instruments include the **Türkiye Disaster Risk Reduction Plan (TARAP)**, the **Türkiye Disaster Response Plan (TAMP)**, the **Türkiye Post-Disaster Recovery Plan (TASİP)**, and **Provincial Disaster Risk Reduction Plans (IRAPs)**. These instruments support coordinated risk management, preparedness, response, and recovery processes at national and local levels.

TASİP provides a framework for the recovery of physical, social, economic, natural, historical, and cultural assets following disasters. It supports the consideration of recovery needs and risk reduction measures in post-disaster planning and investment decisions, including the identification of measures that can reduce future disaster risks.

Meteorological observation, forecasting, and early warning services provided by the Turkish State Meteorological Service support preparedness for hazards such as heavy precipitation, flash floods, storms, heatwaves, and forest fire weather conditions. These services are complemented by flood forecasting and early warning systems, flood hazard and risk mapping, **Flood Management Plans**, and structural and non-structural flood protection measures.

In addition, specialized systems further strengthen early warning and monitoring capacities. The **Forest Fires and Meteorological Early Warning System (MEUS)** contributes to the early detection and prevention of forest fires, while the **Flash Flood Guidance System (FFGS)** supports timely action in relation to heavy precipitation and flash floods. The **Flood Intervention Information System (TAMBIS)** supports the analysis of past flood events and interventions, while the **Flood Forecasting and Early Warning System in Pilot Sub-Basins (TATUS)** supports the monitoring of flood risks and the timely dissemination of relevant information.

These measures are supported by investments in flood protection infrastructure, river training, sediment management, emergency response capacity, and the gradual integration of climate-related risks into infrastructure development, settlement planning, and land-use management. The Climate Law also provides a legal basis for the development of risk assessment, monitoring, information, and early warning systems to reduce loss and damage associated with climate-related disasters.

6.4.6 Spatial Planning, Local Adaptation, and Capacity Development

Türkiye is working to strengthen the integration of climate-related risks into spatial planning and local development processes. The **draft National Spatial Strategy Plan 2053** is being revised through updates to GIS-based maps and spatial analyses. Once finalized, the plan is expected to support the consideration of climate risks, environmental pressures, settlement patterns, infrastructure requirements, and resource use within long-term spatial planning processes.

At the local level, progress has evolved from earlier voluntary and municipality-led climate action planning initiatives toward a nationally coordinated framework for **Local Climate Change Action**



Plans. The DoCC reported that local climate action plans had been completed in 30 provinces by the end of 2025, reflecting experience gained through earlier pilot and voluntary planning processes.

Climate Law No. 7552 establishes Local Climate Change Action Plans as province-wide instruments addressing both mitigation and adaptation. Under the Law, these plans are to be prepared under the coordination of provincial governors, with the participation of relevant public institutions, municipalities, and provincial administrations, and submitted to Provincial CCCBs. The Law requires their preparation by 31 December 2027, subject to the extension provisions set out therein.

The new framework is expected to build on earlier local planning experience while supporting a more consistent approach across all provinces. It is intended to strengthen the use of common methodologies, sectoral risk assessments, local data, institutional coordination, and monitoring arrangements in the preparation and implementation of Local Climate Change Action Plans.

Building on this previous experience, updated climate risk assessments will be carried out across 11 priority sectors in Türkiye's 12 NUTS-1 regions and six pilot provinces. This work also supports the preparation of national, regional, and local datasets; stakeholder engagement; technical assistance; workshops; training activities; and capacity-building for national and local institutions.

The forthcoming technical guidance and common climate risk assessment methodology for Local Climate Change Action Plans are expected to support a more consistent approach to local risk assessment and adaptation planning. They are also expected to encourage municipalities to establish, maintain, and regularly update the local data needed for climate risk assessments and adaptation planning.

6.4.7 Sectoral Integration and Implementation Support

Adaptation considerations are increasingly being integrated into sectoral planning and implementation processes in energy, industry, transport, tourism, cultural heritage, public health, urban development, and critical infrastructure. Sectoral actions include climate risk and vulnerability assessments, water and resource efficiency measures, adaptation planning for infrastructure and service systems, early warning and monitoring activities, and the development of sector-specific guidance and implementation measures.

In particular, water efficiency and the use of non-conventional water resources are promoted in industrial and urban settings. Climate risk assessments and adaptation planning are being advanced for selected priority sectors and critical infrastructures, and while climate suitability and risk assessments are being undertaken in selected tourism destinations.

The implementation of adaptation actions is supported by the relevant ministries, public institutions, local authorities, research organizations, academic institutions, civil society organizations, private-sector actors, and international cooperation projects. Detailed sector-specific measures and related projects are presented in Chapter 6.3.1.

6.4.8 Adaptation Goals and Objectives

Türkiye's adaptation goals and objectives aim to reduce vulnerability to climate hazards, strengthen preparedness for climate impacts, protect natural resources and ecosystems, and integrate climate considerations into development and decision-making processes across sectors and levels of governance.



The main objectives of Türkiye's adaptation approach are to:

- Strengthen water resilience through more efficient and integrated management of water resources, including the protection of water quality and the diversification of water sources,
- Reduce the impacts of droughts, heavy precipitation and floods, heatwaves, forest fires, storms, and other climate hazards through risk assessment, early warning, preparedness, and risk reduction measures,
- Support climate-informed agricultural production, rural livelihoods, soil and water conservation, erosion control, and improved management of land resources,
- Protect and restore forests, wetlands, agricultural lands, marine and coastal ecosystems, and biodiversity in order to sustain ecosystem services that support adaptation,
- Promote integrated coastal management and the consideration of climate-related risks in coastal planning, marine ecosystem protection, tourism, settlement development, and infrastructure investment,
- Integrate climate-related risks into national development planning, public investments, spatial planning, infrastructure development, and sectoral decision-making,
- Strengthen the technical, institutional, financial, and human capacity of national and local institutions to plan, implement, monitor, and evaluate adaptation actions,
- Improve coordination, data management and sharing, stakeholder participation, and access to scientific and technical information for adaptation planning.

These objectives are pursued through national strategies, sectoral plans, basin-level water management instruments, disaster risk reduction frameworks, integrated coastal zone management, spatial planning processes, local climate action planning, and targeted projects and programmes.

6.4.9 Integration of Science, Gender Perspectives, Nature-based Solutions, and Stakeholder Engagement

Türkiye's adaptation approach is supported by the use of scientific information, climate data, risk assessments, nature-based measures, and stakeholder engagement processes. High-resolution regional climate projections, hydrological modeling, vulnerability and risk assessments, drought and flood monitoring systems, land degradation assessments, and spatial information systems provide an evidence base for adaptation planning and decision-making across sectors.

Climate Law No. 7552 provides for sectoral vulnerability and risk assessments based on regional climate models to inform relevant strategies and action plans. These analyses are to be periodically updated and are expected to support more consistent adaptation planning across sectors and levels of governance. This approach is reinforced by ongoing work to develop national, regional, and local datasets, high-resolution climate projections, and common methodologies for climate risk assessment.

Gender perspectives are being increasingly integrated into national climate-related policy processes. **“Environment and Climate Change”** is one of the five policy axes of the **Women's Empowerment Strategy Document and Action Plan (2024–2028)**. This policy axis addresses the identification of climate change and environmental challenges affecting women and girls and the development of targeted measures to address these impacts.

With the **Presidential Circular on Women's Empowerment** issued in 2025, the **Women's Empowerment Coordination Board** was established under the chairmanship of the Minister of



Family and Social Services, with the participation of relevant ministries and public institutions. **Women's Empowerment Provincial Coordination Boards** were also established to strengthen coordination and implementation at the local level. A dedicated sub-committee on Climate Change, Environment, and the Role of Women supports cooperation on climate-related risks, women's participation in climate-related activities, and related policy responses. At the international level, Türkiye has designated a national UNFCCC gender focal point to support the integration of gender considerations into its climate policy processes and negotiations. In addition, the **Research on the Effects of Climate Change on Women Project**, implemented through cooperation between the Ministry of Family and Social Services and Afyon Kocatepe University, aims to assess climate-related impacts on women and girls and develop policy recommendations based on field research in selected pilot provinces.

Nature based solutions are integrated into adaptation through ecosystem restoration, afforestation and reforestation, soil conservation, erosion control, pasture rehabilitation, wetland conservation, biodiversity protection, and ecosystem-based approaches to reducing forest fire, flood, coastal, and land degradation risks. These measures support water regulation, soil retention, habitat integrity, and ecosystem functioning, while also providing potential mitigation co-benefits through carbon storage and the protection of carbon sinks.

The **Land Degradation Neutrality Upper Sakarya Basin Project**, completed in 2024, provides an example of the integration of gender perspectives, participatory planning, and local knowledge into land management. The project developed a **Gender Action Plan** to strengthen women's participation and involved local communities in the preparation of sustainable land management measures. It also promoted nature-based practices, including crop rotation and afforestation, with the participation of farmers, including women.

Stakeholder participation is supported through sectoral and local planning processes, project-based consultations, training activities, technical workshops, and cooperation among public institutions, local authorities, farmers, academia, civil society organizations, and private-sector representatives. The ongoing update of the Climate Change Adaptation Strategy and Action Plan is designed to include sector-specific stakeholder workshops and consolidation discussions under the Adaptation Working Group of the Climate Change and Adaptation Coordination Board.

Traditional and local knowledge is considered, where relevant, through participatory processes in agriculture, land management, rural development, and local adaptation planning. Local Climate Change Action Plans and land management initiatives can support the consideration of local conditions, practices, and priorities in the design and implementation of adaptation measures.

6.5 PROGRESS ON IMPLEMENTATION OF ADAPTATION

Building on the adaptation actions reported in the BTR1, Türkiye has continued to implement and expand adaptation measures across water resources management, agriculture, land and ecosystem management, coastal areas, disaster risk reduction, spatial planning, local adaptation, and other climate-sensitive sectors. Progress during the reporting period includes the continued implementation of previously reported actions, the strengthening of legal and policy frameworks, the expansion of climate risk assessment and local planning processes, and enhanced coordination and capacity-building activities.

Detailed information on sector-specific adaptation priorities, measures, and recent developments is presented in Chapter 6.3.1, while the relevant strategies, policies, plans, and implementation



mechanisms are described in Chapter 6.4. This chapter therefore focuses on progress in implementing, updating, and institutionalizing these actions.

6.5.1 Progress in the Implementation of Adaptation Actions

Actions reported in the BTR1 have continued to be implemented through sectoral, basin-level, regional, and local instruments. Progress has continued in water-efficiency measures, irrigation modernization, drought and flood management, early warning systems, soil and land conservation, ecosystem restoration, integrated coastal management, and local adaptation planning.

In the water sector, the implementation of basin-based planning instruments and water-efficiency measures has been strengthened through the Water Efficiency Strategy Document and Action Plan within the Framework of Adaptation to Changing Climate (2023-2033) and the Water Efficiency Regulation, which entered into force in 2024. Progress in water management, agriculture, ecosystems, coastal areas, disaster risk reduction, and other sectors is described in Chapter 6.3.1 and 6.4.

At the local level, Local Climate Change Action Plans were prepared largely on a voluntary basis by municipalities. The Climate Law and the subsequent regulation establish that all 81 provinces will prepare new Local Climate Change Action Plans as mandatory, province-wide instruments coordinated at the provincial level for the selected sectors. These plans will replace and expand earlier voluntary efforts, ensuring a standardized, comprehensive, and legally grounded framework for both mitigation and adaptation. The ongoing EU Partnership for Local Climate Action in Türkiye Project further supports this process through climate risk assessments, local data development, technical assistance, and capacity-building across 11 priority sectors, 12 NUTS-1 regions, and six pilot provinces.

In addition to the actions reported in the BTR1, externally supported adaptation projects have contributed to implementation progress during the current reporting period. The Enhancing Adaptation Action in Türkiye Project under IPA-II was completed in 2025 and supported sectoral trainings in 20 provinces, awareness-raising conferences in seven provinces, climate change impact and vulnerability analyses for four pilot metropolitan municipalities, and the preparation of local climate change adaptation strategies and action plans. The Climate Change Adaptation Grant Programme provided EUR 6.8 million in support to 29 grant projects implemented by universities, NGOs, and municipalities. The E-IDUSEP monitoring system established under the Climate Portal also supports the monitoring and reporting of adaptation actions at the national level.

The EU Partnership for Local Climate Action in Türkiye Project under IPA-III further supports local climate action through grant support, climate risk assessment, capacity-building, and technical assistance. Within its grant component, 25 grant projects have been selected and implementation has started.

6.5.2 Progress in Planning, Policy Development, and NDC Implementation

The Climate Change Adaptation Strategy and Action Plan (2024-2030) remains the principal national framework for adaptation action. Its ongoing update is being undertaken as a refinement of the existing framework, taking account of implementation experience, monitoring results, stakeholder inputs, Türkiye's NDC 3.0, and recent national and international developments. The process is expected to improve the clarity, measurability, and trackability of adaptation actions, targets, institutional responsibilities, and indicators.



Climate Law represents a significant legal and institutional development. The Law provides a framework for integrating climate change considerations into public plans, programmes, strategies, investments, and other policy instruments. It also establishes Local Climate Change Action Plans as province-wide instruments addressing both mitigation and adaptation, to be prepared under provincial coordination with the participation of relevant public institutions and local authorities.

Progress relevant to the adaptation component of NDC 3.0 is reflected in strengthened risk assessment processes, sectoral and local planning instruments, water and ecosystem management measures, disaster risk reduction, and the integration of climate-related risks into development and investment decisions.

6.5.3 Coordination, Capacity-Building, and Stakeholder Engagement

Adaptation implementation has been supported by cooperation among national institutions, local authorities, sectoral agencies, research organizations, academia, civil society organizations, private-sector representatives, and international partners. The ongoing update of the Climate Change Adaptation Strategy and Action Plan includes sector-specific consultation workshops and consolidation discussions under the Adaptation Working Group of the Climate Change and Adaptation Coordination Board.

The Climate Law further strengthens multi-level coordination through Provincial CCCBs and Local Climate Change Action Plans. In parallel, the EU Partnership for Local Climate Action in Türkiye Project supports institutional cooperation, data-sharing arrangements, technical assistance, training, and stakeholder engagement at national, regional, and local levels.

Capacity-building and stakeholder engagement have been supported through national and project-based activities. By the end of 2025, the DoCC reported that 1,300 persons had received training under its performance indicator on climate change adaptation and Local Climate Change Action Plans. During the same period, the EU Partnership for Local Climate Action in Türkiye Project reached 5,463 stakeholders through 12 workshops, three conferences, and 14 training activities. Of these activities, six capacity-development and training-needs assessment workshops brought together approximately 450 representatives from Türkiye's 12 NUTS-1 regions.

In addition, the earlier Enhancing Adaptation Action in Türkiye Project reported approximately 8,900 participant attendances across activities implemented in ten priority sectors, including 40 identifiable stakeholder-facing training, awareness-raising, consultation, and capacity-development activities by July 2025. These figures demonstrate the scale of capacity-building and stakeholder-engagement efforts; however, they represent project- or programme-specific participation records and should not be interpreted as a consolidated national total or as the number of unique individual beneficiaries.

Climate related education and awareness-raising activities also support adaptation capacity and stakeholder engagement. Through the Türkiye Century Education Model and related school-based initiatives, climate change, sustainable development, zero waste, environmental protection, disaster awareness, water efficiency, and sustainable living skills have been integrated into educational activities. Ministry of Education (MoNE) reported that 170,000 teachers and 1,113,568 students received training on Environmental Awareness and Global Climate Change, while the ÇARE Project reached 583,904 students through teacher training and educational materials. These activities contribute to strengthening climate literacy and long-term societal adaptive capacity.



Within the scope of the activities carried out by the Digital Skills Department, a series of webinars has been organized to enhance teachers' awareness and capacity on climate change and sustainability. These include **Digital Technologies and Artificial Intelligence Tools for Climate Change Education** (186 participants), **Green and Digital Skills and Occupations** (289 participants), and **BUSTIC EDU Project: How Should Education Transform for a Sustainable Future?** (124 participants). In addition, the **online course Climate Change and Its Implications for Education**, available through the Teacher Informatics Network (ÖBA), has so far been completed by 7,027 participants.

6.6 MONITORING AND EVALUATION OF ADAPTATION ACTIONS AND PROCESSES

Türkiye is strengthening a multi-level monitoring and evaluation approach for adaptation, combining national climate policy monitoring, sectoral and basin-based information systems, climate and disaster risk monitoring, and local adaptation planning processes. This approach is intended to support the tracking of implementation, inform periodic reviews of adaptation actions, improve institutional coordination and data sharing, and provide an increasingly consistent basis for assessing adaptation progress over time.

Detailed information on sectoral monitoring systems, climate risk assessments, early warning systems, and relevant planning instruments is provided in Chapters 6.3.1 and 6.4. This chapter focuses on the monitoring and evaluation approach applied to adaptation actions and processes.

6.6.1 National Monitoring and Evaluation Framework

The **Climate Portal** provides the main national platform for monitoring climate change adaptation and mitigation actions. Through the Portal, responsible institutions are expected to report annually on progress in implementing the actions and targets included in the Climate Change Adaptation Strategy and Action Plan (2024-2030). Each action is associated with a responsible institution and relevant monitoring indicators, enabling the tracking of implementation progress, supporting institutional accountability, and helping to identify areas requiring further action.

The online monitoring system is intended to support adaptive management by providing information for the periodic review, updating, and, where necessary, revision of the Climate Change Adaptation Strategy and Action Plan. The ongoing update of the Strategy and Action Plan also provides an opportunity to improve the clarity, measurability, and consistency of actions, institutional responsibilities, baselines, and indicators, as described in Chapter 6.4.1.

Climate Law No. 7552 provides an additional legal basis for the preparation, monitoring, reporting, and periodic updating of climate-related planning instruments. It also reinforces the use of climate models and sectoral vulnerability and risk assessments as a basis for strategies and action plans. These provisions are expected to strengthen the link between climate data, risk assessment, planning, implementation, and monitoring over time.

The national framework is complemented by the monitoring of adaptation-relevant policies and planning instruments in individual sectors. These include water, agriculture, ecosystems, land management, disaster risk reduction, health, coastal areas, urban development, infrastructure, and local planning. While sectoral systems differ in their scope and level of maturity, they collectively provide information on climate hazards, exposure, vulnerability, implementation progress, and selected environmental and socio-economic conditions.



6.6.2 Sectoral, Basin-based and Local Monitoring Systems

In the water sector, implementation of measures under Drought Management Plans and Flood Management Plans is monitored through basin-level arrangements. The **Flood and Drought Plans Tracking Web Application** and the **National Water Information System** support the follow-up of planned measures, data management, and inter-institutional information sharing. The monitoring arrangements for Drought Management Plans include regular follow-up of identified measures and periodic plan updates, while sectoral water-allocation measures are followed through the relevant basin planning processes.

Meteorological, hydrological, and disaster risk monitoring systems also support adaptation planning and evaluation by providing information on changing hazard conditions and the operation of preparedness measures. These include meteorological observation and forecasting services, drought and flood monitoring, early warning systems, flood hazard and risk mapping, and systems supporting weather monitoring during forest fires. Although these systems primarily monitor hazards and operational preparedness, they also provide important information for reviewing adaptation priorities and identifying gaps in risk management.

At the local level, the monitoring framework developed for the pilot Local Climate Change Action Plans (LCCAP) provides a model for tracking adaptation progress. The pilot plans include indicators relating to climate risks, measures implemented to reduce vulnerability, and the resulting progress or outcomes. Their implementation is intended to be monitored through an online system operating under the Climate Portal, supporting coordination among responsible institutions and the assessment of adaptation processes.

The Local Climate Change Action Plan framework established under Climate Law No. 7552 is expected to further strengthen monitoring at the provincial level. The use of common methodologies, sectoral risk assessments, local data, implementation responsibilities, and monitoring arrangements is intended to support a more consistent approach to tracking mitigation and adaptation actions across provinces. Further information on these processes is provided in Chapters 6.4.6 and 6.5.1.

6.6.3 Achievements, Effectiveness, Learning and Further Development

Available monitoring information demonstrates progress primarily in implementation processes and enabling conditions. This includes the preparation and updating of adaptation plans, the establishment of legal and institutional arrangements, the development of risk assessment tools and datasets, the operation of monitoring and early warning systems, the implementation of sectoral and local actions, and capacity-building activities.

These outputs provide an important basis for strengthening preparedness, improving access to climate-related information, clarifying institutional responsibilities, and supporting the integration of climate risks into planning and investment processes. They also facilitate the identification of implementation gaps and the revision of actions where necessary.

However, available evidence is currently more developed for implementation and process indicators than for long-term adaptation outcomes. In particular, nationally consolidated evidence on the extent to which individual adaptation measures have reduced vulnerability, climate-related losses, damages, service disruptions, or residual risks remains limited. It would therefore not be appropriate to attribute changes in climate-related impacts directly to individual measures without further outcome-based assessment.



Türkiye has established a multi-level institutional coordination framework comprising the National Water Council, River Basin Water Councils, and Provincial Water Councils to strengthen integrated, participatory, and basin-based water governance. These governance bodies enhance inter-institutional coordination, facilitate stakeholder participation, improve vertical and horizontal policy coherence, and ensure the effective implementation, monitoring, and evaluation of water-related policies, strategies, and basin management decisions.

Building on this governance framework, Türkiye is working to strengthen the evaluation of adaptation effectiveness through clearer indicators, improved baseline information, enhanced data-sharing arrangements, vulnerability and risk assessments, local planning processes, and the ongoing update of the Climate Change Adaptation Strategy and Action Plan. Over time, this is expected to support a more systematic assessment of:

- Changes in climate vulnerability and risks,
- The effectiveness of adaptation measures in reducing climate-related impacts and exposure,
- Situations where existing measures remain insufficient to address impacts,
- The contribution of adaptation actions to broader sustainable development objectives, including water sustainability, food security, ecosystem protection, disaster risk reduction, public health, and resilient infrastructure.

Stakeholder engagement, institutional ownership, and alignment with national and subnational planning processes remain important for the sustainability of adaptation results. The Climate Portal, sectoral monitoring systems, basin-level arrangements, **Provincial CCCBs**, Local Climate Change Action Plans, and consultation processes coordinated through the **CCACB** provide mechanisms through which implementation experience, emerging evidence, and lessons learned can inform future planning and policy adjustments.

6.7 INFORMATION RELATED TO AVERTING, MINIMIZING AND ADDRESSING LOSS AND DAMAGE ASSOCIATED WITH CLIMATE CHANGE IMPACTS

Observed and projected climate-related impacts, including extreme events and slow-onset changes, are presented in Chapter 6.2. Türkiye addresses associated losses and damages primarily through disaster risk reduction, preparedness, response, and recovery arrangements, complemented by sectoral adaptation measures.

Risk assessments, meteorological and hydrological monitoring, early warning systems, drought and flood management, risk-informed spatial planning, and ecosystem and water resource management measures contribute to averting or minimizing climate-related losses and damages. Relevant actions and systems are described in Chapters 6.3.1 and 6.4.2-6.4.6.

These efforts are supported by the Türkiye Disaster Risk Reduction Plan (TARAP), Provincial Disaster Risk Reduction Plans (IRAPs), the Türkiye Disaster Response Plan (TAMP), and the Türkiye Post-Disaster Recovery Plan (TASİP). Together, these instruments provide a framework for risk reduction, coordinated response, and recovery following disasters, including those associated with climate-related hazards.

While available information demonstrates progress in strengthening risk management, preparedness, early warning, and recovery arrangements, further outcome-based monitoring will be needed to assess the extent to which these measures reduce climate-related losses and damages over time.



6.8 COOPERATION, GOOD PRACTICES, EXPERIENCE, AND LESSONS LEARNED

Türkiye's adaptation efforts are supported by cooperation among public institutions, local authorities, research organizations, academia, civil society organizations, private-sector actors, and international partners. This cooperation supports the use of scientific information, capacity-building, local and sectoral planning, and the exchange of adaptation-related knowledge and experience.

Detailed information on sectoral actions, planning instruments, and monitoring systems is provided in Chapters 6.3.1, 6.4, 6.5, and 6.6. This section therefore highlights the main cooperation processes and lessons emerging from implementation.

6.8.1 Information Sharing and Cooperation

Information sharing is supported through national coordination mechanisms, sectoral consultations, project-based workshops, trainings, technical assistance activities, and digital platforms. Regional climate projections, vulnerability and risk assessments, early warning systems, basin-level planning tools, and local climate action planning processes support the integration of climate risk information into policies, plans, and investment decisions.

The Climate Portal and sectoral data and monitoring systems contribute to institutional coordination, access to adaptation-related information, and the identification of implementation gaps. Further information on these systems is provided in Chapter 6.6.

6.8.2 Good Practices and Lessons Learned

Pilot projects, local planning initiatives, and capacity-building activities have provided practical experience in climate risk assessment, stakeholder engagement, adaptation planning, and implementation. Experience from earlier local initiatives has informed the development of a more systematic, province-wide framework for Local Climate Change Action Plans.

A key lesson is that adaptation measures are more effective when scientific evidence, institutional coordination, stakeholder participation, and local knowledge are combined. Common methodologies and guidance are important for consistency, while sufficient flexibility is needed to address local and sectoral conditions.

Experience also shows that capacity-building, consultation, and monitoring should be integrated throughout the adaptation cycle. Continued cooperation across sectors and levels of governance will remain important for strengthening implementation, improving monitoring, and supporting the long-term effectiveness of adaptation actions.

School-based climate and sustainability initiatives provide an example of good practice in linking awareness-raising, behavioural change, and long-term adaptive capacity. The **Green Homeland** initiative promotes activities on climate change, water efficiency, zero waste, biodiversity, disaster awareness, resource conservation, and sustainable consumption. The **Energy-Friendly Blue-Green School Project** further supports energy efficiency, efficient resource use, waste management, green practices, and environmental awareness in schools. These initiatives demonstrate how climate-related learning can be mainstreamed into education systems and linked with wider mitigation and adaptation objectives.



7 SUPPORT NEEDED AND RECEIVED

This chapter presents an assessment of the financial, technological, and capacity-building support required to facilitate the implementation of Türkiye's climate commitments and long-term development objectives, together with information on support received to date. The chapter reflects Türkiye's evolving climate policy framework, institutional arrangements, and investment priorities, while highlighting the importance of international cooperation in supporting the transition towards a climate-resilient and net-zero economy.

The analysis is structured around three interrelated dimensions of implementation: financial support, technology development and transfer, and capacity-building. These dimensions are mutually reinforcing and collectively underpin the implementation of mitigation and adaptation measures, the mobilization of climate-related investments, and the strengthening of institutional capacities.

7.1 INSTITUTIONAL ARRANGEMENTS AND COUNTRY-DRIVEN STRATEGIES

7.1.1 Institutional Arrangements

Türkiye remains committed to implementing the Paris Agreement in a manner that reflects its national circumstances, development priorities, and long-term sustainable development objectives. Since ratifying the Paris Agreement in 2021, the country has significantly strengthened its climate governance framework and accelerated efforts to integrate climate considerations into national development planning, public policy, sectoral strategies, and investment decision-making processes.

Climate action in Türkiye is guided by the principles of sustainable development, climate resilience, resource efficiency, green growth, and just transition. In recent years, climate policy has evolved from a sector-specific environmental agenda into a comprehensive whole-of-government approach that increasingly influences economic planning, industrial policy, energy transition, infrastructure development, and financial sector reforms.

