

State of Qatar's Nationally Determined Contribution (NDC)

Third Submission (NDC 3.0)

November 2025

Abbreviations	3
List of Tables	3
1. Introduction	4
2. National Circumstances	5
2.1. Geographical and Climate Profile	5
2.2. Social and Economic Profile.....	6
2.3. Stakeholder Engagement Process	6
3. NDC Ambition and Timeframe	7
4. Economic Diversification with Mitigation Co-Benefits	7
4.1. Oil & Gas.....	8
4.2. Power & Water	9
4.3. Industry & Construction	10
4.4. Transport	11
4.5. Waste	12
5. Adaptation Measures with Mitigation Co-Benefits	12
5.1. Agriculture & Livestock Sector.....	13
5.2. Biodiversity Sector.....	15
5.3. Water Sector	17
5.4. Energy & Industry Sector	19
5.5. Public Health Sector.....	20
5.6. Infrastructure & Coastal Resilience Sector	21
6. Means of Implementation	22
6.1. Institutional Coherence & Alignment	23
6.2. Legal & Regulatory Framework	25
6.3. Awareness, Education & Capacity Building.....	26
6.4. Research, Development & Innovation.....	27
6.5. Finance and Risk Management.....	28
6.6. International Cooperation.....	29
6.7. Social & Inclusivity Considerations.....	31
6.8. Transparency	31
7. Response Measures	32