A major milestone in this transformation was the adoption of the Climate Law (Law No. 7552)²⁹⁶ in 2025. The Law establishes the legal foundation for Türkiye's climate governance architecture, providing a comprehensive framework for mitigation and adaptation policies. It also lays the legal basis for the national ETS, climate-related monitoring and reporting obligations, climate planning at the national and local levels, and market-based mechanisms that support the country's low-carbon transition. The Climate Law further strengthens policy certainty for investors and provides a clearer regulatory framework for climate-related investments.

The DoCC, operating under the MoEUCC, is the lead institution responsible for coordinating Türkiye's climate policies and actions. Under the Climate Law, the DoCC is mandated to prepare national, sectoral, and thematic reports; develop climate incentive mechanisms to mobilize financial resources for climate action; and establish and operate Türkiye's green taxonomy. It also leads the development and implementation of climate strategies and action plans, oversees greenhouse gas inventory management and transparency reporting under the Paris Agreement's ETF, coordinates adaptation planning and carbon market development, and represents Türkiye in international

²⁹⁶. The Climate Law is accessible at <https://mevzuat.gov.tr/mevzuat?MevzuatNo=7552&MevzuatTur=1&MevzuatTertip=5>



climate negotiations. The CCACB continues to serve as the principal high-level coordination mechanism for climate policy implementation. The Board brings together relevant ministries, public institutions, and agencies to ensure policy coherence across mitigation, adaptation, energy transition, sustainable development, and climate finance agendas. Through this mechanism, climate considerations are increasingly integrated into sectoral decision-making processes and national development priorities. Furthermore, the Climate Law provides for the establishment of Provincial CCCBs in each province, under the chairmanship of the governor, to ensure the development, coordination, and effective implementation of climate strategies and actions responsive to local needs and conditions.

The strengthening of institutional arrangements reflects Türkiye's recognition that climate change is a cross-cutting challenge with environmental, economic, social, and developmental dimensions, requiring coordinated action across all sectors of government and society.

7.1.2 Climate Finance Governance

Recognizing the scale of investments required to achieve its climate objectives, Türkiye has increasingly focused on strengthening the governance arrangements necessary to mobilize, coordinate, and effectively utilize climate finance.

The MoTF plays a central role in fiscal policy, public financial management, sovereign financing operations, sustainable finance initiatives, and the mobilization of international climate finance. The SBB supports the integration of climate considerations into national planning and public investment programmes and contributes to the alignment of public expenditures with national climate objectives.

In recent years, climate finance governance has evolved significantly. Efforts have focused on improving institutional coordination, strengthening investment planning processes, enhancing climate finance monitoring systems, and supporting the development of sustainable finance markets. Particular emphasis has been placed on creating an enabling environment capable of mobilizing both domestic and international financial resources to support mitigation and adaptation investments.

The National Green Finance Strategy and Action Plan (2026-2029), prepared by the MoTF in collaboration with relevant stakeholders, aims to accelerate Türkiye's climate-aligned financial transition by strengthening the green finance ecosystem, enhancing the resilience of financial markets to climate-related risks, and improving the investment environment. The Strategy focuses on expanding green finance regulations and practices, strengthening market infrastructure, and improving stakeholder coordination. It is structured around three main goals: (i) establishing the necessary infrastructure for a transparent and measurable green finance ecosystem; (ii) strengthening institutional capacity and human capital in the field of green finance; and (iii) establishing market mechanisms for the development of green finance. These goals are supported by 11 objectives and 45 actions to accelerate Türkiye's green transformation process, enhance her economic resilience, and permanently strengthen the financial system's capacity to support green investments.

As part of Türkiye's efforts to strengthen its climate finance governance framework, the Climate Law provides the legal foundation for the Türkiye Green Taxonomy, whose implementation framework was formally established with the publication of the Türkiye Green Taxonomy Regulation on 24 September 2026. The taxonomy is expected to provide a common classification framework for environmentally sustainable economic activities, improve transparency for investors and financial



institutions, and facilitate the alignment of financial flows with national climate and sustainable development objectives. The framework is being developed in line with international good practices and is expected to strengthen the credibility and effectiveness of sustainable finance markets.

The implementation of the national ETS is expected to further strengthen climate finance governance by introducing market-based incentives for emissions reductions while supporting the mobilization of additional financial resources for climate action. Together with broader sustainable finance reforms, these developments are expected to improve the efficiency, transparency, and effectiveness of climate-related investments.

Türkiye has taken important steps to integrate climate considerations into financial decision-making. To facilitate the transition toward a more sustainable financial system, Türkiye's Banking Regulation and Supervision Agency introduced the Sustainable Banking Strategic Action Plan (2021-2025)²⁹⁷, which establishes a roadmap for integrating sustainability considerations into the banking sector. The plan promotes the development of a green finance regulatory framework, encourages banks to incorporate environmental and climate-related risks into their risk management processes, and strengthens sustainability-related data collection and disclosure practices.

Complementing these efforts, the adoption of the Guideline on the Management of Climate-Related Financial Risks²⁹⁸ and the Communiqué on Banks' Green Asset Ratio Calculation²⁹⁹, the introduction of preferential loan-to-value ratios for energy-efficient properties have collectively strengthened the regulatory framework for sustainable finance and laid the groundwork for a climate-aligned banking sector that supports private-sector investment in the low-carbon transition. The Guideline establishes good-practice principles for governance, policies, procedures, and institutional responsibilities to help banks identify, assess, monitor, and manage climate-related financial risks. The Communiqué complements this framework by requiring banks to establish governance, data management, monitoring, and reporting systems for eligible green assets and to regularly report their Green Asset Ratios. The first reporting cycle has been completed, and supervisory oversight is ongoing.

With respect to sustainable financial instruments, in February 2022, the Capital Markets Board published the Guidelines on Green Debt Instruments, Sustainable Debt Instruments, Green Sukuk, and Sustainable Sukuk (lease certificates). The Guidelines are based on the International Capital Market Association (ICMA) Green Bond Principles and cover the use of proceeds bonds and Sukuk. The Guidelines clarify the regulatory framework, enhance public disclosure requirements, and contribute to the growth and credibility of sustainable bond issuances in and from Türkiye. Under the Guidelines, a total of nearly TRY 304 billion of green/sustainable bonds were issued in 2025, which corresponds to about 14 percent of all private sector bond issuances. In August 2026, Türkiye's Capital Markets Board (CMB) adopted two new guidelines aligned with the internationally recognized ICMA principles. The Guidelines on Green Debt Instruments, Sustainable Debt Instruments, Green Sukuk, and Sustainable Sukuk Instruments expand the existing framework to include social bonds and lease certificates, enabling the financing of projects that generate positive social outcomes alongside environmental benefits. They also clarify requirements concerning eligible projects, framework documents, disclosures, reporting, and external reviews. Complementary Guidelines on Sustainability-Linked Capital Market Instruments introduce

297. For the Strategy, please visit <https://www.bddk.org.tr/KurumHakkinda/EkGetir/19?ekId=143>

298. The Guideline can be found at <https://www.bddk.org.tr/Mevzuat/DokumanGetir/1328>

299. The Communiqué is accessible at <https://www.bddk.gov.tr/Mevzuat/DokumanGetir/1297>



performance-based instruments structured around five components: selection of key performance indicators, calibration of sustainability performance targets, instrument characteristics, reporting, and verification. Financial or structural terms—including coupon payments—may vary depending on whether predefined, measurable, and time-bound sustainability targets are achieved. The revised framework limits external review services to second-party opinions and verification, establishes minimum content requirements for issuers' framework documents, and provides clearer application, disclosure, and reporting procedures. To stimulate market development, the CMB also introduced a 50% reduction in regulatory fees for issuances covered by the guideline. These measures broaden Türkiye's sustainable finance market and strengthen its alignment with international standards.

7.1.3 Country-Driven Climate Strategies

Türkiye's climate action framework is guided by a comprehensive set of nationally driven policies, strategies, and plans that collectively support the country's transition toward a climate-resilient and net-zero economy.

Türkiye has demonstrated its enhanced climate ambition through its NDC 3.0³⁰⁰ in November 2025, committing to reduce greenhouse gas emissions by 466 Mt CO₂ eq. compared to the business-as-usual scenario and to limit total emissions to 643 Mt CO₂ eq. by 2035. As a developing country, Türkiye has adopted the highest feasible level of mitigation ambition consistent with its national circumstances and development priorities, in line with the principle of Common but Differentiated Responsibilities and Respective Capabilities. The Second NDC provides the overarching framework for climate action and reflects Türkiye's enhanced ambition under the Paris Agreement. The Second NDC is complemented by the Long-Term Climate Strategy (LTS)³⁰¹, which was announced at COP29 in 2024 and establishes a strategic pathway for achieving net-zero greenhouse gas emissions by 2053. The Strategy outlines long-term mitigation and adaptation priorities while identifying climate finance, technology development, just transition, and capacity-building as key enabling factors.

The LTS, which is aligned with the outcomes of the first Global Stocktake, outlines key sectoral policies on the following areas for 2035 and 2053. In the LTS, 89 strategies have been defined across 18 mitigation and adaptation sectors and four cross-cutting areas:

- climate finance,
- technology development,
- just transition,
- capacity building.

The strategy framework supports:

- renewable energy scale-up,
- industrial decarbonization,
- hydrogen and battery technologies,
- circular economy investments,

300. For the document, please visit <https://unfccc.int/sites/default/files/2025-11/The%20Second%20NDC%20of%20T%C3%BCrkiye.pdf>

301. The LTS can be found at https://unfccc.int/sites/default/files/resource/Turkiye_Long_Term_Climate_Strategy.pdf



- sustainable transport systems,
- climate-resilient infrastructure,
- ecosystem restoration,
- enhancement of carbon sinks,
- sustainable forest management,
- and nature-based solutions.

In the area of climate finance, Türkiye has advanced the priorities set out in the LTS through the development and implementation of carbon pricing instruments, including the national Emissions Trading System (ETS), and the adoption of the Türkiye Green Taxonomy. Work is also ongoing on the National Climate Finance Strategy, with a view to strengthening the mobilisation, accessibility and effective use of climate finance.

The Twelfth Development Plan (2024-2028)³⁰² identifies green transformation, climate resilience, and sustainable development as strategic priorities for national development. The Plan emphasizes resource efficiency, renewable energy deployment, industrial competitiveness, climate-resilient infrastructure, circular economy approaches, and sustainable finance mechanisms. These priorities are further reinforced by the Medium-Term Program (2026-2028)³⁰³, which highlights the importance of climate-related investments and green transformation for maintaining long-term economic competitiveness and resilience. The Green Deal Action Plan (2021)³⁰⁴ constitutes another important pillar of Türkiye's climate strategy. The Plan aims to facilitate alignment with evolving international sustainability requirements, particularly those associated with the European Green Deal and the CBAM. The Plan promotes investments in low-carbon technologies, industrial decarbonization, energy efficiency, sustainable production methods, and green finance instruments.

Sector-specific strategies also play an important role in supporting climate action. The Climate Change Mitigation Strategy and Action Plan (2024-2030)³⁰⁵ and the Climate Change Adaptation Strategy and Action Plan (2024-2030)³⁰⁶ provide detailed roadmaps for implementing climate policies across key sectors. These are complemented by the National Energy Plan³⁰⁷, Energy Efficiency 2030 Strategy and Second National Energy Efficiency Action Plan³⁰⁸, National Circular Economy Strategy and Action Plan (2025-2028)³⁰⁹, sectoral decarbonization roadmaps, and other policy frameworks that support the transition towards a low-carbon and climate-resilient economy.

Sectoral roadmaps generate important signals regarding which sectors face more urgent transition pressure, which technologies play a pivotal role, and which types of investments could deliver

302. For the document, please see https://www.sbb.gov.tr/wp-content/uploads/2025/03/Twelfth-Development-Plan_2024-2028.pdf

303. The Program is accessible at <https://www.sbb.gov.tr/wp-content/uploads/2025/10/Medium-Term-Program-2026-2028.pdf>

304. The document can be found at <https://ticaret.gov.tr/data/60f1200013b876eb28421b23/mutabakat%20ye%C5%9E%C4%B0I.pdf>

305. For the document, please visit [https://iklim.gov.tr/db/turkce/icerikler/files/CLIMATE%20CHANGE%20MITIGATION%20STRATEGY%20AND%20ACTION%20PLAN%20_EN\(1\).pdf](https://iklim.gov.tr/db/turkce/icerikler/files/CLIMATE%20CHANGE%20MITIGATION%20STRATEGY%20AND%20ACTION%20PLAN%20_EN(1).pdf)

306. The document is accessible at <https://iklim.gov.tr/db/turkce/icerikler/files/Uyum.pdf>

307. The Plan can be found at https://enerji.gov.tr/Media/Dizin/EIGM/tr/Raporlar/TUEP/T%C3%BCrkiye_National_Energy_Plan.pdf

308. For the document, please see <https://enerji.gov.tr/Media/Dizin/EVCED/tr/EnerjiVerimlili%C4%9Fi/UlusalEnerjiVerimlili%C4%9FiEylemPlan%C4%B1/Belgeler/EnerEffi2030Str2ndNatEnerEffiActPlan2024-2030.pdf>

309. The document can be found at https://webdosya.csb.gov.tr/db/cygm/haberler/udesep_eng-20251020103224.pdf



higher emissions-reduction impacts in the short and medium term. These signals are critical for designing public interventions in a more strategic and targeted manner. Building on Türkiye's Low Carbon Pathways³¹⁰ initiative on hard-to-abate sectors, in November 2024, Türkiye Industrial Decarbonization Investment Platform (TIDIP) was established in cooperation with the European Bank for Reconstruction and Development (EBRD), International Bank for Reconstruction and Development (IBRD) and International Finance Corporation (IFC). Presidential Circular³¹¹ formally establishing TIDIP was published in the Official Gazette dated 22 May 2026. By 2030, TIDIP aims to:

- Mobilize more than EUR 100 million in technical assistance and concessional finance,
- Support over EUR 5 billion in decarbonization investments through commercial banks and international financial institutions,
- Achieve annual emissions reductions exceeding 20 Mt CO₂ eq.³¹²

Türkiye has adopted several key policy documents in recent years to strengthen the implementation of its climate adaptation agenda across priority sectors. Water management constitutes one of the key pillars of Türkiye's climate adaptation strategy. The National Water Plan 2026-2035³¹³ was enacted by Presidential Decree in March 2026. This plan establishes 8 strategic goals and 141 actions aimed at strengthening climate-resilient water resource management across all sectors. In addition, River Basin Management Plans³¹⁴ for 12 priority basins were completed, with climate adaptation measures integrated into the plans. In October 2025, Presidential Decree No. 10502 on Xeriscaping Principles³¹⁵ was enacted, providing a national framework for the implementation of drought-resilient landscaping practices across the country's eight ecological regions.

Overall, Türkiye has made significant progress in establishing a robust institutional framework, underpinned by comprehensive national planning documents, climate policies, and sector-specific strategies and action plans.

310. The related documents are accessible at <https://www.sanayi.gov.tr/merkez-birimi/6f188a931f68/raporlar-yayinlar-ve-istatistikler#dusuk-karbonlu-yol-haritalari>

311. For the document, please visit <https://www.resmigazete.gov.tr/eskiler/2026/05/20260522-14.pdf>

312. For relevant information, please visit <https://www.ebrd.com/home/work-with-us/projects/tcpsd/20555.html#customtab-3ea76283ed-item-38e0b9f83a-tab>

313. The document could be found at [https://www.tarimorman.gov.tr/SYGM/Belgeler/Ulusal%20Su%20Plan%C4%B1%20%20Resm%C4%B1%20Gazete/Ulusal%20Su%20Plan%C4%B1%20\(2026-2035\).pdf](https://www.tarimorman.gov.tr/SYGM/Belgeler/Ulusal%20Su%20Plan%C4%B1%20%20Resm%C4%B1%20Gazete/Ulusal%20Su%20Plan%C4%B1%20(2026-2035).pdf)

314. Please visit <https://www.tarimorman.gov.tr/SYGM/Sayfalar/Detay.aspx?Sayfald=49>

315. The document is accessible at <https://www.resmigazete.gov.tr/eskiler/2025/10/20251018-2.pdf>



Table 45 – Key national climate strategies and planning documents

Document	Period	Main Focus	Relevance for Support Needs
Climate Law	2025 onward	ETS, taxonomy, and governance	Institutional and regulatory capacity
The Twelfth Development Plan	2024-2028	Green transformation and climate resilience	Mitigation and adaptation finance, institutional and regulatory reforms
Medium-Term Programme	2026-2028	Green transformation and competitiveness	Climate finance and institutional reforms
Second NDC	2035	Mitigation and adaptation	Mitigation implementation and climate finance
Long-Term Climate Strategy	2053	Net-zero transition	Technology, adaptation, and finance
Climate Change Mitigation Strategy and Action Plan	2024-2030	49 strategies and 260 actions	Mitigation implementation
Climate Change Adaptation Strategy and Action Plan	2024-2030	11 adaptation sectors	Adaptation finance and resilience
National Green Finance Strategy and Action Plan	2026-2029	11 targets and 45 actions	Mitigation and adaptation finance, regulatory framework
Low-Carbon Pathways	2053	4 hard-to-abate sectors	Mitigation and technology investments
Building Sector Decarbonization Roadmap	2023-2053	Zero-carbon buildings	Green buildings and sustainable finance
Türkiye National Energy Plan	2022-2035	Mitigation and energy sector	Energy sector investments
Energy Efficiency 2030 Strategy and Second National Energy Efficiency Action Plan	2024-2030	Mitigation and energy targets	Energy efficiency investments
Türkiye Hydrogen Technology Strategy and Roadmap	2053	Mitigation and energy targets	Hydrogen technologies
National Mobility Vehicles and Technologies Road Map	2030	Mitigation	Green mobility technologies
National Circular Economy Strategy and Action Plan	2025-2028	7 mitigation sectors	Mitigation implementation
National Water Plan	2026-2035	8 strategic goals and 141 actions	Adaptation and resilience
The Water Efficiency Strategy Document and Action Plan Within the Framework of Adaptation to the Changing Climate	2023-2033	Water efficiency in all sectors	Adaptation and resilience
Türkiye Agricultural Drought Mitigation Strategy and Plan	2023-2027	Agriculture, food and water	Adaptation, resilience and capacity building



The continued strengthening of institutional arrangements and country-driven strategies is expected to contribute to:

- Enhanced policy coherence across climate-related sectors;
- Improved coordination among public institutions;
- Greater mobilization of domestic and international climate finance;
- Increased private sector participation;
- Improved climate finance tracking and reporting;
- Stronger climate investment pipelines;
- Accelerated implementation of mitigation and adaptation measures;
- Increased resilience to climate-related risks.

Taken together, these strategies establish a coherent policy framework that links climate objectives with broader economic and social development priorities while supporting a balanced approach to mitigation, adaptation, and sustainable growth.

7.1.4 Role of Local Administrations, Private Sector and Other Stakeholders

Climate action in Türkiye increasingly relies on the active participation of local administrations, financial institutions, private sector, academia, civil society organizations, and international development partners.

Metropolitan municipalities and local administrations play a critical role in implementing climate-related investments and delivering climate-resilient public services. Their responsibilities include urban transport systems, water and wastewater infrastructure, waste management, energy efficiency, green spaces, urban resilience, and local adaptation measures. As climate risks become increasingly localized, the role of municipalities in climate planning and implementation is expected to become even more significant.

Private sector also plays an increasingly important role in supporting the transition towards a low-carbon economy. Businesses and financial institutions are gradually integrating climate-related risks and opportunities into their investment, lending, and operational decisions. Sustainable finance instruments, climate-related disclosures, and emerging carbon market mechanisms are expected to further strengthen private sector participation in climate action.

Academia, research institutions, and civil society organizations contribute through scientific research, innovation, awareness-raising activities, and stakeholder engagement processes. International organizations, development partners, and multilateral development banks (MDBs) continue to support Türkiye through technical assistance, policy dialogue, knowledge sharing, and investment support programmes.

The continued strengthening of cooperation among these stakeholders will be essential for accelerating climate action, mobilizing investment, and ensuring the successful implementation of Türkiye's long-term climate objectives.



7.2 UNDERLYING ASSUMPTIONS, DEFINITIONS AND METHODOLOGIES

The information presented in this chapter has been compiled from a broad range of national and international sources, including climate policy and planning documents, national strategies, investment needs assessments, climate finance studies, sectoral roadmaps, public expenditure analyses, and other relevant analytical reports. The assessment provides an indicative overview of the financial resources, technology development and transfer, and capacity-building support required to facilitate the implementation of Türkiye's climate commitments and long-term sustainable development objectives.

As climate finance is inherently cross-cutting, it spans multiple sectors and funding sources, making it difficult to clearly identify, classify, and monitor climate-related investments. Furthermore, climate finance lacks a universally agreed definition, and many investment projects contain both climate-related and non-climate components. Financial resources originate from diverse public and private actors—including national governments, bilateral and multilateral development partners, international financial institutions and the private sector—further complicating efforts to consistently quantify climate-related expenditures. In addition, although the Paris Agreement has introduced common reporting tables for climate finance, there is not yet a globally harmonized methodology for tracking and measuring climate-related investments. Like many developing countries, Türkiye continues to strengthen its institutional and technical capacities to fully implement these reporting requirements.

Consequently, Türkiye does not yet have a standardized methodology or institutional mechanism for systematically tracking and reporting climate-related public and private investments. Although the Climate Change Mitigation and Adaptation Strategies and Action Plans identify sectoral mitigation and adaptation measures across energy, industry, transport, buildings, agriculture, waste, and land use, land-use change and forestry (LULUCF), the climate-specific share of these investments cannot yet be quantified due to the absence of a common climate finance tracking methodology. This underscores the need for a comprehensive climate finance tracking, reporting, and monitoring framework to systematically identify, classify, and assess climate-related investments across sectors.

This assessment covers the support required to implement Türkiye's Second NDC, LTS, the Climate Change Mitigation Strategy and Action Plan, the Climate Change Adaptation Strategy and Action Plan, as well as other national development and sectoral policy frameworks. It identifies support needs across the three means of implementation recognized under the Paris Agreement:

- Financial support;
- Technology development and transfer;
- Capacity-building and institutional strengthening.

These three dimensions are closely interconnected and mutually reinforcing. Effective climate action requires adequate financial resources, access to climate technologies, and strong institutional and human capacities to ensure their successful deployment and long-term sustainability.

For the purposes of this report, climate finance refers to financial resources directed toward activities that support climate change mitigation, adaptation, resilience-building, and the implementation of climate-related policies and measures. These resources encompass investments



in renewable energy, energy efficiency, industrial decarbonization, sustainable transport, green buildings, circular economy initiatives, waste management, sustainable agriculture, forestry and land-use management, as well as adaptation measures that reduce vulnerability and strengthen the resilience of communities, infrastructure, ecosystems, and economic sectors.

The estimated support needs include the full range of resources required to implement climate action effectively, including capital investments, technology deployment, project preparation and development, institutional strengthening, capacity building, risk mitigation instruments, and the establishment of measurement, reporting, and verification (MRV) systems. The assessment also reflects ongoing policy developments, including the implementation of the Climate Law, the national ETS, the green taxonomy, sustainable finance reforms, and broader efforts to strengthen climate finance governance.

The estimates presented in this chapter should be regarded as indicative rather than exhaustive. Climate-related investment needs are influenced by evolving economic conditions, technological progress, policy and regulatory developments, climate risks, and international market dynamics. Inflation, exchange rate fluctuations, interest rates, technology costs, innovation pathways, the severity of climate impacts, and changes in national and international climate policies may all affect future financing requirements. Consequently, support needs are expected to evolve over time and should be periodically updated as new information, methodologies, and policy priorities emerge.

The assessment is guided by the principles of national ownership, alignment with development priorities, cost-effectiveness, climate resilience, inclusiveness, transparency, environmental integrity, private sector engagement, and long-term sustainability. These principles provide the basis for identifying and prioritizing support needs while ensuring that climate-related investments contribute simultaneously to the implementation of Türkiye's commitments under the Paris Agreement and to broader economic, social, and sustainable development objectives.

Accordingly, the support needs identified in this chapter are intended to facilitate the implementation of Türkiye's NDC and its transition to a climate-resilient, competitive, and net-zero economy. In estimating the scale, this report considers both the investment needs associated with the implementation of the Second NDC and, where relevant, the longer-term investment projections developed under sectoral studies that inform Türkiye's 2053 net-zero emissions target. Incorporating these longer-term projections provides greater predictability regarding future support requirements and reflects the long-term nature of the country's climate transition. The analysis therefore presents an integrated overview of the means of implementation required to support the achievement of Türkiye's climate and sustainable development objectives.

Unless otherwise indicated, the investment estimates presented in this chapter are reported in the original United States Dollar (USD) or Turkish Lira (TRY) values provided by the referenced studies and do not involve any conversion based on prevailing TRY/USD exchange rates.

7.3 INFORMATION ON FINANCIAL SUPPORT NEEDED

Türkiye's transition towards a climate-resilient, competitive and net-zero economy will require a substantial scaling-up of financial resources across mitigation, adaptation, technology deployment, resilience-building, and institutional strengthening. The scale of financing needs reflects both the ambition of Türkiye's Second NDC and the long-term transformation implied by the 2053 net-zero emissions target.



Türkiye is already implementing climate-related investments across all major mitigation and adaptation sectors. However, available assessments indicate that existing public resources and current climate finance flows remain insufficient compared with the investment requirements associated with the country's climate objectives. According to a study conducted by ODI Global³¹⁶, Türkiye will need to mobilize more than USD 500 billion for investments in green energy, buildings, and transport in order to meet its NDC-related commitments. The Twelfth Development Plan similarly underlines the magnitude of the climate finance gap, estimating that the annual additional investment required to achieve the 2053 net-zero emissions target corresponds to at least 1.7 percent of Gross National Income across the energy, buildings, industry, transport, agriculture, and forestry sectors. Of this amount, approximately 1 percentage point is expected to be mobilized from the private sector and 0.7 percentage points from the public sector.

The World Bank's Türkiye Country Climate and Development Report³¹⁷ provides further evidence of the scale of investment required for a net-zero pathway. According to the report, Türkiye would need approximately USD 68 billion in additional investments during 2022-2030 and USD 165 billion during 2022-2040. These additional requirements come on top of already significant baseline investment needs in key sectors and illustrate the need for a coordinated financing strategy combining domestic public resources, international climate finance and private capital mobilization.

Climate finance requirements are particularly significant in sectors with high mitigation potential and large investment needs, including renewable energy, energy efficiency, electricity grids, industrial decarbonization, sustainable transport, and building transformation. At the same time, adaptation finance needs are increasing due to Türkiye's exposure to droughts, water scarcity, floods, heatwaves, forest fires, and other climate-related risks. Investments in water management, climate-resilient agriculture, disaster risk reduction, urban resilience, ecosystem restoration, and nature-based solutions are therefore essential to reduce vulnerability and safeguard long-term development gains.

The financing challenge is not limited to capital investments. Türkiye also requires resources for project preparation, technology deployment, risk mitigation instruments, institutional capacity-building, climate finance tracking, monitoring, and reporting systems, and the development of bankable project pipelines. In particular, adaptation investments often generate broad social and environmental benefits but limited direct financial returns, making concessional finance, grants, guarantees, and blended finance mechanisms especially important.

Meeting Türkiye's climate finance needs will therefore require a diversified and coordinated approach. Public finance will remain essential, particularly for adaptation, resilience, and enabling infrastructure. However, given the scale of investment required, public resources will need to be used more strategically to leverage private capital.

The following sections present available estimates of Türkiye's financial support needs on an economy-wide and sectoral basis. The analysis draws on national strategies, development plans, sectoral roadmaps, and international assessments. While the estimates are indicative and subject to further refinement, they provide a consolidated overview of the scale and nature of financial

316. For relevant information, please see <https://odi.org/en/insights/financing-the-climate-transition-in-turkiye-five-key-takeaways/>

317. The document can be found at <https://documents1.worldbank.org/curated/en/099006106072221642/pdf/P177479041cc100c80bacc031005338a440.pdf>



support required to implement Türkiye's Second NDC, advance adaptation priorities, and support the country's long-term green transition.

7.3.1 Economy-Wide Climate Investment Needs

Recent national and international assessments consistently indicate that Türkiye's climate investment requirements significantly exceed current levels of public expenditure and existing climate finance flows. While estimates vary according to the scope, methodology, and time horizon of the underlying analyses, they demonstrate that several hundred billion US dollars of additional investment will be required over the coming decades to support the country's low-carbon and climate-resilient transition. These findings underline the importance of strengthening domestic resource mobilization while significantly scaling up international climate finance and private sector participation.

More recent assessments suggest that the financing requirements may be considerably higher as Türkiye raises its climate ambition. Analyses undertaken under Türkiye's National Energy Plan and subsequent energy transition scenarios indicate that achieving the country's enhanced renewable energy objectives, electricity system transformation, and industrial decarbonization pathways will require unprecedented levels of investment over the next three decades.

Although investment requirements are concentrated in the energy sector, substantial financing will also be needed for industrial modernization, transport electrification, energy-efficient buildings, climate-smart agriculture, sustainable water management, circular economy investments, and ecosystem restoration. In parallel, adaptation investment needs are also expected to increase as climate impacts intensify, requiring additional resources for strengthening the country's resilience.

The composition of climate finance will therefore need to evolve alongside the scale of investment. Public finance will continue to play a catalytic role, particularly in financing adaptation, enabling infrastructure and public goods. However, given the magnitude of the required investments, public resources alone will not be sufficient. Closing the financing gap will require stronger private sector mobilization through sustainable finance instruments, blended finance, public-private partnerships, carbon markets, and an enabling policy environment. At the same time, concessional finance and international climate support will remain essential, particularly for adaptation and capacity-building.

Considering the long-term nature of the transition, investment requirements should not be viewed solely as additional expenditure but as strategic investments that will strengthen Türkiye's energy security, industrial competitiveness, technological capabilities, and climate resilience.

7.3.2 Mitigation Investment Needs

Mitigation investments constitute the largest component of Türkiye's overall climate finance needs. Achieving the emission reduction targets under the Second NDC and the 2053 net-zero emissions target will require a comprehensive transformation of energy production and consumption systems, industrial processes, transport infrastructure, buildings, and land-use practices. While the scale of investment varies across sectors, all analyses consistently identify the energy transition as the principal driver of future climate investment needs.

7.3.2.1 Energy

The energy sector is Türkiye's largest source of greenhouse gas emissions and accounts for the highest share of climate-related investment needs. Electricity demand is projected to rise from



380.2 TWh in 2025 to 455.3 TWh in 2030 and 510.5 TWh in 2035³¹⁸, reflecting economic growth, industrialization, and broader electrification trends, including electric vehicles, data centres, and rising cooling needs. Türkiye's energy strategy prioritizes electrification, aiming to meet 35% of final energy consumption from electricity by 2035 through accelerated uptake in transport, buildings, and industry. Achieving this objective will require around USD 80 billion to modernize and strengthen electricity transmission and distribution infrastructure, ensuring greater resilience, reliability, and security of supply.

Türkiye has significantly increased its renewable energy ambition in recent years. Under the updated National Energy Plan and subsequent policy announcements, the country aims to expand installed wind and solar capacity to approximately 120 GW by 2035 (triple the current level), requiring investments estimated at around USD 108 billion in renewable electricity generation, transmission infrastructure, storage systems, and demand response technologies. Complementary investments will also be required to modernize the electricity grid, integrate variable renewable energy sources, and improve system flexibility.

In line with Türkiye's target of tripling its renewable energy capacity by 2035, significant investments are being directed toward strengthening and expanding the electricity transmission network to accommodate the increasing integration of renewable energy sources. To accommodate the substantial expansion of renewable energy generation and enhance grid flexibility and reliability, the national electricity network is being modernized through the development of a 40 GW High Voltage Direct Current transmission corridor. The implementation of this strategic infrastructure is expected to require investments of approximately USD 30 billion and is envisaged to play a critical role in facilitating the large-scale integration of renewable energy into the power system.³¹⁹

Under the Net Zero 2053 scenario, Türkiye will need USD 526 billion in energy-sector investments over 2021-2055, averaging USD 15 billion annually.³²⁰ Of this, 62 percent is allocated to new renewable generation and storage capacity, while the remainder is directed to grid infrastructure to support system integration. Investment needs are expected to rise significantly after 2035 due to accelerated electrification of demand, before gradually declining after 2050 as energy demand stabilizes and the system approaches net-zero emissions.

The role of green hydrogen in climate action is expanding, driven by its potential to decarbonize hard-to-abate sectors and facilitate renewable energy integration. According to a study by SHURA Energy Transition Center and Energy Policy Research Center³²¹, achieving a total production of 3.4 million tonnes of green hydrogen would require annual investments of approximately USD 3-4 billion up to 2050.

Türkiye's energy transition will therefore depend on scaling up renewable energy, reinforcing grid infrastructure, expanding storage and flexibility solutions, improving energy efficiency, and deploying emerging technologies such as green hydrogen.

318. Ministry of Energy and Natural Resources. <https://enerji.gov.tr/bilgi-merkezi-enerji-elektrik>

319. The relevant information can be found at <https://enerji.gov.tr/news-detail?id=31863>

320. SHURA Energy Transition Center, "Net Zero 2053: A Roadmap for the Turkish Electricity Sector", https://shura.org.tr/wp-content/uploads/2023/05/SHURA-2023-02-Rapor-Net-Zero-2053_Executive_-Summary_03052023-EN.pdf

321. SHURA Energy Transition Center and Energy Policy Research Center, "Techno-economic study of Turkey's production and export potential for green hydrogen", https://shura.org.tr/wp-content/uploads/2024/12/SHURA-2021-12-Techno-Economic-Study-of-Turkeys-Production_EN.pdf



Energy efficiency remains another major investment priority. The Second National Energy Efficiency Action Plan envisages approximately USD 20.2 billion in investments between 2024 and 2030, combining public incentives with significantly larger private sector investments. These measures are expected to reduce energy demand, improve industrial productivity, and enhance energy security while contributing substantially to emission reductions.

Table 46 – Estimated energy investment needs

Area	Estimated Investment Needs
Renewable energy deployment by 2035 (Increase Türkiye's renewable energy installed capacity to 120 GW in wind and solar by 2035)	USD 108 billion
Modernization of national electricity network through the development of a 40 GW High Voltage Direct Current transmission corridor.	USD 30 billion
Energy efficiency investments (2024-2030)	USD 20.2 billion

Long-term energy transition scenarios further illustrate the magnitude of financing needs. Recent analyses indicate that achieving a fully decarbonized energy system by 2053 will require cumulative investments substantially exceeding short-term planning horizons, including major investments in renewable generation, electricity networks, storage technologies, hydrogen production, and digital energy infrastructure. These investments are expected to strengthen Türkiye's energy independence while improving economic competitiveness and reducing exposure to fossil fuel price volatility.

7.3.2.2 Industry

Industrial transformation represents the second largest area of mitigation investment. Particular attention is being given to energy-intensive sectors. Investments are required not only to reduce emissions but also to preserve industrial competitiveness and maintain access to export markets. Sectoral low-carbon pathways developed for the cement, steel, aluminium, and fertilizer industries identify significant investment requirements extending to 2053. In the cement sector, total investment needs are estimated at USD 29.8-30.7 billion, and approximately 80 percent of this amount is expected to be directed to Carbon Capture, Utilization and Storage (CCUS) technologies. This shows that the cost structure of the green transition in cement is largely dependent on a single, capital-intensive, and radical technology, and that financing risk is highly concentrated. Total investment needs in the steel sector are in the range of USD 31.4 billion, while in the aluminium sector the relatively smaller investment need of USD 4.36-4.83 billion is concentrated—by around 90 percent—in processing facilities rather than primary production. This finding indicates that the transition generates widespread investment needs across the supply chain, not only in large integrated plants. In the fertilizer sector, transition costs are shaped by strategic choices. Between maintaining an import-dependent structure and developing domestic and green production capacity, there is a total investment need of USD 5.3 to 16.6 billion for fertilizer production.



Table 47 – Estimated industry decarbonization investment needs

Sector	Estimated Investment Needs
Steel	USD 31.4 billion
Cement	USD 29.8 - 30.7 billion
Aluminium	USD 4.83 billion
Fertilizers	USD 5.3 - 16.6 billion

Industrial decarbonization also requires investments in innovation, R&D, digitalization, and advanced manufacturing technologies. Strengthening technological capabilities and facilitating access to sustainable finance will therefore be essential to accelerate industrial transformation while ensuring long-term competitiveness. Within this context, the Digital Transformation Program (under Presidential Decree No. 9903) provides a national investment-incentive channel for manufacturing enterprises to implement digital transformation roadmaps and invest in systems that improve process visibility, production planning, quality control, predictive maintenance, energy and resource management, traceability, and supply-chain coordination.

7.3.2.3 Transport

The transport sector requires substantial investments to support the transition to low-carbon mobility. National investment priorities focus on expanding railway infrastructure, accelerating transport electrification, promoting electric vehicles, and developing charging infrastructure.

Türkiye's long-term transport strategy envisages significant investments in railway expansion, including high-speed rail networks, along with broader investments in transport and logistics infrastructure extending to 2053. Railway investments under the National Transport and Logistics Master Plan³²² are estimated at around USD 29 billion (in 2019 prices). As part of its 2053 vision, Türkiye intends to invest a total of USD 198 billion in transportation and communications infrastructure, including rail, road, maritime, and air, by 2053. Out of this figure, USD 70 billion is to be invested in the railway sector for 8.554 km of railway construction. By 2040, USD 20 billion should be allocated to transport electrification to stay on track for the 2053 net-zero emissions target.

Besides railway investments, electric vehicles play a crucial role in combating climate change by offering a significant means to lower transportation-related emissions and minimize dependence on fossil fuels, thereby contributing to a more sustainable and environmentally friendly future. To meet the charging requirements of an expected 2.5 million vehicles, about USD 1 billion is estimated to be invested in charging infrastructure by 2030, and total investment will likely increase to USD 2 billion by 2035. Additional investments will also be required to deploy electric vehicle charging infrastructure capable of supporting the rapid growth of electric mobility. Electrification of public transport systems, intelligent transport solutions, and modal shifts towards rail and public

322. The document can be found at <https://www.uab.gov.tr/media/3cgbeluf/20221025-2053-ulasirma-ve-lojistik-ana-plani-eng.pdf>



transport are expected to contribute significantly to emission reductions while improving energy efficiency and urban air quality.

Table 48 – Estimated transport sector investment needs

Area	Estimated Investment Needs
Rail investments by 2030	USD 29 billion
Rail investments by 2053	USD 70 billion
Electrification of transport sector by 2040	USD 20 billion
EV charging infrastructure by 2030	USD 1 billion
EV charging infrastructure by 2035	USD 2 billion

7.3.2.4 Buildings

The buildings sector offers considerable opportunities for cost-effective emission reductions through energy-efficient construction, deep renovation of existing buildings, electrification of heating systems, and integration of renewable energy technologies. Investment priorities include improving thermal insulation, increasing the energy performance of public and residential buildings, promoting nearly zero-energy buildings, and expanding the use of heat pumps and rooftop solar systems.

Given Türkiye's large and continuously growing building stock, together with the need for post-earthquake reconstruction, integrating climate resilience and energy efficiency into urban redevelopment programmes will remain a major investment priority over the coming decades.

7.3.2.5 Waste and Circular Economy

Türkiye has demonstrated global leadership in promoting sustainable consumption and waste management through its flagship Zero Waste Initiative, which has become an internationally recognized model for advancing circular economy principles. Türkiye's ambitious agenda on waste and circular economy demands significant investments. Additional investments are required to improve waste management systems, expand recycling and recovery facilities, reduce CH₄ emissions, and strengthen circular economy practices. Priority areas include separate collection systems, material recovery facilities, landfill gas capture, waste-to-energy applications, and improved hazardous waste management.

The National Waste Management and Action Plan 2023³²³ illustrated the public investment requirements for waste management initiatives, which encompass facility investments in recovery, pre-treatment, intermediate storage, and disposal methods for various waste types. These investments, planned until 2023, were estimated to range between EUR 1.7 billion and EUR 2.9 billion, contingent upon the chosen technological approach, by contributing simultaneously to climate mitigation, resource efficiency, and environmental protection.

323. For the document, please visit https://webdosya.csb.gov.tr/db/cygm/haberler/ulusal_at-k_yonet-m--eylem_plan--20180328154824.pdf



7.3.2.6 LULUCF and Nature-Based Solutions

Nature-based mitigation measures constitute another important component of Türkiye's mitigation strategy. Investments are needed to strengthen sustainable forest management, afforestation and reforestation programmes, forest fire prevention, ecosystem restoration, and carbon sequestration. Enhancing the resilience of forest ecosystems and increasing carbon sinks will contribute both to emission reductions and to adaptation objectives, generating significant environmental and socio-economic co-benefits. Some cost analyses have been performed by the World Bank regarding the sector, with a special emphasis on forestry. The Bank estimates that Türkiye's forest landscape initiatives will require an additional USD 2 billion for restoration, reforestation, and fire management between 2022 and 2030, with this need potentially rising to USD 3 billion by 2040.³²⁴

Overall, mitigation investments are expected to account for the largest share of Türkiye's climate finance needs over the coming decades. Although energy transformation will remain the principal investment priority, achieving the country's climate objectives will require a balanced portfolio of investments across all sectors, supported by enabling policies, technological innovation, strengthened institutional capacity, and enhanced access to domestic and international climate finance.

7.3.3 Adaptation Investment Needs

Unlike mitigation investments, which are primarily driven by sector-specific decarbonization pathways and quantified emission reduction targets, adaptation investments are intended to strengthen the resilience of communities, ecosystems, infrastructure, and economic sectors against the intensifying impacts of climate change. As climate risks intensify, adaptation is becoming an increasingly important component of Türkiye's long-term climate investment strategy and requires sustained financial resources across multiple sectors.

Türkiye is already experiencing the impacts of climate change through increasing temperatures, prolonged droughts, water scarcity, floods, forest fires, heatwaves, coastal erosion, and biodiversity loss. These impacts are expected to become more frequent and severe over the coming decades, increasing the need for investments that reduce climate vulnerability while safeguarding economic growth, food security, public health, and critical infrastructure.

Compared with mitigation, estimating adaptation finance needs remains considerably more challenging. Adaptation actions are highly context-specific, generate multiple environmental and social benefits, and frequently span several sectors simultaneously. Furthermore, many adaptation measures involve public goods whose benefits are realized over long time horizons and are difficult to monetize. Consequently, neither Türkiye nor the international community has yet established a universally accepted methodology for quantifying economy-wide adaptation investment needs.

Although comprehensive national estimates are still under development, available assessments consistently indicate that adaptation financing requirements will increase substantially over the coming decades. International studies, including the UNEP Adaptation Gap Report, estimate that upper-middle-income countries require adaptation investments equivalent to approximately 0.5 percent of GDP annually, suggesting that Türkiye's annual adaptation financing needs could reach approximately USD 5-7 billion, depending on climate scenarios, macroeconomic assumptions, and methodological approaches. These estimates should be interpreted as indicative rather

³²⁴. World Bank, Türkiye Country Climate and Development Report, 2022.



than definitive, highlighting the need for more detailed national assessments and sector-specific investment planning.

At the national level, adaptation priorities are identified in the Second NDC, the Climate Change Adaptation Strategy and Action Plan, the LTS, and the Local Climate Change Adaptation Action Plan. Together, these policy frameworks emphasize strengthening resilience in water resources, agriculture, forestry, biodiversity, urban systems, disaster risk management, public health, transport, energy infrastructure, and coastal areas. While detailed investment estimates are not yet available for all sectors, these documents provide a comprehensive basis for identifying priority investment areas and guiding future resource allocation.

Water resources management represents one of the highest adaptation priorities. Increasing water stress, prolonged droughts, and changing precipitation patterns require investments in integrated river basin management, climate-resilient irrigation systems, water reuse, leakage reduction, storage infrastructure, groundwater protection, and digital water management technologies. Strengthening water resilience will also contribute to resilience in agriculture, industry, and urban areas.

Climate-smart agriculture constitutes another major investment priority. Future financing requirements include drought-resistant crop varieties, efficient irrigation technologies, soil conservation, sustainable land management, early warning systems, agricultural insurance mechanisms, and research supporting climate-resilient farming practices. These investments are essential for maintaining food security, protecting rural livelihoods, and reducing climate-related production risks.

Urban resilience and disaster risk reduction will also require significant financial resources. Investments are needed to improve stormwater drainage systems, flood protection infrastructure, urban green spaces, heat island mitigation measures, resilient public buildings, and climate-proof transport infrastructure. Integrating climate resilience into urban planning and post-disaster reconstruction will become increasingly important as cities face growing climate-related risks.

Nature-based solutions represent another cost-effective adaptation priority. Ecosystem restoration, sustainable forest management, wetland conservation, afforestation, and coastal ecosystem protection contribute simultaneously to climate adaptation, biodiversity conservation, and carbon sequestration while providing significant social and economic co-benefits.

In addition to physical infrastructure, adaptation requires sustained investments in institutional capacity, climate information systems, vulnerability assessments, early warning systems, research, digital monitoring platforms, and local adaptation planning. Strengthening institutional coordination and improving the capacity of national and local authorities to design, prepare, and implement adaptation projects will be essential for improving access to international climate finance and ensuring the effective implementation of adaptation policies.

Given the public-good characteristics of many adaptation measures and their limited direct financial returns, adaptation financing is expected to rely heavily on public budgets, concessional finance, grants, and international climate funds. Mobilizing private investment will remain more challenging than in mitigation and will therefore require innovative financing mechanisms, blended finance structures, and stronger public-private cooperation. Expanding access to adaptation finance will be particularly important for local governments, vulnerable communities, and sectors with limited investment capacity.



Overall, strengthening climate resilience requires a long-term investment approach that integrates adaptation considerations into national development planning, public investment programmes, and sectoral policies. As climate impacts continue to intensify, increasing adaptation finance will be indispensable not only for reducing vulnerability but also for protecting economic competitiveness, social welfare, and sustainable development.

7.3.4 Climate Finance Gap and Priority Areas for International Support

While Türkiye continues to strengthen domestic climate finance mobilization through ongoing policy and regulatory reforms, the scale and pace of the transition required under the Second NDC and the 2053 net-zero emissions target exceed the capacity of currently available public resources and market-based financing alone. Closing the remaining financing gap will therefore require sustained international support alongside increased private sector participation.

The financing challenge is particularly pronounced for adaptation and enabling investments, including project preparation, institutional strengthening, climate information systems, and resilience-building measures, many of which generate substantial public benefits but limited direct financial returns. As a result, these investments continue to rely heavily on concessional finance, grants, and technical assistance.

International support should therefore focus not only on increasing the volume of available finance but also on improving its accessibility, affordability, and catalytic impact. Expanding the use of blended finance, guarantees, risk-sharing mechanisms, and other de-risking instruments will be essential for mobilizing private capital and improving the bankability of climate investments. In parallel, technical assistance and project preparation support will play a critical role in developing a stronger pipeline of investment-ready projects, particularly at the municipal level.

Overall, predictable, accessible, and adequately scaled international support—complemented by technology development and transfer, capacity-building, and stronger private sector engagement—will remain essential for accelerating the implementation of Türkiye's climate policies and supporting a resilient, low-carbon, and competitive development pathway.

7.4 INFORMATION ON FINANCIAL SUPPORT RECEIVED

Türkiye has continued to expand its cooperation with MDBs, bilateral development agencies, multilateral climate funds, and other development partners to support the implementation of its climate policies and sustainable development objectives. In addition to domestic public resources and private investments, international financial and technical support has played an increasingly important role in financing mitigation and adaptation investments, strengthening institutional capacities, and facilitating policy reforms across multiple sectors.

Climate-related support has been provided through a diverse range of financial instruments, including sovereign and non-sovereign loans, concessional finance, grants, technical assistance, guarantees, blended finance mechanisms, project preparation facilities, and advisory services. Beyond financing individual investment projects, international cooperation has contributed to strengthening policy frameworks, improving institutional capacity, enhancing project preparation, and supporting the development of sustainable finance markets. These interventions have also helped mobilize private investment by reducing investment risks and improving the bankability of climate-related projects.



International cooperation has supported a broad range of climate-related activities, including renewable energy deployment, energy efficiency, industrial decarbonization, sustainable transport, municipal infrastructure, climate-resilient urban development, water resource management, biodiversity conservation, and sustainable land management. Technical assistance programmes have also supported analytical studies, climate policy development, carbon market preparedness, MRV systems, sustainable finance, project preparation, and institutional strengthening. These activities have enhanced Türkiye's capacity to design, finance, and implement climate-related investments while improving access to international climate finance.

Türkiye has established strong partnerships with a broad range of MDBs and bilateral development partners, including the World Bank Group, EBRD, the European Investment Bank, the Asian Infrastructure Investment Bank (AIIB), the Asian Development Bank (ADB), the Islamic Development Bank, the Council of Europe Development Bank, Agence Française de Développement, the German Development Bank, and the Japan Bank for International Cooperation. International climate funds, particularly the Climate Investment Funds (CIF) and the GEF, have further complemented these efforts by supporting climate-related investments, technical assistance, and institutional capacity development.

Türkiye's partnerships with MDBs are country-driven and guided by mutually agreed country strategies that reflect national development priorities and investment needs. For example, the EBRD's 2024-2029 Country Strategy³²⁵ for Türkiye aligns its support with the country's priorities by focusing on four strategic areas: accelerating the green transition, strengthening human capital and inclusion, enhancing competitiveness and governance, and improving infrastructure and regional integration. EBRD's flagship initiatives, such as the Sustainable Energy Financing Facility and the Green Economy Financing Facility, have contributed significantly to expanding access to green finance, mobilizing private sector participation, and accelerating investments in energy efficiency, renewable energy, and other climate-related projects. Türkiye is one of the most active participants in the EBRD Green Cities Programme, using the initiative to strengthen climate-resilient and low-carbon urban development through integrated planning and investment. To date, major cities including Ankara, Gaziantep, Izmir, Istanbul, Bursa, and Mersin have joined the programme to deliver sustainable investments in urban transport, water, wastewater, renewable energy, and municipal services.

The World Bank Group's Country Partnership Framework for Türkiye³²⁶, covering 2024-2028, serves as a strong example of the strategic, financial, and technical cooperation underpinning the partnership between Türkiye and the World Bank Group. This Framework provides a comprehensive platform for mobilizing financial resources, technical assistance, and private sector engagement, with a strong emphasis on supporting productive investments, sustainable development, climate resilience, and private sector-led growth.

AIIB's Country Program for Türkiye³²⁷ presents a strategic framework for deepening cooperation on climate and sustainability priorities. A Memorandum of Understanding signed with AIIB in

325. The document is accessible at https://www.ebrd.com/content/dam/ebrd_dxp/assets/pdfs/country-strategies/t%C3%BCrkiye/turkiye-country-strategy.pdf

326. For the document, please visit <https://documents1.worldbank.org/curated/en/099031824111097800/pdf/BOSIB1c51810200bb1b42411382658e7899.pdf>

327. For relevant information, please see <https://www.aiib.org/en/news-events/news/2025/aiib-turkiye-formalize-strategic-partnership-green-resilient-infrastructure.html>



2025 establishes a three-year rolling sovereign-backed investment programme for 2025-2027. Aligned with Türkiye's Twelfth Development Plan and LTS, the programme prioritizes climate and seismic resilience, sustainable transport, water management, the energy transition, and disaster preparedness.

Starting in 2025, the ADB commenced operations in Türkiye, marking the beginning of a new strategic partnership. The Interim Country Partnership Strategy (2025-2027)³²⁸ provides the overarching framework for ADB's engagement, guiding public and private sector financing, technical assistance, analytical work, and policy dialogue. The strategy aims to establish a strong and sustainable partnership by supporting people-centered, inclusive, and resilient development through integrated public and private sector solutions.

Türkiye has close collaboration with multilateral climate funds, particularly the CIF and GEF, which complement the support provided by MDBs. Under the CIF, Türkiye has successfully implemented its Renewable Energy Integration Investment Plan to accelerate renewable energy deployment and strengthen grid flexibility. The country has been selected to benefit from the CIF's Industry Decarbonization Program, which aims to support the transition of energy-intensive industries toward low-carbon production. In parallel, the GEF has been a long-standing partner in providing grant financing and technical assistance to strengthen national capacities, support policy development, and pilot innovative approaches in areas such as climate change mitigation, biodiversity, chemicals and waste management, and sustainable land management.

International support has gradually evolved from conventional infrastructure project financing toward a broader portfolio combining investment finance, technical assistance, institutional strengthening, and policy support. While earlier cooperation primarily focused on financing infrastructure investments, recent programmes increasingly support resilience strengthening, carbon market development, industrial decarbonization, climate governance, and project preparation. This evolution reflects Türkiye's transition from project-based climate investments toward a more comprehensive climate policy and finance framework.

This collaboration is mutually reinforcing: while these institutions provide financing, technical expertise, and policy support, Türkiye offers a robust pipeline of climate-aligned investment opportunities across key sectors, thereby contributing to the global effort to address climate change.

Overall, while the level of international support received to date remains significantly modest relative to Türkiye's estimated climate investment requirements, it has played a significant role in strengthening the country's climate finance ecosystem, institutional capacities, and investment readiness. Investment financing, technical assistance, and policy support have advanced climate action and reinforced the institutional foundations needed to achieve Türkiye's long-term climate and sustainable development objectives.

328. The document can be found at <https://www.adb.org/sites/default/files/institutional-document/1082181/icps-tur-2025-2027.pdf>



7.5 INFORMATION ON TECHNOLOGY DEVELOPMENT AND TRANSFER SUPPORT NEEDED

Technology development and transfer are fundamental to achieving Türkiye's mitigation, adaptation, and long-term climate objectives. Accelerating the development, deployment, commercialization, and diffusion of advanced climate technologies will be essential to reducing greenhouse gas emissions, strengthening climate resilience, improving resource efficiency, and maintaining industrial competitiveness. While Türkiye has made significant progress in renewable energy, energy efficiency, and clean technologies, important technology gaps remain across key sectors, including energy, industry, transport, buildings, agriculture, waste management, and climate adaptation. Addressing these gaps will require enhanced international cooperation through technology transfer, joint research and innovation, demonstration projects, technical assistance, concessional finance, and strengthened innovation ecosystems.

Technology development forms an integral part of Türkiye's climate and development agenda and is embedded across the country's major policy frameworks, including the Second NDC, LTS, the Twelfth Development Plan, the Medium-Term Programme (2026-2028), the Green Deal Action Plan, and the Climate Change Mitigation and Adaptation Strategy and Action Plans. Collectively, these frameworks promote the development and deployment of low-carbon and climate-resilient technologies while strengthening domestic innovation capacity, industrial competitiveness, and technological self-reliance. Priority technology areas consistently include renewable energy, hydrogen, CCUS, battery and energy storage systems, digital technologies, circular economy solutions, sustainable transport, climate-smart agriculture, and advanced adaptation technologies.

The Medium-Term Programme (2026-2028) further positions the green and digital transition as a key driver of Türkiye's sustainable development and industrial transformation. The Programme prioritizes investments in renewable energy, energy efficiency, sustainable transport, climate-resilient infrastructure, and digital transformation while supporting research, development, and innovation in strategic technologies, particularly within the hydrogen value chain. It also envisages the preparation of a comprehensive technology roadmap to facilitate the transition towards integrated, efficient, safe, and environmentally sustainable intelligent transport systems.

Building on these strategic policy frameworks, the Science and Technology Commission of the Climate Council identified five long-term technology priority areas in 2022 to guide research, innovation, and technology development in support of climate mitigation and adaptation objectives.

Table 49. Long-term technology priorities

Area	Technology Priorities
Climate Change, Environment and Biodiversity	Advancing climate modeling, risk assessment, and digital solutions to strengthen resilience
Clean and Circular Economy	Promoting circular economy technologies, resource efficiency, waste valorization, and CCUS solutions
Clean, Accessible and Secure Energy	Supporting renewable energy deployment, hydrogen technologies, and energy storage systems
Green and Sustainable Agriculture	Encouraging smart agricultural practices, sustainable production technologies, and bio-based solutions
Sustainable Smart Transportation	Fostering low-emission mobility, autonomous transport technologies, and smart charging infrastructure



To accelerate industrial decarbonization and strengthen technological competitiveness, Türkiye has developed complementary policy initiatives that guide technology development, innovation, and investment in low-carbon industries. These initiatives support the transition of energy-intensive sectors while promoting the commercialization and domestic production of strategic clean technologies.

The Green Growth Technology Roadmap³²⁹ provides a long-term framework for the decarbonization of key industrial sectors, including iron and steel, aluminium, cement, chemicals, plastics, and fertilizers. Using a life-cycle approach, the roadmap identifies technology priorities for 2026, 2030, and 2035, guiding research, innovation, and investment towards cleaner production processes, resource efficiency, and industrial competitiveness. Priority technology areas include:

- **Energy Efficiency and Renewable Energy:** Low-carbon production, electrification, and renewable energy integration.
- **Waste Management and Recycling:** Advanced sorting, resource recovery, and recycling technologies.
- **Process Optimization and Advanced Materials:** Digitalization, process efficiency, and sustainable materials.
- **CCUS:** Carbon capture, utilization, and storage solutions for hard-to-abate sectors.
- **Biotechnology and Biochemistry:** Biomass-based production and renewable bio-based products.

Complementing the Roadmap, the HIT-30 High Technology Investment Programme identifies green energy as one of Türkiye's strategic investment priorities. The Programme supports investments in green hydrogen, electrolyzers, wind and solar manufacturing technologies, battery and energy storage systems, battery components, and the processing of critical minerals required for clean energy technologies. Notably, the Programme allocates USD 4.5 billion to battery technologies, reflecting Türkiye's commitment to strengthening domestic manufacturing capacity and developing strategic clean technology value chains. In this context, consideration may also be given to strengthening national capabilities and international cooperation in the sustainable extraction, separation, purification, recycling, and value-added processing of rare earth elements, which are important inputs for permanent magnets used in wind turbines, electric vehicles, and other low-carbon technologies.

Together, these initiatives provide an integrated framework for accelerating industrial innovation, expanding domestic technology production, and supporting Türkiye's transition toward a competitive low-carbon economy.

Meanwhile, the Climate Change Mitigation Strategy and Action Plan translates Türkiye's long-term technology vision into sector-specific priorities by identifying the technological interventions required to accelerate emission reductions across the economy.

329. The relevant information can be found at <https://tubitak.gov.tr/tr/kurumsal/politikalar/yesil-buyume-teknoloji-yol-haritasi>

**Table 50 – Technology needs and priorities under the Climate Change Mitigation Strategy and Action Plan**

Sector	Technology needs and priorities
Energy	Priorities include the deployment of low-carbon energy technologies, diversification of electricity generation, and the advancement of hydrogen and CCUS solutions through R&D and innovation. Key focus areas also include smart grids, smart metering, digitalization of energy systems, exploration of modular reactor technologies, and the development of a digital transformation roadmap for the energy sector.
Industry	Priorities focus on accelerating industrial decarbonization through R&D and innovation in CCUS, hydrogen integration, industrial electrification, and heat pump technologies. Additional emphasis is placed on digital MRV systems for energy efficiency in Small and Medium-Sized Enterprises (SMEs) and the introduction of EU-compatible digital product passports to support circular economy practices.
Building	Priorities include expanding the adoption of Building Information Modelling (BIM) across the design, construction, and operation of sustainable, energy-efficient, and low-carbon buildings, while strengthening domestic BIM software capabilities.
Transport	Priorities include expanding sustainable transport infrastructure through high-speed rail, micromobility, and intelligent transport systems, while accelerating the deployment of low- and zero-emission vehicles. Key focus areas also include transport electrification, domestic battery technologies, and the development of smart charging and parking infrastructure for electric vehicles.
Waste	Priorities include strengthening R&D and technological capacity in waste and wastewater management, advancing waste-to-energy solutions such as thermal and biogas conversion technologies, and leveraging digital tools, including AI, advanced sensors, and remote sensing, to improve operational efficiency and resource recovery.
Agriculture	Priorities include advancing climate-smart, sustainable, and digital agriculture through increased R&D in technologies such as drones, sensors, robotics, and data-driven solutions, while strengthening domestic agricultural technologies tailored to the needs of small-scale family farms. Nuclear, isotopic, and radiation-based techniques for developing stress-tolerant crop varieties, improving water and nutrient use efficiency, and reducing post-harvest food losses.
LULUCF	Priorities include strengthening R&D and innovation to enhance carbon stock monitoring and climate resilience, while expanding the use of digital technologies, remote sensing, drones, robotics, and AI in forestry and land-use management. Additional focus is placed on developing integrated drought management solutions and data-driven decision-making tools.

While the Climate Change Mitigation Strategy and Action Plan focuses on accelerating low-carbon technologies across major emitting sectors, the Climate Change Adaptation Strategy and Action Plan promotes the deployment of innovative technologies to strengthen climate resilience. The Strategy emphasizes research, development, and innovation in climate-smart agriculture, water management, disaster risk reduction, and ecosystem protection. Priority technologies include smart irrigation systems, satellite- and sensor-based monitoring, early warning systems, earth observation applications, digital twins, and other advanced digital solutions that improve climate risk assessment, preparedness, and evidence-based decision-making.

Complementing these near- and medium-term priorities, Türkiye's LTS establishes a broader framework for strengthening national technological capabilities and scientific research infrastructure to support the transition to a low-carbon, climate-resilient economy. The Strategy promotes the development, deployment, and commercialization of domestic clean technologies while fostering innovation across key sectors through seven long-term strategic technology pathways.



Table 51 – Strategies for technology development under Türkiye’s LTS

Sector	Details
1. Development of domestic technologies and critical products for the decarbonization of the energy sector, and enhancement of the performance of existing technologies and products:	<p>The development and deployment of domestic clean energy technologies will be accelerated, with a focus on advanced solar, offshore wind, hydrogen, and energy storage solutions. Efforts will also be directed toward the localization of key technology components, including electrolyzers and next-generation batteries.</p> <p>Research and innovation activities will be supported to improve energy storage performance, enhance industrial energy efficiency, and strengthen the integration of renewable energy sources into the energy system.</p>
2. Development of Carbon Capture, Utilization, and Storage Technologies	<p>CCUS technologies will be advanced to support industrial decarbonization, with a focus on innovative carbon removal solutions and the conversion of captured carbon into value-added products. The development of carbon storage infrastructure and industrial collaboration models will be supported to accelerate the deployment and utilization of CCUS technologies.</p>
3. Development of smart city applications	<p>The development of smart city infrastructure will be supported to enable sustainable urban growth and low-carbon mobility. Priority will be given to smart transportation solutions, including electric vehicle ecosystems, charging infrastructure, smart traffic management, and next-generation mobility technologies such as connected, autonomous, and high-speed transport systems.</p>
4. Development of smart agriculture and food technologies	<p>Digital and data-driven technologies will be advanced to improve the sustainability, productivity, and resilience of agricultural and food systems. Efforts will focus on precision agriculture, autonomous farming solutions, resource-efficient production methods, and the valorization of agricultural and food waste through innovative circular economy approaches.</p>
5. Development of integrated ecosystem-focused technologies	<p>Innovative technologies will be developed to strengthen ecosystem resilience and support the sustainable management of marine, freshwater, and terrestrial resources. Priority areas include blue economy solutions, biomass-based technologies, pollution prevention, advanced greenhouse gas monitoring systems, and next-generation climate modeling capabilities.</p>
6. Development of technology and innovation-focused solutions to prevent and minimize the risks, damages, and losses that may arise from disaster types caused by extreme climate events	<p>Advanced technologies will be deployed to reduce climate-related disaster risks and enhance resilience. Efforts will focus on risk assessment tools, decision-support systems, early warning mechanisms, and digital technologies that improve the protection of communities, ecosystems, natural resources, and critical infrastructure.</p>
7. Development of resource efficiency-focused technologies and improvement of waste management	<p>Resource efficiency and circular economy solutions will be promoted through the development of advanced waste and wastewater management technologies. Priority will be given to smart monitoring systems, recycling and recovery technologies, waste-to-energy solutions, biogas and biomethane production, and AI-enabled process optimization to reduce emissions and improve sustainability outcomes.</p>



The priorities identified under the LTS are further operationalized through Türkiye's industrial and technology policies, which seek to accelerate the commercialization, domestic production, and large-scale deployment of strategic low-carbon technologies while strengthening industrial competitiveness and technological self-sufficiency.

The 2030 Industry and Technology Strategy³³⁰ identifies green transformation as one of the main drivers of Türkiye's future industrial development. The Strategy aims to strengthen domestic technological capabilities while accelerating the transition to a resource-efficient, low-carbon, and competitive economy. Priority actions include expanding the domestic production of renewable energy technologies, hydrogen, CCUS, battery and energy storage systems, digital energy solutions, AI applications, industrial energy efficiency, advanced water and waste management technologies, and circular economy practices. At the same time, the Strategy places strong emphasis on developing skilled human resources and strengthening innovation ecosystems to support the large-scale deployment of green technologies.

Türkiye has significantly expanded domestic support mechanisms to accelerate the development, commercialization, and deployment of climate technologies. Public investments in research, innovation, and industrial transformation increasingly target strategic low-carbon technologies while strengthening national technological capabilities and supporting the country's long-term climate objectives.

Public support for R&D has grown substantially over the past two decades. Through TÜBİTAK, TRY 31.5 billion has been allocated to support 4,291 research projects and 4,318 researchers working on green transformation and climate-related technologies. In parallel, investment incentive certificates have been issued for 16,826 projects in renewable energy, energy efficiency, and environmental technologies since 2012, representing a cumulative investment volume exceeding TRY 2.5 trillion. These investments have contributed to expanding domestic manufacturing capacity, promoting technological innovation, and accelerating the commercialization of clean technologies.

To further support industrial decarbonization, Türkiye is strengthening financial and institutional mechanisms that facilitate technology deployment in emission-intensive industries. Particular emphasis is placed on accelerating investments in low-carbon production processes, improving resource efficiency, and supporting the adoption of circular economy technologies.

An important component of this transition is the TIDIP, which is designed to accelerate the demonstration, commercialization, and large-scale deployment of innovative low-carbon technologies. During its initial phase, the Platform focuses on strategically important and emission-intensive sectors—including iron and steel, cement, aluminium, and fertilizers—where technological innovation is essential for maintaining international competitiveness and complying with emerging decarbonization requirements. Beyond facilitating investment, TIDIP is expected to strengthen collaboration among industry, research institutions, technology providers, and financial institutions while increasing the visibility and market uptake of innovative climate technologies.

Digital technologies and AI are becoming increasingly important enablers of Türkiye's climate transition. AI can enhance the efficiency, flexibility, and resilience of energy systems while supporting renewable energy integration, optimizing electricity networks, improving industrial resource efficiency, and strengthening climate risk assessment and adaptation planning.

330. The document is accessible at <https://www.sanayi.gov.tr/assets/pdf/plan-program/2030IndustryAndTechnologyStrategyENG.pdf?1751241600107>



Recognizing this potential, Türkiye launched the Artificial Intelligence Action Plan³³¹ in 2026 to accelerate digital transformation and strengthen the national AI ecosystem. The Action Plan envisages substantial investments in data centres, cloud computing infrastructure, and advanced digital technologies while promoting high energy-efficiency standards for digital infrastructure. By 2030, Türkiye aims to expand its installed data center capacity to at least 1 GW, while strengthening national AI capabilities through targeted investments in research, innovation, education, and workforce development. These measures are expected to support both digital transformation and the deployment of climate technologies across multiple sectors.

Despite significant progress in strengthening domestic innovation and technology development, achieving Türkiye's climate objectives will require continued international support to accelerate the deployment of advanced low-carbon and climate-resilient technologies. International cooperation remains particularly important for technologies that are still at an early stage of commercialization or require substantial upfront investment and international knowledge exchange.

Priority areas include hydrogen technologies, CCUS, battery and energy storage systems, industrial electrification, smart grids, digital MRV systems, climate-smart agriculture, advanced adaptation technologies, and emerging digital solutions, including AI applications for climate action.

Technology transfer should be closely integrated with financial support and capacity-building efforts to ensure that innovative solutions can be effectively adopted, scaled, and sustained across all sectors of the economy. Strengthening these three mutually reinforcing pillars will enhance Türkiye's domestic innovation ecosystem, improve industrial competitiveness, accelerate mitigation and adaptation efforts, and support the effective implementation of the Paris Agreement and the country's long-term climate objectives.

In this context, Türkiye requires enhanced support through technology transfer, concessional and blended finance, joint R&D programmes, pilot and demonstration projects, technical assistance, and international research partnerships. Expanding access to global innovation networks and strengthening cooperation between research institutions, the private sector, and international technology providers will be essential to accelerate the diffusion and localization of advanced climate technologies.

7.6 INFORMATION ON CAPACITY-BUILDING AND INSTITUTIONAL SUPPORT NEEDS

Institutional capacity, effective governance, and skilled human resources are fundamental to achieving Türkiye's climate objectives and implementing the Paris Agreement. As the implementation of the Second NDC, the LTS, the Climate Law, the national ETS, and sustainable finance reforms accelerates, capacity-building needs continue to expand across public institutions, local governments, financial institutions, the private sector, academia, and civil society.

As emphasized in Türkiye's Second NDC, capacity-building is a cross-cutting enabler of climate action. Strengthening institutional capacities, technical expertise, and human resources is essential for improving policy implementation, enhancing institutional coordination, facilitating access to climate finance, and supporting the effective deployment of climate technologies. In this

331. Relevant information can be found at <https://www.sanayi.gov.tr/medya/haber/turkiye-yapay-zek%C3%A2-eylem-plani-aciklandi>



context, Türkiye adopts a comprehensive capacity-building approach encompassing institutional strengthening, technical training, workforce development, and awareness-raising.

7.6.1 Climate Governance, Finance and Regulatory Capacity

Strengthening climate governance and institutional coordination remains one of Türkiye's highest capacity-building priorities. Continued institutional support is required to improve policy coordination across sectors, integrate climate considerations into development planning and public investment processes, strengthen monitoring and evaluation systems, and enhance evidence-based decision-making.

Particular attention is required to reinforce climate finance governance through the further development of climate expenditure tracking, climate budget tagging, green budgeting, and climate-responsive public investment planning. Strengthening institutional capacities for monitoring, reporting, evaluation, and transparency will also support more effective implementation of climate policies and improve access to international climate finance.

The implementation of the Climate Law, the national ETS, sustainable finance reforms, and the green taxonomy has created new institutional responsibilities across both public and private sectors. Priority capacity-building needs include carbon accounting, greenhouse gas MRV systems, emissions registry administration, carbon market oversight, sustainability reporting, ESG integration, climate-related financial risk assessment, and preparedness for cooperative approaches under Article 6 of the Paris Agreement.

Continued technical assistance will also be required to support export-oriented industries and SMEs in adapting to evolving international sustainability requirements, while strengthening institutional capacities to facilitate the transition toward a low-carbon and competitive economy.

7.6.2 Sectoral and Local Capacity Development

Capacity-building needs extend across all sectors responsible for implementing climate mitigation and adaptation actions, including energy, industry, transport, buildings, agriculture, water resources, forestry, biodiversity, waste management, tourism, and public health. Priority areas include renewable energy deployment, industrial decarbonization, circular economy practices, climate-smart agriculture, integrated water resources management, ecosystem restoration, climate risk assessment, adaptation planning, early warning systems, and disaster risk reduction.

Particular emphasis is placed on strengthening the capacities of local governments, which play a critical role in translating national climate policies into local investment and implementation. Municipalities require continued technical assistance to improve climate action planning, project preparation, investment appraisal, climate-resilient infrastructure planning, monitoring and reporting, and access to domestic and international climate finance. Enhancing these capacities will facilitate the preparation of bankable project pipelines, strengthen public investment planning, and accelerate the implementation of local climate actions.

Institutional support is also required to improve project development capacities across both public and private sectors, strengthen public-private cooperation, promote innovative financing mechanisms, and facilitate the mobilization of private investment for mitigation and adaptation projects.



7.6.3 Human Capital and Green Skills

Developing a skilled workforce is essential for achieving Türkiye's long-term climate objectives. The transition to a low-carbon and climate-resilient economy will require significant investment in green skills, workforce reskilling and upskilling, and specialized technical expertise across climate finance, carbon markets, renewable energy, industrial decarbonization, sustainable construction, climate-smart agriculture, digital technologies, and sustainable manufacturing. According to the World Bank Country Climate and Development Report, approximately USD 620 million annually will be required to address workforce reskilling and upskilling needs associated with the green transition.

Particular attention should be given to SMEs, which will play a central role in implementing Türkiye's climate policies but often face limited technical and financial capacity. Expanding vocational education, professional training, and lifelong learning opportunities will therefore be essential to strengthen workforce readiness and improve the adoption of low-carbon technologies.

Capacity-building efforts are also guided by the principles of a just transition. Türkiye is promoting inclusive social dialogue mechanisms to ensure broad stakeholder participation while supporting the active involvement of women, youth, and groups requiring special policy attention in emerging green sectors. Under the coordination of the Ministry of Labour and Social Security, preparations for the National Just Transition Strategy are progressing through an inclusive consultation process covering 17 sectors and 33 thematic areas. The Strategy seeks to ensure that the social impacts of climate change, together with the green and digital transitions, are managed in an equitable, participatory, and socially inclusive manner. These efforts are further supported by the National Employment Strategy (2025–2028), which includes policies and actions to strengthen workforce adaptation to the green and digital transitions through lifelong learning, reskilling and upskilling, skills matching, and inclusive labour market policies.

Long-term capacity development extends beyond institutional strengthening and technical training. It also requires continuous investment in education, public awareness, research, innovation, and youth engagement to ensure that future generations possess the knowledge and skills necessary to support Türkiye's transition towards a sustainable and climate-resilient economy.

7.6.4 Long-Term Institutional Development Priorities

Long-term institutional development remains fundamental to sustaining Türkiye's climate transition and strengthening the implementation of its long-term climate strategies. As emphasized in the LTS, continued investment in education, research, innovation, and public awareness will be essential to build the knowledge, skills, and institutional capacities required for a low-carbon, climate-resilient economy.

In this context, Türkiye is progressively integrating climate change, sustainable development, and green transformation into education and training systems while expanding awareness-raising activities targeting all segments of society. Particular emphasis is placed on strengthening competencies in renewable energy, energy efficiency, climate finance, sustainable production, digital technologies, and innovation to support the country's long-term green transformation.

A key component of these efforts is the Climate Envoy Programme, which promotes youth participation in climate governance and strengthens climate leadership across universities. Bringing together representatives from 208 universities, the Programme encourages student engagement in climate policymaking, awareness-raising, capacity-building activities, and international climate



processes, including contributions to Türkiye's UNFCCC reporting. By fostering youth leadership and supporting the development of climate-friendly campuses, the Programme contributes to building the long-term institutional and human capacities needed to achieve Türkiye's 2053 net-zero emissions and green development objectives.

Looking ahead, institutional development priorities should continue to focus on strengthening climate finance governance, sustainable finance implementation, climate investment planning, project preparation, public-private cooperation, private capital mobilization, transparency systems, and climate resilience planning. These priorities will reinforce institutional effectiveness while improving the country's ability to implement increasingly ambitious climate policies.

Despite the significant progress achieved in strengthening institutional capacity and climate governance, continued international support remains essential to accelerate Türkiye's climate transition. Capacity-building needs are expected to increase further with the implementation of the Climate Law, the national ETS, sustainable finance reforms, and enhanced transparency requirements under the Paris Agreement.

Priority areas for international cooperation include institutional strengthening, climate finance governance, carbon market implementation, MRV and transparency systems, climate investment planning, project preparation, sustainable finance, digitalization, and technical capacity for both mitigation and adaptation. Continued support will also be required to strengthen local governments, financial institutions, SMEs, research organizations, and other stakeholders responsible for implementing climate policies.

Capacity-building should therefore be pursued through an integrated approach combining institutional development, technical assistance, knowledge sharing, workforce development, and international cooperation. Close integration of capacity-building with technology development and transfer, financial support, and policy implementation will strengthen Türkiye's institutional resilience, accelerate climate action, and enhance the effective implementation of its long-term commitments under the Paris Agreement.

7.7 INFORMATION ON CAPACITY-BUILDING SUPPORT RECEIVED

International capacity-building support has played a key role in strengthening Türkiye's institutional, technical, and human capacities for implementing climate policies and fulfilling its commitments under the UNFCCC and the Paris Agreement. MDBs, international climate funds, bilateral development partners, United Nations agencies, and other international organizations have supported Türkiye through technical assistance, advisory services, institutional partnerships, analytical studies, and knowledge-sharing programmes.

Beyond individual projects, international cooperation has increasingly focused on strengthening long-term institutional capacities, supporting policy reforms, enhancing implementation arrangements, and improving project preparation and investment readiness. These efforts have complemented financial and technological support while reinforcing national and local climate governance.



7.7.1 Major Areas of Capacity-Building Support

International capacity-building support has contributed to several strategic dimensions of Türkiye's climate transition.

Climate governance and transparency: Technical assistance has supported the preparation and implementation of climate strategies, greenhouse gas inventories, BTRs, adaptation planning, institutional coordination mechanisms, and evidence-based policymaking. These activities have strengthened the institutional foundations for implementing the Second NDC and the LTS.

Climate finance and carbon market development: Capacity-building programmes have enhanced institutional capacities in climate finance assessment, sustainable finance policy development, climate investment planning, ESG integration, climate-related financial risk management, and carbon market preparedness. Support has also contributed to the development of MRV systems, stakeholder engagement, emissions trading preparedness, and broader institutional readiness for the implementation of the national ETS.

Adaptation and local implementation: International cooperation has strengthened capacities in climate risk assessment, vulnerability analysis, water resources management, climate-smart agriculture, disaster risk reduction, ecosystem-based adaptation, and urban resilience. Technical assistance has also improved local climate action planning, project preparation, sustainable infrastructure development, and access to climate finance, contributing to the development of investment-ready climate projects.

7.7.2 Key Achievements

International capacity-building support has generated institutional outcomes extending well beyond individual projects. It has strengthened climate governance, improved inter-institutional coordination, enhanced analytical and technical expertise, and supported the integration of climate considerations into national and local development planning.

Capacity-building initiatives have also accelerated the development of sustainable finance frameworks, strengthened institutional readiness for carbon pricing and emissions trading, improved project preparation and investment planning, and reinforced climate-related risk assessment and transparency systems. In parallel, they have expanded knowledge-sharing, strengthened cooperation among public institutions, financial sector stakeholders, academia, civil society, and international partners, and enhanced the institutional foundations for implementing Türkiye's Second NDC, the LTS, the Climate Law, and the national ETS.

Overall, international cooperation has contributed to improving institutional readiness for scaling climate investments, mobilizing private capital, and implementing increasingly ambitious climate policies.

7.7.3 Remaining Capacity Needs

Despite substantial progress, capacity-building needs continue to evolve as Türkiye advances the implementation of its climate agenda. The implementation of the Climate Law, the national ETS, sustainable finance reforms, the national green taxonomy, and enhanced transparency requirements under the Paris Agreement has increased institutional responsibilities across public institutions, local governments, financial institutions, and the private sector.



Future international cooperation should therefore prioritize strengthening climate governance, climate finance and sustainable finance implementation, carbon market institutions, digital MRV systems, climate investment planning, project preparation, adaptation finance, and local implementation capacities. Continued support will also be required to strengthen analytical capabilities, institutional coordination, and technical expertise while facilitating knowledge-sharing, peer learning, and international cooperation.

7.8 INFORMATION ON SUPPORT NEEDED AND RECEIVED FOR THE IMPLEMENTATION OF ARTICLE 13 OF THE PARIS AGREEMENT AND TRANSPARENCY-RELATED ACTIVITIES, INCLUDING TRANSPARENCY-RELATED CAPACITY-BUILDING

Türkiye recognizes transparency as a cornerstone of effective climate governance and remains committed to implementing Article 13 of the Paris Agreement through the ETF. A robust transparency system is essential for tracking progress toward national climate objectives, enhancing mutual trust among Parties, and supporting evidence-based policymaking.

Consistent with its status as a developing country, Türkiye has regularly fulfilled its reporting obligations under the UNFCCC through the submission of NCs, Greenhouse Gas Inventory Reports, Biennial Reports, and, most recently, its BTR1. The transition to the ETF, however, has introduced more demanding institutional and technical requirements, including integrated MRV systems, greenhouse gas inventories, climate finance tracking, adaptation monitoring, quality assurance, and climate data management.

Continued financial, technical, and capacity-building support is therefore needed to strengthen national transparency arrangements, improve institutional coordination and reporting methodologies, enhance analytical and modelling capacities, and further develop digital climate data infrastructure. Additional support is also required to improve the capacity of sectoral institutions to assess the economic impacts of climate change, estimate mitigation and adaptation investment needs, and monitor progress toward national climate objectives.

These priorities are consistent with the Twelfth Development Plan, which emphasizes strengthening environmental information systems, developing internationally comparable indicators, expanding monitoring and evaluation mechanisms, and integrating climate-related data into public decision-making processes to reinforce the effective implementation of the ETF.

International cooperation has played an important role in strengthening Türkiye's transparency framework by supporting institutional capacity, technical systems, and the preparation of national transparency reports.

The support received has significantly strengthened Türkiye's capacity to implement the ETF by improving national reporting systems, climate data management, integrated MRV arrangements, and institutional coordination, while supporting the preparation of BTRs and other reporting obligations under the UNFCCC. It has also contributed to the integration of climate considerations into national and sectoral policymaking and reinforced the institutional basis for evidence-based climate governance.

Despite this progress, continued international support remains essential to address the growing requirements of the ETF. Future assistance should prioritize integrated transparency systems, greenhouse gas inventories, digital climate data infrastructure, climate finance tracking, adaptation



monitoring, analytical and modelling capacities, and coordination across reporting institutions. Sustained technical assistance, knowledge sharing, and capacity building will be critical to maintaining high-quality reporting, improving transparency, facilitating access to international climate finance, and supporting the effective implementation of Türkiye's long-term climate objectives under the Paris Agreement.



8 REFERENCES

AFAD, 2022. Mid-Term Review of the Sendai Framework: National Report of Türkiye

Ari, I. 2025. Carbon Pricing in Emerging Economies Challenges and Opportunities for Türkiye. Routledge. <https://doi.org/10.4324/9781003570820>

Beaufils, T., Gallé, J. 2026. Between Challenges and Opportunities: The Impacts of the EU CBAM In Türkiye, Istanbul Policy Center-Sabancı University-Stiftung Mercator Initiative, ISBN 978-625-6956-93-3

CRF, 2026. Common Reporting Format (CRF) 2024. Türkiye, <https://unfccc.int/documents/461898>

CRT, 2026. Common Reporting Table (CRT). 2024. Türkiye, <https://unfccc.int/documents/656426>

DOCC, 2024_a. Climate Change Mitigation Strategy and Action Plan 2024-2030 (CCMSAP), Republic of Türkiye, Directorate of Climate Change (DOCC), 2024. [https://iklim.gov.tr/db/turkce/icerikler/files/CLIMATE%20CHANGE%20MITIGATION%20STRATEGY%20AND%20ACTION%20PLAN%20_EN\(1\).pdf](https://iklim.gov.tr/db/turkce/icerikler/files/CLIMATE%20CHANGE%20MITIGATION%20STRATEGY%20AND%20ACTION%20PLAN%20_EN(1).pdf)

DOCC, 2024_b. Climate Change Adaptation Strategy and Action Plan 2024-2030 (CCASAP), Republic of Türkiye, Directorate of Climate Change (DOCC), 2024. https://iklim.gov.tr/db/english/icerikler/files/İklim%20Değişikliğine%20Uyum%20Stratejisi%20ve%20Eylem%20Plan_%202024-2030.pdf

DoCC, 2024_c. 2053 Long Term Climate Strategy. https://unfccc.int/sites/default/files/resource/Turkiye_Long_Term_Climate_Strategy.pdf

DoCC, 2025. Capacity-Building Project for NDC Projections and Reporting, 2025-2028.

DSİ, 2025. General Directorate of State Hydraulic Works (DSİ). <https://dsi.gov.tr/Haber/Detay/14826>

DSİ, 2026. General Directorate of State Hydraulic Works (DSİ). <https://www.dsi.gov.tr/Sayfa/Detay/754#>

EPDK, 2026. Republic of Türkiye, Energy Market Regulatory Authority (EMRA), Electricity Market Production Capacity Projections. <https://www.epdk.gov.tr/Detay/Icerik/3-0-66/elektrikuretim-kapasite-projeksiyonlari>

GDH, 2024. General Directorate of Highways. 2024-2028 Strategic Plan. Ankara, Türkiye, 2024.

GDM, 2026. General Directorate of Mapping, 2026. <https://atlas.harita.gov.tr/#5/39/35>

<https://mevzuat.gov.tr/mevzuat?MevzuatNo=7552&MevzuatTur=1&MevzuatTertip=5>

https://yereliklim.org/wp-content/uploads/2024/09/A21_Yonetici-Ozeti.pdf

IPCC, 2022. Point of Departure and Key Concepts. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change



MENR, 2010. Republic of Türkiye, Ministry of Energy and Natural Resources, Energy Efficiency Strategy Paper. <https://www.resmigazete.gov.tr/eskiler/2012/02/20120225-7.htm>

MENR, 2015. Procedures and Principles Regarding the Use of LED Luminaires in General Lighting. https://enerji.gov.tr/Media/Dizin/BHIM/tr/Duyurular/genel_aydinlatma_usul_ve_esaslar_202110120910.pdf

MENR, 2018. Republic of Türkiye, Ministry of Energy and Natural Resources, National Energy Efficiency Action Plan (2017-2023). <https://enerji.gov.tr/Media/Dizin/EVCED/tr/EnerjiVerimliliği/UlusalEnerjiVerimliliğiEylemPlanı/Belgeler/UEVEP.pdf>

MENR, 2022. Ministry of Energy and Natural Resources, Türkiye National Energy Plan (2022). https://enerji.gov.tr/Media/Dizin/EIGM/tr/Raporlar/TUEP/Türkiye_Ulusal_Enerji_Planı.pdf

MENR, 2022. National Energy Plan. 2022. https://enerji.gov.tr/Media/Dizin/EIGM/tr/Raporlar/TUEP/Türkiye_Ulusal_Enerji_Planı.pdf

MENR, 2023_b. Republic of Türkiye, Ministry of Energy and Natural Resources, Türkiye Electricity Investments Year 2022 Month December Summary Report. <https://enerji.gov.tr/Media/Dizin/EIGM/tr/Raporlar/PRP/EYÖRA/2022/Aralık/ElektrikYatırımları2022AralıkAyıÖzetRaporu.pdf>

MENR, 2024. MENR Strategic Plan (2024-2028). 2024. https://enerji.gov.tr/Media/Dizin/SGB/tr/Kurumsal_Politikalar/ETKB_2024-2028_Stratejik_Planı.pdf

MENR, 2024. Ministry of Energy and Natural Resources, Energy Efficiency 2030 Strategy and II. National Energy Efficiency Action Plan (2024-2030). 2024.

MENR, 2025. Republic of Türkiye, Ministry of Energy and Natural Resources, Energy Efficiency 2030 Strategy and Second National Energy Efficiency Action Plan (UEVEP). <https://enerji.gov.tr/bilgi-merkezi-enerji-verimliliği-ulusal-enerji-verimliliği-eylem-planı>

MENR, 2026. Republic of Türkiye, Ministry of Energy and Natural Resources, Energy Balance Tables. <https://enerji.gov.tr/preview/tr/63d0007a-f593-458b-9610-353eb2545897>

MENR, 2026_a. Republic of Türkiye, Ministry of Energy and Natural Resources, <https://enerji.gov.tr/bilgi-merkezi-enerji-jeotermal-en>

MENR, 2026_b. Republic of Türkiye, Ministry of Energy and Natural Resources / TEMSAN, Hydroelectric. <https://temsangov.tr/p/186/hidroelektrik>

MGM, 2023. Turkish State Meteorological Service (MGM), Climate Assessment

MGM, 2025. https://www.mgm.gov.tr/eng/Yearly-Climate/State_of_the_Climate_in_Turkey_in_2025.pdf

MGM, 2026. Various reports. <https://www.mgm.gov.tr>

MoAF, 2025. General Directorate of Forestry (OGM), 2025 Annual Activity Report, 2026

MoAF, 2025. Republic of Türkiye, Ministry of Food Agriculture and Forestry, Strategy and Action Plan, <https://www.tarimorman.gov.tr/SGB/Belgeler/stratejikplan.pdf>

MoAF, 2025_a. Republic of Türkiye, Ministry of Food Agriculture and Forestry, National Water Plan (2026-2035). 2026. [https://www.tarimorman.gov.tr/SYGM/Belgeler/Ulusal_Su_Planı_Resmi_Gazete/Ulusal_Su_Planı_\(2026-2035\).pdf](https://www.tarimorman.gov.tr/SYGM/Belgeler/Ulusal_Su_Planı_Resmi_Gazete/Ulusal_Su_Planı_(2026-2035).pdf)



MoAF, 2026_a. Republic of Türkiye, Ministry of Food Agriculture and Forestry, Maps of Agricultural Basins. <https://www.tarimorman.gov.tr/Sayfalar/Icerikler.aspx?IcerikId=296c5dc2-2d3f-427d-af9a-70c4a2f131a6>

MoAF, 2026_b. Republic of Türkiye, Ministry of Food Agriculture and Forestry, Noah's Ark National Biological Diversity Database. <https://nuhungemisi.tarimorman.gov.tr/public/istatistik>

MoAF, 2026_b. Republic of Türkiye, Ministry of Food Agriculture and Forestry, Fertilizer Statistics. <https://www.tarimorman.gov.tr/Konular/Bitkisel-Uretim/Bitki-Besleme-ve-Tarimsal-Teknolojiler/Bitki-Besleme-Istatistikleri>

MoAF, 2026_c. Republic of Türkiye, Ministry of Agriculture and Forestry, General Directorate of Forestry, Forestry Statistics. <https://www.ogm.gov.tr/tr/e-kutuphane/kitaplik/Forestry-Statistics>

MoCT, 2026a. Republic of Türkiye, Ministry of Culture and Tourism, <https://yigm.ktb.gov.tr/TR-11569/mavi-bayrak.html>

MoCT, 2026b. Republic of Türkiye, Ministry of Culture and Tourism, Statistics.

MoEUCC, 2025_b. Republic of Türkiye, Ministry of Environment and Urbanization (MoEU), National Waste Management Action Plan (NWMAP) (2025-2035). https://webdosya.csb.gov.tr/db/cygm/editordosya/National_Waste_Management_and_Strategy_Plan_2025-2035.pdf

MoEUCC, 2025_c. "National Circular Economy Strategy and Action Plan (UDESEP) 2025-2028." Ankara, Türkiye, 2025. https://webdosya.csb.gov.tr/db/cygm/haberler/udesep_eng-20251020103224.pdf.

MoFA, 2026. Republic of Türkiye Ministry of Foreign Affairs. "The Black Sea Economic Cooperation." 2026.

MoIT, 2020. "National Regional Development Strategy." 2020. <https://www.sanayi.gov.tr/bolgesel-kalkinma-faaliyetleri/strateji-belgeleri/01135b>.

MoT, 2021. Ministry of Trade, Green Deal Action Plan, 2021. <https://ticaret.gov.tr/data/60f1200013b876eb28421b23/MUTABAKAT%20YEŞİL.pdf>

MoTF, 2025. Republic of Türkiye Ministry of Treasury and Finance. Update on Turkish Economy. 2025.

MoTI, 2020. National Intelligent Transportation Systems Strategy Document and 2020--2023 Action Plan. Ankara, Turkey, 2020. <https://www.uab.gov.tr/media/14xfzlxz/ulusal-akilli-ulas-im-sistemleri-strateji-belgesi-ve-2020-2023-eylem-plani-eng.pdf>.

MoTI, 2022. "2053 Transport and Logistics Master Plan." Ankara, Turkey, 2022. <https://www.uab.gov.tr/media/3cgbeluf/20221025-2053-ulasirma-ve-lojistik-ana-plani-eng.pdf>.

MoTI, 2022. "Regulation on Combined Transport." May 2022. <https://www.resmigazete.gov.tr/eskiler/2022/05/20220527-1.htm>.

MoTI, 2022_a. Republic of Türkiye Ministry of Transport and Infrastructure. Instructions on Authorization Requests Regarding Ship Fuel Consumption Data Collection and Reporting. Ankara, Türkiye, 2022.



MoTI, 2022_a. Republic of Türkiye, Ministry of Transport and Infrastructure. Transport and Logistics Master Plan, 2053. <https://uhdgm.uab.gov.tr/uploads/pages/turkiye-lojistik-master-plani/tlmp-n8-nihai-rapor.pdf>

MoTI, 2025. 2030 Industry and Technology Strategy. Ankara, Türkiye, 2025. <https://www.sanayi.gov.tr/assets/pdf/plan-program/2030IndustryAndTechnologyStrategyENG.pdf>.

MTP, 2026. Republic of Türkiye, Medium-Term Programme (MTP) 2026-2028. The Presidency of Strategy and Budget (SBB). <https://www.sbb.gov.tr/wp-content/uploads/2025/09/Orta-Vadeli-Program-2026-2028.pdf>

NID, 2024. TurkStat, Turkish Greenhouse Gas Inventory, 1990 to 2022. National Inventory Document (NID). <https://unfccc.int/documents/644387>

NID, 2026. TurkStat, Turkish Greenhouse Gas Inventory, 1990 to 2024. National Inventory Document (NID). <https://unfccc.int/documents/656425>

OECD, 2016. OECD, Innovation, Agricultural Productivity and Sustainability in Turkey, OECD Food and Agricultural Reviews, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264261198-en>

OECD, 2026_a. OECD, Türkiye Economic Snapshot, Economic Forecast Summary. <https://www.oecd.org/economy/turkiye-economic-snapshot/>

OECD, 2026_b. OECD Data, Passenger transport statistics. <https://data.oecd.org/transport/passenger-transport.htm>

Risk Azaltma Faaliyetleri Kapsamında Dere Islahı Çalışmalarına Dair İş Birliği Protokolü, 2024.

SBO, 2023. 12th Development Plan, 2023. Presidency of the Republic of Türkiye, Presidency of Strategy and Budget, 2023. https://www.sbb.gov.tr/wp-content/uploads/2024/06/Twelfth-Development-Plan_2024-2028.pdf

TEİAŞ, 2026_a. Republic of Türkiye, Ministry of Energy and Natural Resources, Türkiye Electricity Production-Transmission Statistics. <https://www.teias.gov.tr/turkiye-elektrik-uretim-iletim-istatistikleri>

TEİAŞ, 2026_b. http://www.ritm.gov.tr/root/index_eng.php

The Climate Law 2025,

TUEP, 2026. Türkiye Ulusal Enerji Planı. https://enerji.gov.tr//Media/Dizin/EIGM/tr/Raporlar/TUEP/T%C3%BCrkiye_Ulusal_Enerji_Plan%C4%B1.pdf

TURÇEV, 2026. Türkiye Foundation for Environmental Education (TÜRÇEV), 2026 Blue Flag Data. <https://www.mavibayrak.org.tr/english/home.aspx>

TurkStat, 2026_a. Turkish Statistical Institute, The Results of Address Based Population Registration System, 2025. <https://veriportali.tuik.gov.tr/en/press/53899>

TurkStat, 2026_b. Turkish Statistical Institute, National Accounts, Annual National Account Statistics. <https://biruni.tuik.gov.tr/medas/?kn=136&locale=en>

TurkStat, 2026_c. Turkish Statistical Institute, Foreign trade by months and years. <https://veriportali.tuik.gov.tr/en/press/58237>



TurkStat, 2026_d. Turkish Statistical Institute, Building Permits. <https://veriportali.tuik.gov.tr/en/press/58303>

TurkStat, 2026_e. Turkish Statistical Institute, Annual Industry and Service Statistics. <https://veriportali.tuik.gov.tr/en/press/54051>

TurkStat, 2026_f. Turkish Statistical Institute, Agriculture Statistics, Crop Production and Land. <https://veriportali.tuik.gov.tr/en/statistical-themes>

TurkStat, 2026_g. Turkish Statistical Institute, Transportation and Communication Statistics, Total Passenger and Freight Traffic at the Airports. <https://veriportali.tuik.gov.tr/tr/statistical-themes>

TurkStat, 2026_h. Turkish Statistical Institute, Agriculture Statistics, Animal Production. <https://veriportali.tuik.gov.tr/en/statistical-themes>

TurkStat, 2026_i. Turkish Statistical Institute, Agriculture Statistics. <https://veriportali.tuik.gov.tr/en/statistical-themes>

TurkStat, 2026_j. Turkish Statistical Institute, Transportation Statistics, Road Motor Vehicles Statistics. <https://veriportali.tuik.gov.tr/en/press/58043>

TurkStat, 2026_k. Turkish Statistical Institute, Tourism Statistics. <https://veriportali.tuik.gov.tr/en/press/58143>

UNCTAD, 2026. World Economic Situation and Prospects 2026. <https://unctad.org/publication/world-economic-situation-and-prospects-2026>

UNFCCC, 2007. Republic of Türkiye, First National Communication of Türkiye under the UNFCCC, <https://unfccc.int/documents/198773>

UNFCCC, 2013. Republic of Türkiye, 2-5th National Communication of Türkiye under the UNFCCC, <https://unfccc.int/documents/199141>

UNFCCC, 2015. Intended Nationally Determined Contribution. INDC of Türkiye. https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf

UNFCCC, 2015_a. Republic of Turkey Intended Nationally Determined Contribution. http://www4.unfccc.int/Submissions/INDC/PublishedDocuments/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf

UNFCCC, 2015_b. "Adoption of the Paris Agreement." 2015. <http://unfccc.int/resource/docs/2015/cop21/eng/I09r01.pdf>

UNFCCC, 2016. Republic of Türkiye, 6th National Communication of Türkiye under the UNFCCC. <https://unfccc.int/documents/198420>

UNFCCC, 2018. Decision of 4/CMA.1 Further Guidance in Relation to the Mitigation Section of the Paris Agreement. 2018. https://unfccc.int/sites/default/files/resource/4-CMA.1_English.pdf

UNFCCC, 2019. Republic of Türkiye, 7th NC of Türkiye, <https://unfccc.int/documents/199646>

UNFCCC, 2023. Republic of Türkiye. 8th NC of Türkiye, <https://unfccc.int/documents/628372>



UNFCCC, 2023_a. Republic of Türkiye Updated First Nationally Determined Contribution. <https://unfccc.int/sites/default/files/NDC/2023->

UNFCCC, 2024. BTR1 of Türkiye. <https://unfccc.int/documents/642617>

UNFCCC, 2025. Report on the Technical Expert Review of the First Biennial Transparency Report of Türkiye: Addendum. no. FCCC/ETF/TERR.1/2024/TUR/Add.1. Bonn, Germany, 2025. https://unfccc.int/sites/default/files/resource/terr1_2024_TURa01.pdf.

UNFCCC, 2025. Türkiye Second NDC (NDC 3.0). <https://unfccc.int/node/652920>

World Bank, 2024. Socially Inclusive Green Transition (SoGreen) Project. 2024. <https://documents1.worldbank.org/curated/en/099031124170520652/pdf/BOSIB-226380b4-31cb-4005-a10e-e795d7a06b0d.pdf>.

World Bank, 2026. World Bank national accounts data, and OECD National Accounts data file, Agriculture, forestry, and fishing, value added (% of GDP). <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>



ANNEX I NINTH NATIONAL COMMUNICATION

1 RESEARCH AND SYSTEMATIC OBSERVATION

This chapter provides an overview of Türkiye's national policies, research activities, and research and development (R&D) programs aimed at mitigating and adapting to climate change, as well as systematic observations of Türkiye. Additionally, the chapter discusses additional actions to support capacity-building and national and international data sharing efforts.

1.1 GENERAL POLICY ON RESEARCH AND SYSTEMATIC OBSERVATION

Climate technologies are essential to achieving the objectives of the Paris Agreement and strengthening resilience to climate-related risks. Following the ratification of the Paris Agreement in 2021, Türkiye announced its 2053 net-zero emissions target, which now serves as a central reference point for aligning development planning, industrial transformation, and science, technology, and innovation policies. In this context, climate action is addressed not only as an environmental priority but also as a structural transformation agenda aimed at strengthening competitiveness, technological capabilities, and long-term sustainable growth through innovation.

Reinforcing this strategic direction, Climate Law No. 7552 strengthens the legal basis for climate-related planning, risk assessment, monitoring, and reporting, thereby increasing the importance of climate research, systematic observation, modelling, and data-sharing systems. High-quality climate data, regional climate projections, vulnerability and risk assessments, and interoperable spatial information systems are therefore expected to play an increasingly important role in supporting evidence-based climate action at both national and local levels. These capabilities constitute the evidence base for climate policy and provide essential inputs for the research, technology, and sectoral transformation priorities discussed below.

Türkiye's overarching research policy is guided by the 12th Development Plan (2024-2028), which positions the twin green and digital transitions as key drivers of sustainable socioeconomic development. The Plan calls for an environmentally sustainable and disaster-resilient ecosystem capable of generating greater value added through advanced technologies, while also prioritizing the strengthening of domestic R&D capacity and the diffusion of innovation throughout the economy.

Complementing these objectives, the Industry and Technology Strategy for 2030, published in 2025 and grounded in the vision of the National Technology Initiative, sets out a comprehensive roadmap for expanding Türkiye's domestic production capabilities in critical and high-technology fields, reducing external dependency, and accelerating the transition towards a green and circular economy. Structured around five main objectives-High Technology, Digital Economy, Green Transformation, Global Integration, and Structural Transformation-the Strategy integrates decarbonization and clean production into the broader process of industrial modernization, combining technology-driven productivity gains with emissions reduction.

To translate these objectives into practice, the Industry and Technology Strategy for 2030 calls for the development of monitoring, assessment, and support mechanisms that enable industrial



firms to adopt low-carbon production methods and circular economy practices. It also promotes the green transformation of organized industrial zones as pilot environments for sustainable industrial infrastructure. Particular emphasis is placed on strengthening R&D and technological capabilities in renewable energy, hydrogen systems, energy storage, and carbon capture, as well as on developing AI-enabled energy management and grid technologies. Complementary measures seek to improve industrial energy management, resource-efficiency monitoring, waste recovery, and the skills and human capital required to support the green transition of industry.

At the sectoral level, the Türkiye National Energy Plan sets out a long-term pathway for meeting Türkiye's growing energy demand while strengthening security of supply, reducing external dependence, and advancing the transition towards the 2053 net-zero emissions target. Covering the period to 2035 within a longer-term outlook to 2053, the Plan identifies the required evolution of the energy mix, infrastructure, energy efficiency, and system flexibility. Its projections for renewable and nuclear energy capacity, energy storage, hydrogen, demand-side response, and energy efficiency also provide important demand signals for related R&D, innovation, and technology development.

In parallel, climate-resilient agriculture and sustainable water management are guided by a complementary sectoral policy framework. It comprises the Türkiye Agricultural Drought Strategy and Action Plan (2023-2027), the Water Efficiency Strategy Document and Action Plan in the Context of Adaptation to a Changing Climate (2023-2033), and the National Water Plan (2026-2035). Together, these instruments promote drought monitoring and early warning, agricultural production planning based on water availability, efficient irrigation, water reuse, and digital and data-driven water management. They also create research and technology needs in areas such as climate-resilient crop varieties, precision and digital agriculture, water-saving irrigation technologies, soil and water monitoring, modelling, and climate-risk assessment.

These sectoral priorities have also been informed and further developed through participatory consultation processes, most recently the Fourth Agriculture and Forestry Council in 2025. Their decisions emphasize agricultural production planning, agricultural R&D and technology-development zones, artificial-intelligence-supported forecasting and monitoring, remote sensing, water-efficiency technologies, modelling, and decision-support systems.

Across sectors, Türkiye uses participatory technology-roadmapping and priority-setting processes to translate high-level policy objectives into concrete technological needs, development pathways, and time-bound targets. Involving relevant public institutions, industry, academia, research organizations, and other stakeholders, these processes help identify the technologies required for sectoral transformation, assess national capabilities and gaps, and determine the research, infrastructure, and human-resource needs associated with their development and deployment.

The Green Growth Technology Roadmap, prepared under the coordination of the MoIT and TÜBİTAK, represents a prominent example of this approach in the field of industrial decarbonization. It identifies technological needs and strategic targets for key carbon-intensive industries, including iron and steel, aluminum, cement, chemicals, plastics, and fertilizers. These sectors are critical to the national economy, as they provide essential inputs to major production value chains and account for a significant share of industrial carbon emissions. Adopting a product life-cycle perspective, the Roadmap identifies R&D- and innovation-based solutions and sets specific technological targets for 2026, 2030, and 2035. These targets are supported by technical descriptions, assessments of technology readiness levels in Türkiye and globally, selected national and international examples, and analyses of the infrastructure and human-resource requirements for technology development, adoption, and diffusion.



The outputs of the Green Growth Technology Roadmap have been incorporated into TÜBİTAK's Priority R&D and Innovation Topics for the 2024-2025 and 2026-2028 periods, ensuring that sectoral needs are systematically reflected in national research and innovation priorities. This prioritization approach establishes an operational bridge between high-level policy objectives and the science, technology, and innovation ecosystem. To maintain this link, it also continues to take into account the thematic areas identified through broader consultation processes, including the Science and Technology Commission of the Climate Council of Türkiye: (i) Climate Change, Environment and Biodiversity; (ii) Clean and Circular Economy; (iii) Clean, Accessible and Secure Energy Supply; (iv) Green and Sustainable Agriculture; and (v) Sustainable and Smart Transportation. The specific topics related to these thematic areas are updated periodically to reflect emerging technological developments and evolving national needs.

In summary, Türkiye's policy framework for climate-related research is structured through multiple, complementary layers. The Twelfth Development Plan provides the overarching direction for sustainable development, while the Industry and Technology Strategy for 2030 translates this direction into priorities for industrial modernization, green transformation, and technological capability-building. Sector-specific policies and plans in energy, agriculture, and water further define transformation pathways, deployment needs, and resource-management priorities. Participatory councils, technology-roadmapping exercises, and R&D and innovation priority-setting processes then translate these strategic and sectoral directions into concrete technological needs, capability gaps, time-bound targets, and research priorities. Together, these policy layers align sectoral transformation with the science, technology, and innovation ecosystem in support of Türkiye's 2053 net-zero emissions target and its broader objectives for climate resilience, resource efficiency, competitiveness, and reduced external dependence.

Complementing this policy architecture, systematic observation provides the evidence base required for climate research, policymaking, implementation, and evaluation. Nationwide meteorological, hydrological, and climatological monitoring systems generate continuous data for modelling, risk assessment, national and local planning, and Türkiye's international reporting obligations. The Turkish State Meteorological Service operates through 16 regional directorates and continues to expand its observation infrastructure, while the General Directorate of State Hydraulic Works maintains an extensive hydrometeorological monitoring network across Türkiye's 25 river basins. The Turkish State Meteorological Service also contributes to strengthening observation and technical capacity across the wider region through its international activities, including its role as a World Meteorological Organization (WMO) Regional Training Centre.

Taken together, this policy, planning, and observation framework provides the basis for the institutional RDI arrangements, support mechanisms, and research activities discussed in the following section.

KOSGEB supports fostering green transformation among manufacturing SMEs by enhancing their resource efficiency and environmental stewardship, thereby strengthening their market competitiveness, digital maturity, investment readiness, and supply chain resilience by Green Industry Support Programme under Türkiye Green Industry Project. Under the Project, KOSGEB aims to strengthen the capacity of manufacturing small and medium-sized enterprises to:

- Harness Türkiye's renewable energy potential,
- Increase their awareness and adoption of environmentally sustainable technologies,
- Improve their capacity to reduce energy costs,



- Enhance their capacity to promote environmental sustainability, improve competitiveness, expand investment opportunities, accelerate digitalization, strengthen the security of resource supply, and increase resource efficiency through environmentally responsible production practices.

Under the Green Industry Support Programme, two Calls for Proposals were developed and officially launched on 8 December 2023 by KOSGEB.

The 2023.01 Call for Proposals- Solar Energy Call was launched to facilitate the decarbonization of energy systems used by manufacturing SMEs, promote the adoption of environmentally sustainable technologies, and enhance SMEs' competitiveness through improved energy efficiency and reduced energy costs. A total of 1,153 applications were received under the call. To date, 966 projects have been approved, with grant disbursements amounting to TRY 4.292 billion provided to the respective beneficiaries.

The 2023.02 Call for Proposals - Circular Economy was launched to strengthen SMEs' capacity to benefit from opportunities arising from the green transition, digitalization and sustainable resource management, while addressing their priority investment needs in the areas of environmental sustainability and resource efficiency. Under this call, 2,303 applications were submitted, of which 1,017 projects have been approved. To date, grant disbursements totaling TRY 2.785 billion have been made to the approved beneficiaries.

Across the two calls, 1,983 SMEs have received a total of TRY 7.077 billion in grant support. Projects implemented by 2,136 SMEs have been completed, while grant implementation and disbursement processes for the remaining approved projects are ongoing. Preparatory work is currently underway for the launch of a new Call for Proposals aimed at further supporting the green transition of SMEs.

TUBITAK also promotes green growth through entrepreneurship and commercialization instruments, including BİGG Green Growth calls, as well as fellowships and competitions aimed at strengthening human capital and encouraging youth participation in climate related research.

1.2 RESEARCH

1.2.1 Research and Development Innovation (RDI) Supports

Building on the policy and planning landscape outlined above, Türkiye's climate-related RDI system brings together funding, implementation, and research-performing capabilities across a differentiated institutional structure. Within their respective mandates, the Ministry of Industry and Technology, the Ministry of Environment, Urbanization and Climate Change, the Ministry of Energy and Natural Resources, and the Ministry of Agriculture and Forestry contribute to the industrial, environmental, energy-related, and agricultural dimensions of the green transition. The Ministry of Industry and Technology plays a central role in shaping the green transformation of Türkiye's production and innovation system by integrating industrial policy, technology development, R&D and innovation, investment, entrepreneurship, commercialization, skills, competitiveness, and the transformation of industrial value chains. Through this broad mandate, it steers policies for industrial modernization and decarbonization, supports the development and deployment of clean and advanced technologies, and strengthens the domestic production capabilities required for a competitive, resource-efficient, and low-carbon economy. The Ministry of Environment, Urbanization and Climate Change shapes the climate policy, planning, monitoring, and reporting requirements that inform related research, data, and technology needs. The Ministry of Energy and Natural Resources guides energy-transition priorities and the deployment of clean and low-



carbon energy technologies, while the Ministry of Agriculture and Forestry guides research and innovation priorities related to climate-resilient agricultural production, the sustainable use of soil and water resources, food security, and the conservation and use of agricultural genetic resources. These mandates are supported by institutions that fund RDI, conduct research and technology development, or combine both functions.

Within this institutional architecture, TÜBİTAK serves both as an implementing and funding body for national RDI policies and as a research-performing organization. Through grant programmes, interest-free repayable financing instruments, and entrepreneurship schemes, it supports the development, demonstration, commercialization, and market uptake of climate-related technologies across academia, research institutions, and the private sector. Entrepreneurship instruments such as the BİGG Green Growth calls, together with fellowships and competitions, contribute to strengthening human capital and encouraging young people's participation in climate-related research and innovation. In parallel, TÜBİTAK's research centers and institutes undertake mission-oriented research and technology development in areas relevant to climate action and green transformation.

Aligned with the Industry and Technology Strategy for 2030 and the Twelfth Development Plan, TÜBİTAK prioritizes R&D and innovation activities that contribute to Türkiye's climate objectives and green transformation. Particular emphasis is placed on decarbonization in carbon-intensive sectors that provide essential upstream inputs across major industrial value chains, including iron and steel, aluminum, cement, chemicals, plastics, and fertilizers. Support also extends to digital technologies, particularly AI, as well as renewable energy, green hydrogen, CCUS, energy storage, and wastewater treatment technologies. These priorities aim to strengthen Türkiye's capacity to develop domestic, high-value-added solutions consistent with the European Green Deal and its international climate commitments.

Dedicated green transformation calls have been introduced, while climate-related projects are also prioritized within TÜBİTAK's broader support programmes. Between 2002 and 2026, a total of TRY 30.61 billion, at constant 2026 prices, was allocated to 4,087 projects and 4,318 researchers and young people. Of this amount, TRY 13.53 billion supported 2,017 academic and public R&D projects aimed at strengthening research capacity in green transformation fields, while TRY 10.8 billion was allocated to 2,070 industrial R&D and innovation projects focused on green technologies and sustainable production. A further TRY 6.28 billion was provided through fellowships and scholarship programmes to develop the expertise required for Türkiye's green and circular transition.

A major recent extension of this support portfolio is TÜBİTAK's role in the Türkiye Green Industry Project, where it leads the technology development-oriented R&D and innovation component with a budget of USD 175 million. This component supports the development, demonstration, and commercialization of green technologies, products, and processes that contribute to industrial decarbonization and strengthen enterprises' green transformation capabilities. The wider Project, coordinated by the Ministry of Industry and Technology and financed by the World Bank with a total budget of USD 450 million, is implemented jointly with KOSGEB, which supports SMEs in adopting greener and more resource-efficient production practices.

TÜBİTAK delivers its R&D and innovation component through three complementary instruments addressing different stages of industrial green transformation. The 1831 Technology Extension Programme provides SMEs with technical mentoring and tailored green transition roadmaps; the 1832 Green Transformation in Industry Call supports late-stage R&D and innovation projects; and the 1833 SAYEM Green Transformation Call promotes product-oriented collaboration platforms



that bring together industry, universities, and research institutions. To date, these instruments have supported 1,133 SME transformation projects, 270 company-led green innovation projects, and seven platforms involving 45 companies and 23 institutions in areas including waste management, textiles, sustainable agriculture, food security, and green hydrogen. Across the three instruments, a total of approximately USD 67.7 million in grant and reimbursable financing support has been approved.

Co-creation and platform-based mechanisms form an important part of TÜBİTAK's approach to fostering structured collaboration among universities, research infrastructures, public research institutes, industry, and other relevant stakeholders. Through instruments such as the TÜBİTAK 1004 High Technology Platforms Programme and the Industry Innovation Networks Mechanism (SAYEM), multidisciplinary consortia undertake collaborative technology development in strategic areas supporting green growth.

Under the TÜBİTAK 1004 Programme, consortia involving universities, research infrastructures established under Law No. 6550, public research institutes, and private-sector organizations are supported in developing and transferring high-technology solutions. Platforms currently operate in areas such as solar energy, electric-vehicle batteries, sustainable urban systems, and circular economy technologies. Key examples include the Battery Technologies Research and Development Platform for Electric Vehicles, which develops advanced battery systems; the Environmentally Compatible Sustainable Advanced Vehicle Technologies Platform, which addresses energy storage and management, clean-energy power systems, and alternative fuels; and the Türkiye Photovoltaic Technologies Platform, which seeks to raise the technology readiness levels of high-efficiency silicon solar cells, advanced photovoltaic materials, panel technologies, and photovoltaic power systems, while facilitating their transfer to industry.

Complementing the research- and infrastructure-oriented collaboration model of the 1004 Programme, the Industry Innovation Networks Mechanism (SAYEM) supports value-chain-based consortia led by private-sector R&D centers. These consortia bring together firms, universities, and research organizations to develop and commercialize high-technology products in areas such as smart cities, smart homes, and additive manufacturing. By strengthening links between research, industrial production, and market deployment, the 1004 Programme and SAYEM jointly contribute to Türkiye's green and digital transformation and support the development of domestically generated, high-value-added technological solutions with export potential.

Beyond platform-based collaboration, TÜBİTAK also employs demand-driven instruments to ensure that R&D activities respond to clearly identified market and industrial needs. The 1707 Order-Based R&D Programme supports direct partnerships between technology-provider SMEs and customer enterprises, enabling innovation projects to be designed around specific commercial requirements and facilitating the integration of R&D outputs into industrial production processes, including those supporting green transformation. The 1711 Artificial Intelligence Ecosystem Call complements this approach by strengthening the digital dimension of the green transition. It supports the development of AI solutions tailored to sectoral needs in areas such as smart manufacturing, climate-change mitigation, precision agriculture, and energy management. By linking AI developers with user organizations and sector-specific challenges, the programme promotes the development, adoption, and commercialization of innovative solutions across the national ecosystem.

Alongside these specialized and demand-driven instruments, TÜBİTAK's broader RDI support portfolio includes the 1501 Industrial R&D Projects Programme and the 1507 SME R&D Grant



Programme, which provide grant support for business-led R&D projects contributing to Green Deal objectives and the green transformation of industry. The commercialization performance of supported projects is subsequently monitored in the first, third, and fifth years following completion, enabling the longer-term market, economic, and environmental outcomes of public RDI support to be assessed.

TÜBİTAK advances green growth through entrepreneurship and commercialization instruments that support technology ventures from idea development to market entry and scale-up. Since 2012, technology-based start-ups have been supported through the 1512 Entrepreneurship Support Programme (BİGG) and, from 2023 onwards, through its successor, the 1812 Investment-Based Entrepreneurship Support Programme (BİGG Investment). These programmes help transform technology- and innovation-oriented business ideas into commercially viable products and services developed by R&D-intensive enterprises. Dedicated BİGG Green Growth calls have provided targeted support to entrepreneurs developing solutions for the green transition. In 2023, BİGG shifted from a grant-based to an investment-based model with the establishment of the TÜBİTAK BİGG Fund in cooperation with the Türkiye Development Fund. BİGG Investment provides pre-seed financing to support the establishment and early development of technology start-ups. This model was further expanded in 2024 through the launch of the TÜBİTAK BİGG+ Venture Capital Investment Fund in partnership with Kalkınma Girişim Sermayesi Portföy Yönetimi A.Ş., providing seed-stage financing to companies seeking to advance and scale their technologies. Together, these instruments establish a more continuous financing pathway from company formation to early-stage growth, including for ventures developing climate and green technologies.

Support also extends to established firms seeking to build advanced research capabilities and pursue frontier technologies with potential applications in green and digital transformation. In this context, the 1515 Frontier R&D Laboratory Support Programme enables firms with strong R&D capacity to establish world-class laboratories focused on high-risk, high-impact research and next-generation technology development. To ensure a strong scientific base, at least one-third of laboratory personnel must hold a doctoral degree, while at least half must be Turkish nationals. Currently, 15 private-sector frontier R&D laboratories are supported in strategic fields including hydrogen storage and transport, advanced composite materials, additive manufacturing, 6G, AI, and autonomous vehicle technologies.

Under the Ministry of Energy and Natural Resources, TENMAK combines sector-specific RDI funding with in-house research and technology-development capabilities. Its support instruments cover a broad pathway from scientific research and collaborative R&D to product and technology development, testing, localization, and the transformation of research outputs into production and commercial value. These instruments are open to public institutions, universities, and private-sector organizations.

Similarly, under the Ministry of Agriculture and Forestry, the General Directorate of Agricultural Research and Policies (TAGEM) combines the coordination of agricultural R&D priorities with research conducted through its affiliated institutes and support for collaborative R&D projects. Its R&D Support Programme requires project partnerships structured according to the type of lead organization: universities and TÜBİTAK R&D units apply in partnership with eligible private-sector organizations, while projects led by private-sector or civil-society require the participation of a TAGEM-affiliated institute or another Ministry research unit authorized by TAGEM. Its research and support activities contribute to climate-resilient crop and livestock production, the sustainable management of soil and water resources, agricultural biodiversity and genetic resources, food and feed research, and the development and transfer of agricultural technologies.



1.2.2 Human Resources Supports

Universities constitute another major pillar of Türkiye's climate-related research ecosystem. Their scientific and technological capabilities are strengthened through participation in national and international RDI programmes, as well as through public investment allocations for research infrastructure. These include research infrastructure projects at universities and public institutions under the annual Public Investment Programme and the Research Universities Support Programme, implemented through cooperation between the Presidency of Strategy and Budget and the Council of Higher Education (CoHE). Together, these mechanisms support the development of specialized laboratories and research infrastructure, mission-oriented research capacity, researcher training, and interdisciplinary collaboration across climate-related fields.

Developing highly qualified human resources in science, technology, and innovation is essential to Türkiye's green and digital transformation. The Twelfth Development Plan (2024-2028) accordingly identifies the strengthening of human capital in academia and industry as a key component of sustainable and competitive growth. Within this broader landscape, TÜBİTAK plays a central role in encouraging participation in science from an early age, supporting researchers at successive stages of their careers, and developing the skills and expertise required for research and innovation.

At the pre-university level, research project competitions, science fairs, and experiential learning programmes introduce students to scientific inquiry and encourage them to develop solutions to environmental and societal challenges. The TÜBİTAK 2204 Research Project Competitions for Secondary and High School Students include thematic areas such as the environment, air and climate, water research, biodiversity, food security, renewable energy, and sustainability. Dedicated Climate Change and Polar Research Project Competitions provide additional opportunities for students to undertake research directly related to climate mitigation, adaptation, and environmental change. Final exhibitions held within TEKNOFEST increase the visibility of these projects and encourage wider youth participation in science and technology.

Science outreach programmes complement these competitions by strengthening environmental and sustainability awareness. The 4004 Nature Education and Science Schools Support Programme provides hands-on learning experiences in areas including climate change and renewable energy, while the 4006 TÜBİTAK Science Fairs Support Programme enables students in grades 5 to 12 to design and present research projects addressing sustainability-related challenges.

At the university and postgraduate levels, TÜBİTAK supports the development of research capabilities through undergraduate research programmes, doctoral scholarships, and industry-oriented training instruments. The 2209-A and 2209-B University Students Research Support Programmes enable students to gain early research experience in academic and industrial settings. Doctoral scholarship and industrial doctorate programmes further strengthen the supply of specialized researchers and promote the development of expertise in priority technology areas, including those relevant to climate-change mitigation, adaptation, and the green transition.

Türkiye also uses excellence-oriented researcher mobility and career-development programmes to attract, retain, and support highly qualified researchers. The 2232 International Leading and Early-Stage Researchers Programmes and the 2236 International Fellowship for Outstanding Researchers support the integration of experienced international researchers and their teams into Türkiye's RDI ecosystem. Since 2018, these instruments have supported 261 researchers and enabled 1,525 researchers and students, including 484 PhD candidates, to participate in the resulting research teams.



Complementing these international instruments, the 2247 National Leading Researchers Programme and the National Early-Stage Researchers Programme support researchers based in Türkiye in undertaking high-impact and frontier research. These programmes aim to strengthen scientific excellence, address strategic knowledge and capability gaps, and create sustainable research teams in areas of national importance.

Across these instruments, climate change, green transformation, and priorities related to the European Green Deal are incorporated into thematic calls and priority-setting mechanisms where relevant. By connecting science education, researcher training, mobility, career development, and industry-oriented skills, Türkiye's human-resource support system contributes to the long-term capacity required to develop and deploy environmentally sustainable technologies and to support the transition towards a climate-resilient and competitive economy.

1.2.3 Research and Development Innovation (RDI) Activities

Türkiye's climate-related RDI activities are undertaken through a broad research ecosystem comprising public research institutions, universities and research infrastructures. These activities address both climate-change mitigation and adaptation, spanning fundamental and applied research, technology development, testing, demonstration, and field deployment. Particular emphasis is placed on developing domestic capabilities in clean and low-carbon energy, sustainable transport, environmental technologies, climate-resilient agriculture, and the efficient management of natural resources. The following examples illustrate the contribution of this research ecosystem to Türkiye's green transformation, climate resilience, and broader technological and industrial objectives.

TÜBİTAK and its research centers and institutes undertake research and technology development across a broad range of strategic fields, including information and communication technologies, space and aviation, rail transport, defence, food and energy technologies, climate change, polar research, metrology, basic sciences, and industrial management. Within this ecosystem, the TÜBİTAK Marmara Research Center (TÜBİTAK MAM) has developed a substantial portfolio of climate-related research covering green hydrogen, advanced fuel-cell systems, sustainable bioenergy, zero-emission transport, power systems, and smart environmental technologies. Supported by national research investment and participation in EU framework programmes, these activities contribute to Türkiye's green-energy transition and its broader climate mitigation and adaptation objectives.

A major strand of TÜBİTAK MAM's current research focuses on developing domestic capabilities across the green-hydrogen value chain. The South Marmara Hydrogen Shore Project (HYSouthMarmara), launched in 2023 under the Horizon Europe Clean Hydrogen Partnership, aims to demonstrate the integrated production, transport, storage, and use of 500 tonnes of green hydrogen annually. Produced using renewable electricity, the hydrogen is intended for industrial applications and emergency power generation. By demonstrating technologies across the hydrogen value chain, the project is expected to support the emergence of a regional hydrogen economy, strengthen domestic technological capabilities, and contribute to efforts to reduce dependence on imported energy.

Closely linked to HYSouthMarmara, the South Marmara Hydrogen Shore Platform Green Hydrogen Production Facility Project was also launched in 2023 to demonstrate green-hydrogen production technology under field conditions. The project involves the development of a 30 kW PEM electrolyser and an associated hydrogen-storage system. TÜBİTAK MAM is responsible for the



design, manufacture, assembly, and installation of the domestic electrolyser system. The planned field application, with a minimum hydrogen-production capacity of 5 Nm³ per hour, will be implemented at the Enerjisa Natural Gas Power Plant as a demonstration of the technology in an operational industrial setting.

These initiatives build on earlier domestic electrolyser-development activities. With support from the Turkish Energy, Nuclear and Mineral Research Agency (TENMAK), the PEM-Type Electrolyser Development Project produced a 10 kW system at Technology Readiness Level 6, making it suitable for field demonstration. Completed in March 2023, the project represented an important milestone in strengthening domestic capabilities related to electrolyser capacity, efficiency, and operating pressure. Its outputs provided a technological basis for the subsequent South Marmara Hydrogen Shore Platform Green Hydrogen Production Facility Project. Building on this experience, the 250 kW PEM Electrolyser Development Project, also supported by TENMAK, was launched in 2024 to develop a system with a hydrogen-production capacity of 100 kg per day over a planned three-year period.

Research has also extended to fuel-cell technologies and their use in distributed energy systems. Three Fuel Cell Micro-Cogeneration System Projects addressed hydrogen production from natural gas and the development of residential micro-cogeneration systems. These projects produced PEM fuel-cell prototypes with electrical capacities of 1, 2, and 5 kWe and covered fuel-cell manufacturing, hydrogen generation, process control and automation, and DC-AC inverter development. The resulting systems reached Technology Readiness Level 6.

To consolidate the national infrastructure supporting this field, the Fuel Cell and Electrolyser Technologies Development and Test Centre Project was launched in 2023 as a three-year initiative supported by the Presidency of Strategy and Budget. The project aims to strengthen development and testing capabilities for PEM fuel-cell systems ranging from 100 W to 100 kW for transport, stationary, and portable applications, as well as for PEM electrolyser systems of up to 100 kW. The resulting infrastructure is intended to support collaborative use by public institutions, universities, industry, and other organizations engaged in R&D and applied activities in the energy and transport sectors.

In transport applications, the Development and Integration of an Automotive-Compatible PEM-Type Fuel-Cell Module and System Components Project aims to develop a 1 kW PEM fuel-cell prototype that can be scaled for use as a range extender in electric vehicles. Supported under the TÜBİTAK 1004 Programme, the project was launched in March 2023 with a planned duration of 48 months. This national effort is complemented by the Horizon Europe-funded ESCALATE Project, Powering the EU Net-Zero Future by Escalating Zero-Emission Heavy-Duty Trucks and Logistics Intelligence, which is developing and demonstrating five heavy-duty vehicle platforms using fuel-cell, battery-electric, and range-extender hybrid powertrains. Combining vehicle-performance testing with digital-twin studies, the project targets Technology Readiness Level 8, a driving range of at least 800 km per refueling or charging event, a minimum 10% improvement in powertrain efficiency, and sustained operation exceeding 500 km per day over a six-month demonstration period. The project commenced on 1 January 2023 and has a duration of 42 months.

Alongside mitigation-oriented technology development, research activities also address the adaptation of climate-sensitive industries. The Enhancing the Adaptation Capacity of Climate-Sensitive Industrial Sectors through Risk Assessment Project, supported under the Climate Change Adaptation Grant Programme and implemented in cooperation with the Istanbul Chamber of Industry, conducts climate-risk assessments at 40 facilities operating in the food, textile, and



forest-products sectors. Based on these assessments, the project seeks to develop sectoral action plans and identify measures for managing and reducing climate-related risks.

The green and digital transformation of power systems represents another important area of research. TÜBİTAK MAM conducts projects aimed at improving the efficiency, flexibility, sustainability, and resilience of energy systems, including through the integration of clean-energy technologies and digital solutions. This work complements its activities in hydrogen, fuel cells, energy storage, and zero-emission mobility by addressing the system-level requirements associated with the wider deployment of low-carbon technologies.

Institutional capacity-building and smart environmental research are advanced through SMART4ENV Enhancing the Scientific Capacity of TÜBİTAK MAM in the Field of Smart Environmental Technologies for Climate Change Challenges which runs from 2022 to 2026. The project seeks to strengthen scientific expertise, international collaboration, and research excellence in technologies supporting climate-change mitigation and adaptation. It combines researcher training, institutional networking, knowledge exchange, and interdisciplinary R&D undertaken with academic, industrial, and international partners. Six case studies are being implemented at laboratory, pilot, and field scales across four areas: water and wastewater management, agricultural irrigation, marine and coastal research, and air pollution. These studies include low-cost real-time monitoring systems and sensors for wastewater treatment and air quality, smart environmental and remote-sensing technologies for irrigation management, and modelling of hydrological and environmental changes in marine and coastal systems. Cooperation with experienced European research partners also strengthens TÜBİTAK MAM's capacity to develop international projects and contribute to Türkiye's environmental sustainability, digitalization, and green-transition priorities.

Beyond TÜBİTAK MAM, the wider TÜBİTAK research ecosystem includes the Rail Transportation Technologies Institute (TÜBİTAK RUTE), which contributes to Türkiye's sustainable transport and energy-storage capabilities through its Battery Development Project under the EU's Horizon 2020 Programme. Drawing on advanced research, development, and testing infrastructure, the project focuses on lithium-ion and next-generation battery technologies with the aim of reducing dependence on critical raw materials, improving battery safety, and enhancing performance. This work strengthens domestic capabilities in battery and rail-transport technologies and complements TÜBİTAK MAM's research on zero-emission mobility, fuel cells, and hydrogen-based transport.

Alongside the TÜBİTAK research ecosystem, TENMAK contributes to energy-related RDI through its specialized research institutes. Operating under the Ministry of Energy and Natural Resources, it conducts research and develops technological solutions in fields including energy and clean-energy technologies, nuclear energy, hydrogen, boron, rare-earth elements, and other critical minerals. In the context of the green transition, its activities support areas such as renewable and low-carbon energy technologies, hydrogen production and storage, energy efficiency, energy storage, and the development of domestic enabling technologies. These research capabilities help connect Türkiye's sectoral energy priorities with technology development, demonstration, and practical application.

In the agricultural domain, TAGEM and its affiliated research institutes conduct and coordinate research supporting the adaptation and resilience of agricultural production to climate change. Activities cover areas such as climate-resilient crop varieties and breeding, agricultural drought and ecology, soil and water management, efficient irrigation, agricultural biodiversity and genetic resources, sustainable plant and animal production, and the application of digital and smart agricultural technologies. By linking national research priorities with regional field conditions and



sectoral needs, this research network supports the development and dissemination of technologies and practices that strengthen food security, resource efficiency, and the climate resilience of agriculture.

Complementing the capabilities of public research institutions, Türkiye has continued to expand the infrastructure required for climate-related R&D and innovation in support of its broader climate and green-transition objectives, including the 2053 net-zero emissions target. Public investment programmes have supported the establishment and development of specialized research facilities at universities and public institutions, taking into account national and regional priorities as well as the research and technology needs of the public and private sectors.

Within this expanding research landscape, university-based institutes, centers, laboratories, and national research infrastructures provide capabilities across multiple stages of climate-related research and technology development. In renewable energy and energy storage, prominent examples include the METU Center for Solar Energy Research and Applications (METU-GÜNAM), the METU Center for Energy Materials and Storage Devices (METU-ENDAM), the Ege University Solar Energy Institute, and the İzmir Institute of Technology Geothermal Energy Research and Application Center (IZTECH-GEOCEN). Capabilities in hydrogen and sustainable fuels are provided by the Synthetic Natural Gas and Hydrogen Production Technologies Laboratory at Boğaziçi University and the ITU Synthetic Fuels and Chemicals Technology Center (ITU-SENTEK). This ecosystem also includes the METU Institute of Marine Sciences, which undertakes research on climate change and marine ecosystems, and the Sabancı University Nanotechnology Research and Application Center (SUNUM), which provides enabling capabilities in energy materials, energy storage, water treatment, carbon-dioxide valorization, and environmental technologies. Together, these institutions support research, modelling, testing, demonstration, and technology development across renewable energy, hydrogen, sustainable fuels, energy storage, geothermal energy, marine and climate research, water technologies, and related enabling fields.

Taken together, the research and technology-development activities undertaken by TÜBİTAK, TENMAK, TAGEM, universities, and public research infrastructures—spanning green hydrogen, electrolyser and fuel-cell technologies, advanced batteries, sustainable bioenergy, climate-resilient agriculture, soil and water management, smart environmental technologies, climate adaptation, and related enabling technologies—constitute a broad and strategically significant contribution to Türkiye's green transition and its efforts to mitigate and adapt to climate change.

1.3 SYSTEMATIC OBSERVATION

There are various types of systematic observation systems in Türkiye, including atmospheric observation, terrestrial observation, ocean observation, and cryosphere observation.

1.3.1 Atmospheric and Terrestrial Climate Observing Systems

Turkish State Meteorological Service is one of the leading institutions in the use of modern and advanced technology in meteorological observation systems. Meteorological radars, automatic meteorological observation stations, upper air observation systems, lightning detection and tracking systems, low level wind shear warning systems, meteorological satellites, satellite communication and ground receiver systems, and high-performance computing and information technologies form the core technological resources of the Turkish State Meteorological Service.

Meteorological work requires a robust communications infrastructure at both national and global levels, and the Turkish State Meteorological Service plays a vital role in this regard by collecting,



generating and distributing meteorological observation and measurement data in line with its national and international responsibilities, through its strong communications infrastructure. With the widespread use of state of the art observation systems across the country, it has become possible to carry out automatic observations via electronic devices, thereby enabling the acquisition of faster, more accurate, continuous and timely observation data. Turkish State Meteorological Service is the sole public institution authorized to carry out meteorological observations and forecasts and to provide meteorological services in our country. Turkish State Meteorological Service has a widespread organization covering the entire country; there are 16 Regional Directorates, as shown below, Annex 1 Figure 63.

Annex I Figure 63 - Distribution of the TSMS's regional directorates



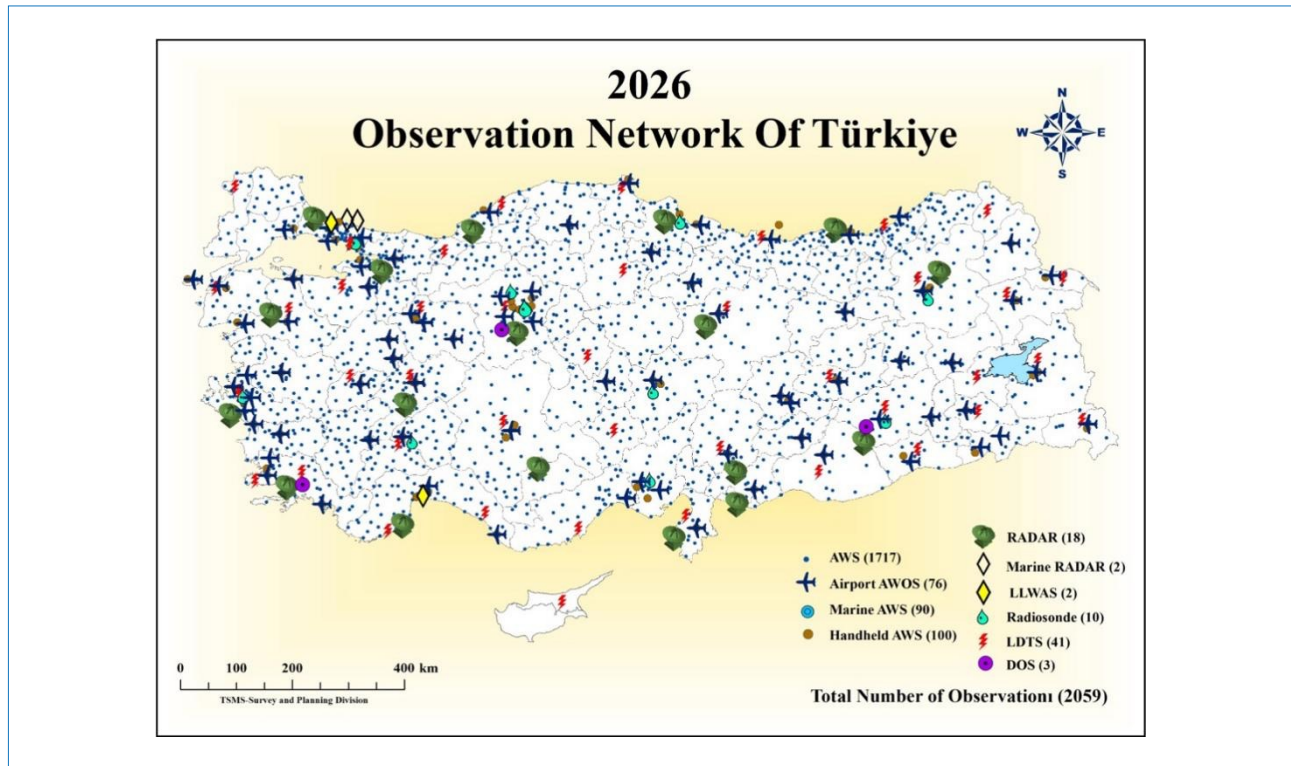
1.3.1.1 Meteorological Observation Network

Türkiye's meteorological observation network, operated primarily by the Turkish State Meteorological Service (TSMS), has continued to expand and modernize since the establishment of planned meteorological observations in 1929. The network provides real-time and near-real-time meteorological information for weather forecasting, nowcasting, forecast verification, aviation and maritime safety, disaster risk reduction, sectoral services, and research activities, including climate and climate change studies.

Since the First BTR, the TSMS observation network has been further strengthened. As of the beginning of 2026, the network comprises **2,059 observation systems**, including automatic weather stations, airport observation systems, marine observation systems, radars, lightning detection sensors, upper-air observation systems, dust observation systems, and low-level wind shear alert systems, as shown in Annex I Figure 64.



Annex I Figure 64 – Observation network by TSMS in Türkiye



The largest component of the network is the Automatic Weather Station (AWS) network. As of early 2026, TSMS operates **1,717 Automatic Weather Stations (AWS)** across Türkiye. These stations provide continuous observations of meteorological parameters and support the preparation of meteorological products and services for public institutions, economic sectors, research users, and the general public.

For aviation meteorology, TSMS operates **76 Airport Automatic Weather Observation Systems (Airport-AWOS)**. These systems provide essential meteorological information for airport operations and flight safety. In addition, **100 Handheld Automatic Weather Stations** are available as backup systems, particularly for use at TSMS regional directorates and airports in the event of failure or disruption in fixed observation systems.

Remote sensing capacity has also been maintained and expanded. As of early 2026, TSMS operates **18 meteorological radars**, consisting of **17 C-Band radars** located in Ankara, İstanbul, Balıkesir, Zonguldak, İzmir, Muğla, Antalya, Hatay, Samsun, Trabzon, Afyonkarahisar, Bursa, Karaman, Gaziantep, Şanlıurfa, Erzurum and Sivas, and **1 mobile X-Band radar**. These systems provide high-resolution data for short-term weather forecasting, severe weather monitoring, precipitation estimation, and forecast verification.

TSMS also operates a **Lightning Detection and Tracking System (LDTS)** with **41 sensors** across the country. The system provides real-time information on lightning location, type, polarity, signal amplitude, and lightning height. It supports nowcasting and provides services for sectors such as aviation, transport, agriculture, fisheries, energy, national defence, and insurance.

Upper-air observations are conducted through **9 radiosonde systems** located in Adana, Ankara, Diyarbakır, Erzurum, Isparta, İstanbul, İzmir, Samsun, and Kayseri. These systems provide vertical



profiles of temperature, humidity, wind, and pressure from the surface to the upper atmosphere. In addition, **1 mobile upper-air observation system** is available for observations at different locations when needed.

Satellite-based monitoring remains an important part of the national meteorological observation system. TSMS, a founding member of the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), receives real-time and near-real-time data from **3 EUMETSAT geostationary satellites** and **2 polar-orbiting satellites**. These data support weather monitoring, forecasting, climate services, and research.

To strengthen monitoring of sand and dust storms, TSMS operates **3 Dust Observation Systems** at strategic locations. These systems are particularly relevant for Türkiye due to its exposure to dust transport from North Africa and the Middle East, with potential impacts on air quality, visibility, transport, public health, and other human activities.

Marine meteorological observations have also been strengthened. As of early 2026, TSMS operates **90 Marine Automatic Weather Stations**, which provide meteorological data from Türkiye's surrounding seas and support maritime activities and marine weather services. In addition, **2 marine radars** are operated at the Black Sea exit of the Bosphorus Strait to measure waves, wind, and currents over a wider area using remote sensing methods.

Low-level wind shear monitoring capacity has been improved for aviation safety. Following the installation of a **Low-Level Wind Shear Alert System (LLWAS)** at Antalya Airport, a second system has been installed at İstanbul Airport. These systems support the detection and warning of low-level wind shear during aircraft approach, landing, and take-off.

Complementary environmental observation systems also support climate- and air-quality-related monitoring. Air quality monitoring in Türkiye is carried out by several institutions, including the Ministry of Environment, Urbanisation and Climate Change, municipalities, and organized industrial zones. As of 2022, **365 air quality monitoring** stations were in operation, measuring parameters such as SO₂, PM₁₀, NO, NO₂, NO_x, CO, and O₃. The data are collected by the Data Operation Centre of the Environmental Reference Laboratory under the Ministry of Environment, Urbanisation and Climate Change. In addition, samples from automatic precipitation collection systems located in different regions are analyzed by the Acid Rain Laboratory for pH, electrical conductivity, metals, anions, and cations, supporting the monitoring of transboundary pollution transport.

1.3.1.2 Hydrometeorological Observation Network

Hydrometeorological observations in Türkiye are mainly carried out by the **General Directorate of State Hydraulic Works (DSI)**. These observations support the assessment, planning, operation, and management of Türkiye's water resources, including irrigation water, industrial and drinking water supply, water quality monitoring, flood control, hydropower generation, and environmental flow monitoring.

Since the First BTR, the hydrometeorological observation network has continued to support water resource planning, flood risk management, drought monitoring, dam and reservoir operation, hydropower management, and climate-related water assessments. Accurate and reliable measurements of both water quantity and water quality remain essential for the optimum planning and operation of dams, ponds, irrigation systems, flood control structures, and other water infrastructure.



As of 2025, the active hydrometeorological observation network operated by DSI consists of **8,945 monitoring stations**, of which **2,031 are online stations**. The network includes flow monitoring stations, lake monitoring stations, snow observation stations, flood early warning stations, hydropower plant environmental flow monitoring stations, irrigation canal monitoring stations, groundwater monitoring stations, meteorological monitoring stations, and temporary miscellaneous monitoring stations used mainly for planning studies. The number of active stations in a hydrometeorological observation network as of 2025 is given in Annex I Table 52.

Annex I Table 52 – Types and number of observation stations installed by State Hydraulic Works

Type of Station	Number of Station	Number of On-line Station
Flow Monitoring Station	1,355	991
Lake Monitoring Station (Dam + Lake)	78	56
Meteorological Monitoring Station	56	0
Snow Observation Station	260	46
Flood Early Warning	319	319
HEPP Environmental Flow Monitoring	671	619
Miscellaneous Monitoring Stations*	1,382	
Irrigation Canal Monitoring Station	1,577	
Underground Water Monitoring Stations	2,812	
TOTAL	8945	2031

*Miscellaneous Monitoring stations are temporary monitoring stations usually used in planning studies of ponds (sampling two times in a month).

Surface water quality monitoring is also carried out by DSI in line with its mandate under Presidential Circular No. 4. In 2025, water quality monitoring was conducted across **25 river basins**, with **1,681 monitoring points** identified by regional directorates according to DSI needs, particularly for irrigation and drinking water purposes. Parameters monitored are that measurable by DSI laboratories and relevant to DSI's operational and planning needs. The basin level distribution of water quality monitoring points is provided in Annex I Table 53.



Annex I Table 53 – Water quality monitoring points of 2025

Basin Name	Point Number
Büyük Menderes	107
Susurluk	116
Meriç-Ergene	39
Konya Kapalı	34
Sakarya	126
Akarçay	10
Yeşilırmak	127
Batı Karadeniz	68
Batı Akdeniz	37
Doğu Akdeniz	48
Asi	18
Ceyhan	49
Seyhan	33
Marmara	149
Kuzey Ege	60
Küçük Menderes	59
Gediz	120
Burdur	4
Antalya	42
Kızılırmak	113
Doğu Karadeniz	66
Aras	56
Çoruh	17
Van Gölü	34
Fırat-Dicle	149
TOTAL	1681

Hydrological forecasting and basin operation capacity has also been strengthened through the **Flow Estimation and Basin Optimization Model Project (ATHOM)**, implemented by DSI and TUBITAK Marmara Research Center. The project aims to improve streamflow forecasting, water budgeting, and the daily, monthly, and annual operation of single and sequential water structures.

Following successful development and implementation in the Seyhan pilot basin, ATHOM has been expanded to other major river basins. The Ceyhan Basin model was completed in November 2023, while streamflow forecasting and operational programmes were completed for the Kızılırmak Basin by the end of May 2024 and for the Yeşilırmak Basin by the end of October 2024. The Fırat and Dicle basin components are planned to be completed by the end of 2025.

Further integration studies have been initiated for the Antalya, Sakarya, Çoruh, and Western Black Sea basins. The objective is to complete the integration of all remaining basins by the end of 2028. Once implemented across all 25 river basins, ATHOM is expected to provide a national streamflow forecasting and basin management system, supporting more coordinated, data-based, and climate-informed water resources management.



1.3.1.3 Communication, Data Management and Quality Assurance of Meteorological Information

The Turkish State Meteorological Service (TSMS) communicates meteorological forecasts and warnings to public institutions, sectors, and the general public through multiple channels, including SMS, e-mail, media outlets, national television and radio broadcasts, and digital services. TSMS provides short, medium and long-term forecasts, supporting timely preparedness and decision making for weather and climate related risks. In 2025, the consistency rate of long-range precipitation forecasts reached 92.1%.

Meteorological observations collected through ground, marine, upper-air, radar, satellite, and automated systems are electronically archived and distributed to domestic and international users. The **Meteorological Data Information Presentation and Sales System (MEVBİS)** provide online access to meteorological observations, climate data, analysis products, and climate projections, supporting research, planning, sectoral services, and climate related assessments.

The reliability of observations is supported by the **TSMS Calibration Centre**, which has provided calibration services for meteorological sensors since 2009. The Centre is accredited by the Turkish Accreditation Agency in accordance with ISO/IEC 17025:2017 and is recognized as a WMO Region VI Regional Instrument Centre, contributing to the quality and international comparability of meteorological measurements.

1.3.1.4 Early Warning and Forecasting Systems

Early warning and forecasting systems form an important part of Türkiye's systematic observation framework. These systems are supported by the Ministry of Environment, Urbanization and Climate Change (MoEUCC)- the Turkish State Meteorological Service (TSMS), the Ministry of Agriculture and Forestry (MoAF)- General Directorate of State Hydraulic Works (DSI), and the Directorate General of Water Management (DGWM), and the Disaster and Emergency Management Presidency (AFAD) under the Ministry of Interior (MOI).

TSMS provides meteorological monitoring, forecasting and early warning services and communicates warnings to public institutions, sectors and the general public through digital services, SMS, e-mail, media, television and radio. Through the MeteoUYARI colour-coded meteorological warning system, TSMS issues warnings for meteorological hazards including rain, snow, thunderstorm showers, strong wind and storm, hot and cold weather, fog, agricultural frost, icing and frost, dust transport, snowmelt and avalanche. Thunderstorm warnings may also cover related hazards such as lightning, hail and tornado conditions.

Several specialized systems support hazard-specific monitoring and early warning. The Flash Flood Guidance System (FFGS) supports the forecasting of intense rainfall and flash-flood conditions, while the Forest Fires and Meteorological Early Warning System (MEUS) monitors meteorological conditions associated with elevated forest-fire risk and provides advance information for preparedness, resource deployment and timely intervention.

Flood early warning is supported by DGWM and DSI through basin-level planning, observation and information systems. TATUS supports flood forecasting and real-time hazard mapping in 15 pilot sub-basins, while flood management plans and flood hazard and risk maps have been prepared for 24 basins. DSI operates a hydrometeorological observation network of 8,945 stations, including 319 online flood early warning stations, and has initiated work for the installation of TEUS across the country. TAMBIS supports the analysis of flood events, damages and interventions.



Drought early warning is also being strengthened through the Drought Forecasting and Early Warning System Project, initiated in 2024 and planned for completion in 2027. The project aims to support drought preparedness through shared indicators, harmonized algorithms and climate projections. MoAF also identifies agricultural drought monitoring and early warning as a priority for strengthening climate resilience in agriculture.

AFAD complements these systems through the Disaster Risk Reduction System (ARAS), which supports hazard mapping and risk assessment for floods, landslides, avalanches and other disaster types. Together, these systems strengthen Türkiye's capacity for monitoring, timely warning, preparedness, disaster risk reduction and adaptation planning.

1.3.2 Ocean Climate Observing Systems

As reported in the First BTR, ocean climate observations in Türkiye are supported by the Turkish State Meteorological Service (TSMS), the General Command of Mapping, and the Middle East Technical University Institute of Marine Sciences (METU-IMS). These activities include marine meteorological observations, sea-level monitoring through the Turkish National Sea Level Monitoring Network (TUDES), and long-term marine observation efforts such as Argo floats and coastal mooring systems. No major update has been identified for this reporting period.

1.3.3 Cryosphere Observations

As reported in the First BTR, Türkiye contributes to cryosphere and polar observation through its Antarctic research activities. These include national Antarctic expeditions and the Automatic Weather Station installed by TSMS on Horseshoe Island in 2019, which supports climate change research. No major update has been identified for this reporting period.

1.4 OTHER ACTIONS TAKEN TO SUPPORT RELATED CAPACITY-BUILDING IN DEVELOPING COUNTRIES

1.4.1 International Cooperation by the Turkish State Meteorological Service

As reported in the First BTR, the Turkish State Meteorological Service (TSMS) contributes to international capacity-building through meteorological training, regional forecasting systems, and climate services. TSMS operates as a WMO Regional Training Centre with training facilities in Ankara, İstanbul, and Alanya, providing courses on meteorological observations, forecasting, calibration, radar and satellite meteorology, aviation meteorology, agricultural meteorology, climate applications, and climate change.

TSMS also supports regional cooperation through systems and services such as METCAPPLUS, regional Flash Flood Guidance Systems, and the Eastern Mediterranean Climate Centre. These activities contribute to the sharing of meteorological data, forecasting tools, early warning products, and technical knowledge with countries in neighboring regions.

1.5 NATIONAL AND INTERNATIONAL DATA SHARING

Türkiye supports national and international data sharing through meteorological, environmental, geographic, and climate-related information systems. TSMS collects, manages, archives, and distributes domestic and international meteorological observations and forecast products through its data management and communication systems, including the Meteorological Communication and Distribution System and WMO-related data exchange mechanisms. Sector-specific meteorological products are also provided for aviation, maritime transport, highways, agriculture, and other users.



Spatial data sharing is supported through the **Türkiye National Geographic Information System (TUCBS)**, which provides a national framework for the integration, standardization, discovery and authorized sharing of geographic data produced by public institutions and other data providers. TUCBS supports access to spatial information relevant to environmental management, infrastructure, spatial planning, vulnerability assessment and climate risk analysis.

The **Climate Portal** complements TUCBS by providing access to climate data, projections, adaptation-related information and monitoring information for national and local climate action. Together, TUCBS, the Climate Portal and sectoral information systems contribute to improved data availability, institutional coordination, transparency and evidence-based climate planning.

As part of the ongoing regional climate projection and risk assessment work, extreme climate indices derived from the projections and the spatial outputs of vulnerability and risk assessments are planned to be shared through TUCBS in compatible geographic data formats. The establishment of a dedicated climate data layer has also been recommended, together with common standards for input data, intermediate analytical products and final outputs. This approach is intended to reduce duplicate data requests, improve interoperability and facilitate the use of climate information in public planning, investment and risk-management processes.

A dedicated technical infrastructure is also being developed for the long-term storage, processing and user-oriented dissemination of high-resolution climate projection outputs. The technical assessment identified a need for approximately one petabyte of storage capacity and an automated interface through which users would be able to request projection data according to selected variables, periods and geographical areas. Outputs are planned to be made available in formats including NetCDF and CSV and at different spatial and temporal resolutions. At the time of reporting, the required infrastructure remained under development.

2 EDUCATION, TRAINING AND PUBLIC AWARENESS

Türkiye is experiencing increasing climate related impacts, including droughts, landslides and extreme weather events. In response, education, training and public awareness activities have continued to be strengthened through the MoNE, the Directorate of Climate Change (DoCC), other public institutions, municipalities, universities, NGOs and private-sector actors. This chapter updates the information reported in the previous 8th National Communication and focuses on new developments while summarizing long-standing programmes and institutional arrangements.

2.1 GENERAL POLICY ON EDUCATION, TRAINING AND PUBLIC AWARENESS

The general policy framework for environmental and climate education is grounded in Article 56 of the Constitution, which recognizes the right to live in a healthy and balanced environment, and in Environment Law No. 2872, which establishes the protection of the environment in line with sustainable development principles.

MoNE is responsible for education policy and implementation at all levels of the national education system. The **2024-2030 Climate Change Adaptation Strategy and Action Plan** provides a broader policy context by emphasizing a resilient, sustainable and greener Türkiye, strengthened adaptive capacity across society, sustainable natural resource management and the participation of all segments of society in the green transition. In line with these national priorities, MoNE's climate change efforts focus on increasing climate change awareness in schools and educational institutions,



developing environmental management policies aligned with the Sustainable Development Goals (SDGs) and ensuring that climate-related initiatives are implemented effectively, efficiently, sustainably, and in a measurable and monitorable manner. MoNE has also mainstreamed climate action across the education system through dedicated action plans, including the implementation of the **2022-2025 Climate Change Action Plan**.

In accordance with Climate Law No. 7552, which establishes the framework for addressing climate change in line with Türkiye's green growth vision and net-zero emissions target, MoNE prepared the **Ministry of National Education Climate Change Action Plan for 2026-2030** following the conclusion of the previous Action Plan on 31 December 2025.

The Ministry of National Education Climate Change Action Plan (2026-2030) was developed through a participatory process to ensure alignment with evolving national policies and emerging climate-related challenges. The process involved experts from MoNE's central and provincial organizations, representatives of relevant public institutions and organizations, and academics with expertise in climate change and education. Building upon the achievements, lessons, and experience gained during the implementation of the previous Action Plan, the 2026-2030 Climate Change Action Plan is designed to further advance these accomplishments. The Plan aims to transform every component of the education ecosystem, from curricula and physical infrastructure to digitalization and teacher competencies into a climate-resilient system, thereby strengthening the education sector's capacity to adapt to climate change while supporting Türkiye's green transition and SDGs.

As part of the Climate Change Action Plan (2026-2030), the Ministry's climate change agenda is structured around the following ten strategic pillars:

Disaster and emergency management focuses on strengthening the preparedness, resilience, and adaptive capacity of the education system to disaster risks while ensuring the uninterrupted delivery of educational services during emergencies and disaster situations. **Digital platforms and distance education** support this objective by strengthening digital infrastructure, expanding digital learning opportunities, reducing the carbon footprint of educational activities, and enhancing the system's capacity to respond to climate-related disruptions.

Curriculum development promotes the integration of climate literacy, ecological awareness, and sustainable living through an interdisciplinary approach, enabling students to acquire the knowledge, skills, values, and attitudes required for sustainable development. At the same time, **school buildings and physical infrastructure are being transformed** into environmentally sustainable, energy and water-efficient, climate-resilient, and disaster-resistant learning environments while minimizing their environmental footprint. Teacher training and professional development further support this transformation by enhancing teachers' knowledge, competencies, and awareness of climate change and sustainability through comprehensive, continuous, and digitally supported professional development programmes.

Green school practices promotes the implementation of environmentally sustainable practices in schools, including zero-waste initiatives, energy efficiency, water conservation, rainwater harvesting, and nature-based activities, with the objective of fostering sustainable school environments. The **Dissemination of good practices** seeks to promote the dissemination and scaling up of innovative projects and successful sustainability practices implemented in schools by facilitating the exchange of knowledge and experience among education stakeholders.



International cooperation strengthens partnerships, promotes knowledge exchange, supports collaborative climate-related projects, and facilitates the integration of relevant global practices into the national education system. **Non-formal education** aims to expand public awareness and lifelong learning on climate change, environmental protection, and zero-waste practices by delivering non-formal education programmes through Public Education Centers and extending these initiatives to all segments of society. In addition, **health and hygiene standards** in schools seeks to improve health and hygiene conditions by strengthening access to safe drinking water, ensuring food safety, improving indoor air quality, and promoting healthy nutrition, thereby reducing the physical and biological health risks associated with climate change.

Through our 2026–2030 Climate Change Action Plan, environmental awareness is addressed as a lifelong culture beginning in early childhood. Cultivating environmentally responsible habits among students and fostering a sense of global responsibility, grounded in Türkiye’s civilizational understanding of stewardship, constitute strategic priorities. The broad range of initiatives implemented in schools from zero-waste management and recycling practices to rainwater harvesting, composting systems, and agroecological activities supports the translation of theoretical knowledge into practical skills and responsible everyday behavior. The integration of digital competencies into education also strengthens the resilience of the education system against potential disruptions caused by climate change and disasters. Enhanced digital infrastructure and distance-learning platforms support the continuity of education under extraordinary circumstances, while international cooperation facilitates the exchange and adaptation of relevant global practices. Furthermore, through green school initiatives and biodiversity conservation efforts, we are preparing our students not only to recognize environmental challenges but also to become leaders capable of developing innovative and locally appropriate solutions. The Action Plan is presented in the accompanying document, where all provisions are detailed through clearly defined objectives, strategic targets, concrete activities, and measurable performance indicators (<https://meb.ai/UiOSnC3>).

Earlier cooperation between the MoNE General Directorate of Basic Education and the European Commission TAIEX, including the workshop on the integration of climate change awareness into basic education, provided input to approaches for raising awareness in schools and beyond.

2.1.1 Current Climate Change Awareness in Türkiye

Recent public perception research indicates that climate change awareness in Türkiye remains high. The latest Climate Crisis Perception Survey, conducted by KONDA for İklim Haber with fieldwork carried out on 8-9 November 2025, shows that climate change is widely recognized by society. According to the survey, 88% of respondents think that extreme weather events such as floods, storms, extreme heat and droughts have increased in recent years, while nine out of ten respondents state that climate change exists. The survey also finds that 64% of respondents are concerned about climate change, with higher levels of concern among rural residents, women, the 34–50 age group and university graduates. These findings suggest that climate change is increasingly perceived not only as an environmental issue but also as a phenomenon linked to everyday experiences, disaster risks, water resilience and food security, and broader social and economic impacts.



2.2 PRIMARY, SECONDARY AND HIGHER EDUCATION

The Turkish National Education System consists of formal and non-formal education, as defined by the Fundamental Law of National Education No. 1739. Formal education covers pre-primary, primary, lower secondary, upper secondary and higher education, while non-formal education supports citizens outside or alongside the formal education system. Compulsory education in Türkiye is 12 years. According to the 2024-2025 National Education Statistics, net enrolment rates were 82.53% for pre-primary education, 95.43% for primary education, 89.09% for lower secondary education and 82.85% for upper secondary education.

2.2.1 Pre-primary Education

Pre-primary education aims to support children's physical, mental, emotional and language development. In 2024-2025, Türkiye had 17,640 pre-primary education institutions providing education to 1,741,314 children. The pre-primary curriculum includes environmental and climate-related learning experiences, and has been further strengthened through the Türkiye Century Education Model, which promotes sustainable living skills, climate awareness, eco-literacy, nature-based learning and environmentally responsible behaviours from early childhood. Also, the sensitivity value, which forms part of the Virtue-Value-Action Model underpinning the Türkiye Century Education Model, is operationalized through actions directly related to sustainability and climate change. In this context, the program aims to develop children's awareness of sustainability not only at the cognitive level but also through their attitudes and behaviors.

2.2.2 Primary and Lower Secondary Education

In 2024-2025, Türkiye had 25,099 primary schools with 5,704,483 students and 18,878 lower secondary schools with 5,181,914 students. Environmental and climate issues are addressed through compulsory and elective courses and through project-based school activities. The educational tool related to the Environmental Education and Climate Change curriculum, prepared in accordance with the Türkiye Century Education Model and approved by the Board of Education, will be taught in grades 6, 7, and 8 starting from the 2026-2027 academic year. The newly prepared curriculum includes 6 units and 24 learning outcomes. The program aims to raise students as individuals who are sensitive to environmental issues, capable of producing solutions, and ready to take responsibility. In this respect, the program adopts an environmental education approach that raises awareness, instills responsibility, and directs students toward action.

In line with the Türkiye Century Education Model approach, it adopts a holistic learning perspective that integrates field skills, conceptual skills, values, dispositions, social-emotional learning skills, and literacy skills. In this context, a process-oriented assessment approach aimed at observing the development of this holistic structure has also been adopted. With the introduction of the Türkiye Century Education Model, starting with grades 1, 5 and 9 in the 2024-2025 academic year, climate change, sustainable development, the zero-waste approach and environmental protection have been integrated across curricula. Climate and environmental themes are addressed not only in Science, Social Studies, Geography, Physics, Chemistry, Biology, Turkish Language and Religious Culture and Ethics, but also in courses such as Environmental Education and Climate Change, Disaster Awareness, Sustainable Agriculture and Food Security, and Climate, Environment and Innovative Solutions. Within this framework, 170,000 teachers and 1,113,568 students received training on Environmental Awareness and Global Climate Change.



Inclusive climate education has also been strengthened through materials developed for students with special needs, including booklets for first and second graders in special education schools and plans to expand accessible digital and interactive content.

2.2.3 Upper Secondary and Vocational Education

In 2024-2025, Türkiye had 12,423 upper secondary education institutions with 5,328,812 students. Climate change awareness has been supported through in-service teacher and administrator training. Between 2023 and 2025, 70,945 school administrators and teachers participated in 720 centrally and locally organized in-service training activities on environmental and climate change issues. A ten-hour Environment and Waste (Zero Waste) seminar is also delivered as part of candidate teacher training.

2.2.4 Higher Education

The framework curricula for 57 vocational fields implemented in vocational and technical Anatolian high schools have been updated in line with the 12th Development Plan, the Vocational and Technical Education Policy Document (2023), the Turkish Century Education Model, technological developments, and the needs of the labor market. These updated vocational field curricula reflect climate change mitigation, circular economy, sustainability, digital and green skills (twin transformation), and skills for the professions of the future. Thus, the framework curricula for all 57 vocational fields have been aligned with the goals of the European Green Deal.

Higher education institutions continue to contribute to climate change education and research through undergraduate and graduate programmes, research projects and courses on topics such as climate change and modelling, sustainable development, environmental economics, energy policies and finance, Earth system sciences and plant-climate models. These programmes support the development of human resources and expertise needed for climate action.

2.3 PUBLIC INFORMATION CAMPAIGNS AND SCHOOL-BASED CLIMATE ACTION

Türkiye has implemented national and local campaigns, projects and communication activities to raise awareness of climate change, energy efficiency, water conservation and sustainable living. Long-standing initiatives include the Raising Awareness Project for Climate Change, the İklimİN Project, the Voice of Meteorology Radio and TSMS digital services, the Family Education Programme, the Water Ambassadors initiative and the Young Climate Envoys Movement. These activities have contributed to public awareness, youth participation and stakeholder engagement.

MoNE has recently expanded school-based climate and sustainability actions. Under the Education for Sustainable Living Project, implemented with UNICEF, 18 storybooks for pre-primary, primary and lower secondary students were developed and updated, and 450,000 copies were printed and distributed to schools.

The ÇARE (Environment, Disaster, Risk Reduction and Education) Project, implemented by MoNE in cooperation with UNICEF, strengthened environmental, climate change, sustainability and disaster awareness in schools. The project included a SWOT workshop on the 2022-2025 MoNE Climate Change Action Plan, an online awareness survey administered to 115,541 students, the development of 78 educational activities and 24 learning materials, and the finalisation of 46 activities and 20 materials after pilot implementation. A total of 130 teachers received training-of-trainers and subsequently delivered in-service training to 19,920 teachers; the project reached 583,904 students nationwide.



In the 2025-2026 academic year, the Green Homeland, My School: A Remedy for the Future initiative was launched to promote sustainable living skills and climate awareness through school-based activities. The programme covers themes such as climate change, water efficiency, zero waste, biodiversity and disaster awareness. Supported by thematic activity calendars, teacher guides, activity books and digital materials, it implemented 127,091 activities and reached 22,817,845 students, 1,584,186 teachers, 3,370,562 parents and 502,491 educational staff. Related activities include tree planting, disaster drills, climate debates, idea marathons, water efficiency education, zero-waste and recycling activities, biodiversity initiatives, the International Zero Waste and Sustainability Competition, and student participation in climate and sustainability projects under TUBITAK and TEKNOFEST.

The Energy-Friendly Blue-Green School Project was launched to promote efficient use of natural resources and energy, environmental awareness, green practices, waste management and expansion of green spaces in schools. As of the reported period, 11,374 schools had applied and 2,848 schools were entitled to receive the Energy-Friendly Blue-Green School Label following monitoring and evaluation visits.

The Ministry of National Education is actively working to provide certification services in accordance with the **TS EN ISO 14001 Environmental Management System** standard. This initiative is designed to enhance the environmental standards within our schools and encourage the establishment of more ecologically minded educational institutions. As part of this endeavor, personnel from the Ministry of National Education are being trained to certify educational institutions for the ISO 14001 Environmental Management System. This training is being conducted through the **Ministry's Standardization and Certification Unit**, in collaboration with the Turkish Standards Institute.

To promote healthy eating habits, food safety, food security, and food quality in schools; ensure compliance with international standards; improve environments where safe and high-quality food is provided; encourage balanced nutrition; and promote regular physical activity, the Ministry has launched **"I Eat Healthy at My School"** programme. Through this initiative, the Ministry aims to foster a culture of healthy and sustainable nutrition among students, parents, and teachers; strengthen food literacy; reconnect students with traditional and locally produced foods; raise awareness of food loss and waste and promote responsible consumption; encourage healthy and balanced dietary habits; and support active lifestyles. These initiatives contribute not only to improved public health but also to more sustainable food systems, responsible resource use, and climate change mitigation by reducing food waste and promoting environmentally conscious consumption patterns. To further advance these objectives, the Ministry is establishing a **School Food and Nutrition Management System Certification Programme** through the Ministry's Standardization and Certification Unit, in collaboration with the Turkish Standards Institution (TSE). The programme will introduce standardized criteria and a certification framework to promote best practices in food safety, nutrition, and sustainable food management across schools, while strengthening institutional capacity and supporting the transition to more resilient and sustainable school food systems.

Ministry of National Education, through the Directorate General of Lifelong Learning (DGLLL), plays an important role in promoting climate awareness, environmental responsibility and sustainable lifestyles among adults and communities across Türkiye. Lifelong learning activities complement formal education by providing accessible learning opportunities for individuals of all ages, thereby strengthening public engagement in climate action and supporting the implementation of national climate policies.



Within the framework of non-formal education, the DGLLL continuously develops and updates training programmes in cooperation with relevant departments of the Ministry of National Education, public institutions, municipalities, professional organizations, universities, NGOs and other stakeholders. These programmes respond to emerging environmental challenges while supporting the transition towards a green and sustainable society.

As of 2025, a total of 37 non-formal education programmes addressing environmental protection, climate change and sustainability have been made available through face-to-face and distance learning modalities. These programmes cover a broad range of topics, including:

- Climate change and sustainability;
- Global climate change mitigation;
- Drought management and agricultural drought;
- Water literacy;
- Renewable energy resources and renewable energy technologies;
- Recycling and zero waste;
- Ecology and environmental literacy;
- Environmental protection awareness;
- Waste management and wastewater;
- Forest fire prevention and firefighting methods;
- Green fertilization and ecological agriculture.

In addition, eight training programmes have been developed under the field of Renewable Energy Technologies to improve knowledge and practical skills related to clean energy systems.

To increase accessibility, several climate-related programmes are also delivered through the Public Education Centers Information Network (HEMBA), Türkiye's national digital lifelong learning platform. Asynchronous online courses include Drought Management, Water Literacy, Recycling and Zero Waste, Basic Solar Energy Training, and Installation and Hybrid Integration of Photovoltaic Solar Panels. These digital learning opportunities enable citizens throughout the country to access climate-related education regardless of geographical location.

During 2025, a total of 55,128 learners participated in climate- and environment-related non-formal education courses, demonstrating growing public interest in environmental awareness and sustainable practices.

Beyond structured training programmes, the DGLLL also implements awareness-raising activities that integrate climate action with culture, creativity and community participation. During the 2024–2025 academic year, the “Climate Change through Traditional and Artistic Expression” (Geleneksel ve Sanatsal İfadeyle İklim Değişikliği Projesi) project was implemented across 30 Olgunlaşma Institutes. The project aimed to increase public awareness of climate change by combining traditional arts with environmentally responsible production approaches. Within the scope of the project:

- Online coordination meetings were organized with teachers and master trainers from all 30 Olgunlaşma Institutes;
- 62 climate-themed workshops and 72 public talks were conducted;



- 549 artistic works promoting sustainability, recycling and climate awareness were produced using environmentally friendly and upcycled materials;
- The “Transformation for Climate” Exhibition, held at CSO Ada Ankara in January 2025, showcased these works and highlighted the role of cultural heritage and traditional craftsmanship in promoting sustainable lifestyles and environmental responsibility.

Through these activities, Directorate General of Lifelong Learning contributes to strengthening environmental literacy, encouraging behavioural change and fostering public participation in climate action.

2.4 TRAINING PROGRAMMES AND INSTITUTIONAL CAPACITY-BUILDING

2.4.1 Energy Efficiency and Sustainable School Operations

Energy efficiency training is provided by the Department of Energy Efficiency and Environment through programmes on energy management in industry and buildings, certification of energy managers, survey-project training, energy audits, awareness-raising and energy performance certification. International cooperation also continues through the International Energy Efficiency and Energy Management in Industry and Buildings Training Project implemented with JICA and TİKA.

MoNE has also been transforming school campuses around energy efficiency, water efficiency and waste management. The Zero Waste Management System has been expanded across educational institutions; temporary zero-waste storage areas have been established in more than 47,000 schools and institutions; 1,544 recycling libraries have been established; more than 100,000 tons of waste paper have been recycled through the recovery of freely distributed textbooks; and zero-waste education has been provided to more than 10 million students.

2.4.2 Staff Awareness, Adaptation Training and Local Climate Action

Institutional capacity-building has been supported through projects and training programmes at national and local levels. The İklimi Duy Project, completed in 2021, developed four training modules, trained personnel from municipalities and CCACB member institutions, and established an Education Portal. The Union of Municipalities of Türkiye has also continued to provide training through its Municipal Academy, which reaches approximately 100,000 municipal personnel annually.

The Enhancing Adaptation Action in Türkiye Project under IPA-II was completed and its closing event was held in 2025. Under the project, sectoral trainings were organized in 20 provinces and awareness-raising conferences in seven provinces. Climate change impact and vulnerability analyses were prepared for Konya, Muğla, Samsun and Sakarya metropolitan municipalities, and local climate change adaptation strategies and action plans were developed for these provinces. The E-YUSEP monitoring system was established to support monitoring of these local adaptation plans. The Climate Change Adaptation Grant Programme under IPA-II also contributed to local and institutional capacity-building. A total of EUR 6.8 million in grant support was provided to universities, NGOs and municipalities, and the implementation of 29 grant projects has largely been completed. At the national level, the implementation status of the 2024 actions under the 2024-2030 Climate Change Adaptation Strategy and Action Plan was monitored and reported through the E-IDUSEP system established under the Climate Portal.



The EU Partnership for Local Climate Action in Türkiye Project under IPA-III is continuing this work. Within its grant component, 25 projects have been selected and implementation has started. Training and information activities are being carried out for institutions involved in grant management, including a Training on Tendering and Evaluation organized in December 2025. Further trainings on implementation, monitoring and financing are planned to support contract management, reporting, monitoring and the use of the MIS.

The project also supports regional and local climate information. Information seminars on climate risk assessment studies at the NUTS-1 level were delivered online for all 12 NUTS-1 regions, using inputs from expert academics and trainers and introducing climate projections based on six global climate models. The project will also develop a system for disseminating climate projection data. Under the local climate action framework established by Climate Law No. 7552 and related technical guidance, capacity-building trainings are planned for stakeholders involved in the preparation and implementation of Local Climate Change Action Plans across all 81 provinces. In addition, Local Climate Change Action Plans will be prepared for six pilot provinces: Kahramanmaraş, Elazığ, Kastamonu, Ordu, Isparta and Antalya. Decision-support tools, including a greenhouse gas calculation tool, a climate impact mapping tool and a nature-based solutions tool, are also expected to support evidence-based local climate planning.

The General Directorate of Forestry continues to train staff, forest villagers and other groups on sustainable forest management and forest fire prevention. Between 2020 and 2021, awareness activities reached 405,132 citizens, including military units, local firefighters, hunters, shepherds, farmers, press organizations and youth groups.

2.5 ACCESS TO INFORMATION: RESOURCE AND INFORMATION CENTRES

Climate-related information is made available through the websites, digital platforms, publications and communication channels of public institutions, professional chambers, universities, NGOs and private-sector organizations. Key governmental sources include the DoCC website, the climate change information pages of the Ministry of Environment, Urbanisation and Climate Change, TSMS climate publications, and energy efficiency information portals. Public meetings, project launch and closing events, public service broadcasts, short films and institutional journals also contribute to access to information.

The Climate Portal strengthens access to climate-related information, including adaptation actions, climate data and monitoring information. MoNE digital platforms also support public access to climate and sustainability learning materials. On the EBA Platform, the Sustainable World section, covering climate literacy, environmentally conscious consumption, nature conservation and individual carbon footprints, has been made available without a password. In addition, 21 educational videos on environmental and climate topics and a 13-part documentary series entitled Climate Change and Sustainability have been made available through the Science curriculum and TRT EBA channel.

2.6 INVOLVEMENT OF NGOS AND OTHER ORGANIZATIONS

NGOs, professional organizations, academia and private-sector institutions continue to play an important role in climate change education, public awareness and stakeholder engagement. MoNE cooperates strategically with public institutions and organizations, including the Ministry of Environment, Urbanisation and Climate Change, the Ministry of Agriculture and Forestry, TUBITAK,



the Zero Waste Foundation and the TEMA Foundation, on climate change, water efficiency and environmental awareness.

TEMA education programmes support ecological literacy and nature-based learning for students at different levels. The Climate Change Education and Awareness Project, implemented jointly by MoNE and The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA), reached approximately 7,000 children in 50 provinces in 2022 and 553 young people and adults in 19 provinces through awareness activities in the first half of 2022.

Private-sector and business organizations also contribute to awareness and capacity-building. TOBB conducts training and information activities on climate change, the green transition, circular economy, carbon pricing and CBAM, and operates a climate portal for its members. BIST supports sustainability awareness through the BIST Sustainability Index, Sustainability Participation Index and Sustainability Guide for Companies. Turkish Industry and Business Association (TÜSİAD) has prepared reports, position papers, dialogue platforms and training seminars on the European Green Deal, circular economy, carbon pricing, sustainable finance, renewable energy and climate policy.

2.7 INTERNATIONAL COOPERATION

Türkiye participates in international cooperation on climate change and sustainability through ministries, universities, research institutions, NGOs and private-sector organizations. Turkish experts contribute to Intergovernmental Panel on Climate Change (IPCC) processes, UNFCCC meetings, international conferences and regional initiatives. Institutions also support the participation of researchers, personnel and students in international events and collaborative programmes.

MoNE participates in sustainability-oriented international education initiatives. Turkish educational institutions are active in Erasmus+ and eTwinning projects. The BUSTIC EDU project, launched in March 2025 under the Erasmus+ Programme, adapts the European Sustainability Competence Framework (GreenComp) into an age-appropriate and interdisciplinary learning curriculum from pre-primary to high school levels. The pilot implementation has been completed in participating schools across Italy, Malta, Spain, Serbia, and Türkiye. The project is currently in the data analysis phase, evaluating the effectiveness of the programme and generating evidence to inform the further refinement and potential wider adoption of the curriculum. MoNE also cooperates with international organizations including UNICEF, the World Bank, the EU and UNDP.

The Ministry of National Education has been designated as the responsible institution for the core theme of Youth and Education within the scope of COP31, to be hosted by Türkiye. In this context, MoNE participated in the UNFCCC SB62 and SB64 processes in Bonn, sharing national practices on climate action in education with international stakeholders.

Other institutions also contribute to international capacity-building and cooperation. TSMS has organized and hosted more than 70 international trainings and workshops as a WMO Regional Training Centre. It participated actively in the Second FFGS Global Workshop and First FFGS Programme Management Committee Meeting held in Skopje in June 2023, presenting tools related to automated alerts, snow water potential and flash flood warning visualization. The GDCDE cooperates with international organizations including United Nations Convention to Combat Desertification (UNCCD), FAO, UNDP, UNEP and regional partners, and has trained 1,220 experts from 108 countries on combating desertification, land degradation neutrality, drought and climate change.



2.7.1 International Events in Türkiye

Hosting and participating in international events provides important opportunities for strengthening international cooperation, sharing knowledge and good practices, and increasing the visibility of Türkiye's climate change policies and initiatives. Türkiye therefore encourages public institutions, local authorities, the private sector, academia and civil society organizations to organize, host and participate in international events related to climate change, green development, sustainable cities, disaster risk reduction, water management, agriculture, energy transition and environmental protection.

Türkiye will host the United Nations Climate Change Conference, COP31, in Antalya from 9 to 20 November 2026. In the lead-up to COP31, Türkiye and Australia, as incoming COP31 Presidency, are expected to work in partnership, while the COP30 and COP31 Presidencies are coordinating to support an open, transparent and inclusive process with Parties and observers.

In 2026, private-sector climate engagement also continued in preparation for COP31. TÜSİAD launched the "COP31 Yolunda TÜSİAD Yuvarlak Masa Toplantıları Serisi", with the first meeting focusing on water security and drought. TÜSİAD also organized the "Su Odağında Teknoloji Çözümleri" event, where the impacts of climate-related water risks on the economy, finance and supply chains, as well as technological solutions for water management, were discussed.

The Türkiye-EU High-Level Climate Dialogue continued after the period reported in the 8NC. The third Türkiye-EU High-Level Dialogue on Climate was held in Brussels on 1 October 2025. The Dialogue addressed Türkiye's first Climate Law, climate policy implementation, carbon pricing, the establishment of Türkiye's ETS, adaptation, CBAM, just transition and other areas of cooperation.

At COP29, held in Baku in November 2024, Türkiye's climate-related initiatives continued to be presented through international platforms. TÜSİAD and Chapter Zero Türkiye organized events focusing on green transformation, climate finance, clean energy transition and the role of the private sector in climate action. Türkiye also presented its Zero Waste initiative through a dedicated pavilion at COP29, contributing to international awareness-raising on sustainability, recycling, biodiversity protection and climate action.

At COP28, held in Dubai in 2023, TÜSİAD organized climate-related events addressing the impacts of international climate policies and the CBAM on the economy, as well as the responses developed by financial institutions and the real sector in Türkiye.

Within the framework of the Barcelona Convention, Türkiye's earlier proposal to establish a Regional Activity Centre on Climate Change advanced further. At COP23 of the Barcelona Convention, held in Portorož, Slovenia on 5-8 December 2023, the Contracting Parties decided to establish a Regional Activity Centre on Climate Change hosted by Türkiye. This built on Türkiye's proposal following the 22nd Meeting of the Contracting Parties held in Antalya in December 2021.

Between 2011 and 2023, the GDCDE carried out international trainings and cooperation activities to exchange knowledge and strengthen technical capacity on combating desertification, land degradation neutrality, drought and climate change. Through these activities, a total of 1,145 experts from 108 countries were trained. The Directorate also cooperated with international organizations including the UNCCD Secretariat, the UNCCD Northern Mediterranean Regional Coordination Unit, UNCCD, FAO, FAO-SEC, UNDP, UNEP, the African Union, the Pan African Agency of the Great Green Wall, the League of Arab States, the Arab Organization for Agricultural Development and FOREST EUROPE.



At COP27, held in November 2022, TÜSİAD shared good practices from the Turkish business community in combating climate change and presented its green transition studies at the Türkiye Pavilion. TÜSİAD also organized sessions on sustainable finance at the EBRD Pavilion and at the International Chamber of Commerce's "Make Climate Action Everyone's Business Forum" Pavilion.

In June 2022, the "Sustainable Tourism and Circular Economy" event was held by the TÜSİAD-Sabancı University Competitiveness Forum, with the support of the Ministry of Culture and Tourism. The event addressed sustainable tourism and circular economy issues within the context of the Global Competitiveness Report of the World Economic Forum.

The UCLG Middle East and West Asia Section (UCLG-MEWA) Congress was hosted by Konya Metropolitan Municipality on 25-27 May 2022. During the Congress, the administrative bodies, thematic committee structures, strategic priorities and related governance arrangements were renewed. The six thematic committees of UCLG-MEWA were updated, and Gaziantep Metropolitan Municipality Mayor and Union of Municipalities of Türkiye President Fatma Şahin was elected Chair of the Environment Committee.

In April 2022, TÜSİAD and the United Kingdom International Trade Department jointly organized the "Climate Change and Sustainable Agriculture" webinar. Experts from Türkiye and the United Kingdom discussed the role of sustainable agricultural production in combating climate change, the implications of the Farm to Fork Strategy and good practices for sustainable agriculture.

The Climate Council was held in Konya on 21-25 February 2022 in line with Türkiye's 2053 net zero emissions target and green development policy. The Council brought together relevant stakeholders to determine sectoral strategic targets, contribute to climate-related legislation, identify basic policies for different sectors and establish a roadmap for long-term climate action. The Council produced 217 recommendations, of which 76 were prioritized, and these recommendations contributed to the development of Türkiye's climate policy framework.

The 22nd Meeting of the Contracting Parties to the Barcelona Convention was held in Antalya on 7-10 December 2021. Following the meeting, the Presidency of the Bureau was transferred to Türkiye, and Türkiye proposed the establishment of a regional activity center on climate change at the 93rd Bureau meeting held in İstanbul on 24-25 March 2022.

In November 2021, TÜSİAD organized the "Roadmap for a Carbon Neutral Türkiye" event as a side event of COP26. The programme was moderated by Professor Mehmet Emin Birpınar, Deputy Minister of Environment, Urbanization and Climate Change and Chief Climate Negotiator.

In September 2021, TÜSİAD organized a webinar titled "European Green Deal from the Perspective of the European Commission and the Private Sector". The webinar addressed Türkiye's green transformation needs from the perspective of investors and the business community.

In July 2021, before COP26, TÜSİAD organized the "UK-Turkey Race to Zero Summit" online. British and Turkish business leaders discussed climate action in the private sector and best practices that could support net zero targets in both countries.

In February 2021, TSMS experts participated as trainers in the WMO "Online Training Workshop on Quality Management Systems for Climate Services", together with experts from the Bureau of Meteorology of Australia.

The "Smart Cities and Municipalities Congress and Exhibition" was held by the Union of Municipalities of Türkiye under the auspices of the Presidency on 15-16 January 2020, in cooperation with the



Ministry of Environment, Urbanization and Climate Change and the Ministry of Industry and Technology. The Congress brought together mayors, ambassadors, academics, senior executives of technology companies and representatives of NGOs from 41 countries.

The International Association of Agricultural Cities was established on 24 June 2019 and is based in Konya. The Association brings together cities with important roles in the agricultural sector and aims to raise awareness on water management, climate change, drought and zero waste; transfer good agricultural practices among municipalities; share technological developments; and strengthen capacity through inter-municipal cooperation.

The “Climate Analysis and Climate Models” training was held at the Ankara facilities of WMO Regional Training Centre Türkiye for two experts from the Azerbaijan National Meteorology Service on 29 July-1 August 2019.

The “Eleventh International Training Workshop on Climate Variability and Predictions” and the related “Symposium on Variability and Predictability of the Global Climate System” were held in Ankara on 15-26 April 2019. The events were hosted by the Turkish State Meteorological Service in cooperation with NOAA, USAID and WMO.

The “3rd International Climate Analysis and Applications Course” was held in Ankara on 15-19 October 2018 by WMO Regional Training Centre Türkiye, with the participation of 18 trainees from 16 countries.

The Turkish State Meteorological Service also hosted the “Flash Flood Guidance System Global Workshop” in Antalya, with the participation of nearly 200 experts from 65 countries. The event focused on the sustainability strategy of the WMO Flash Flood Guidance System Project, which supports early warning for flash floods associated with extreme meteorological events.

2.8 MONITORING, REVIEW AND EVALUATION OF THE IMPLEMENTATION OF ARTICLE 6 OF THE CONVENTION

The Education, Raising Awareness and Capacity Building Working Group under the CCACB supports the monitoring, review and evaluation of activities related to Article 6 of the Convention. The working group contributes to national reporting, policy development, inter-institutional cooperation, education materials, training programmes, public information campaigns, resource and information centres, NGO participation and international activities.

Monitoring has also been strengthened through MoNE action plans, school-based programmes, project reporting systems and digital tools such as the Climate Portal and E-IDUSEP. These tools support the systematic follow-up of education, training, public awareness and adaptation-related capacity-building activities.

2.9 PUBLIC PARTICIPATION IN THE PREPARATION AND DOMESTIC REVIEW OF THE NATIONAL COMMUNICATION

The preparation of this National Communication has involved inputs from relevant public institutions and stakeholders, including MoNE and the DoCC. Drafting and review processes have relied on written institutional contributions, bilateral exchanges, stakeholder feedback and expert review. This approach supports the accuracy, transparency and relevance of the information reported under education, training and public awareness.



3 FINANCIAL, TECHNOLOGICAL AND CAPACITY-BUILDING SUPPORT

Türkiye is included in Annex I to the UNFCCC but is not listed among the Annex II Parties. Accordingly, Türkiye does not have obligations to provide financial resources, technology transfer, or capacity-building support to developing countries under Articles 4.3, 4.4, and 4.5 of the Convention or Article 11 of the Kyoto Protocol. Upon ratifying the Paris Agreement in 2021, Türkiye reaffirmed that it would implement the Agreement in accordance with its status as a developing country and its recognized special circumstances.

Türkiye's development status is consistently reflected in internationally recognized classifications. The United Nations Department of Economic and Social Affairs (UN DESA) classifies Türkiye as a developing economy in the World Economic Situation and Prospects 2026³³², while the International Monetary Fund (IMF) identifies it as an emerging market and developing economy, and the World Bank classifies it as an upper-middle-income country. Türkiye also remains eligible to receive Official Development Assistance (ODA) under the OECD Development Assistance Committee (DAC) framework³³³.

Consistent with these classifications, Türkiye's special circumstances under the Convention have been recognized by the Conference of the Parties (COP). Decisions 1/CP.16 and 1/CP.18 acknowledge Türkiye's unique position and emphasize the importance of facilitating financial, technological, and capacity-building support through multilateral institutions, including the Global Environment Facility (GEF). Nevertheless, Türkiye continues to face constraints in accessing certain international climate finance mechanisms. In particular, the lack of access to the Green Climate Fund (GCF) limits opportunities to mobilize concessional finance, leverage co-financing with MDBs, and accelerate climate investments.

Despite these constraints, Türkiye has significantly strengthened domestic climate action through sustained public and private investment. Central government institutions and local administrations continue to expand investments in renewable energy, energy efficiency, sustainable transport, climate-resilient infrastructure, and adaptation, while the private sector increasingly integrates climate considerations into corporate strategies and long-term investment planning. Many companies have adopted greenhouse gas reduction goals aligned with Türkiye's 2053 Net Zero Emissions Target. As a result of these efforts, Türkiye ranks fifth in Europe and eleventh globally in installed renewable energy capacity, with renewable sources accounting for approximately 62 percent of total installed electricity generation capacity as of May 2026.

As a developing country located in the Mediterranean Basin—one of the regions most vulnerable to climate change—Türkiye faces substantial investment needs to achieve its mitigation, adaptation, and sustainable development objectives. To complement domestic resources, the country actively mobilizes financial, technological, and technical support from MDBs, bilateral development partners, international financial institutions, United Nations agencies, and climate funds. This cooperation has supported the development of climate policies and regulatory frameworks, sustainable finance initiatives, ETS preparedness, industrial decarbonization, climate risk

332. For the report, please visit <https://www.un-ilibrary.org/content/books/9789211577761/read>

333. The details can be found at https://www.oecd.org/en/topics/sub-issues/oda-eligibility-and-conditions/dac-list-of-oda-recipients.html?utm_source



assessment, adaptation planning, municipal climate action, project preparation, and investment readiness, while strengthening institutional coordination and facilitating the mobilization of public and private climate finance.

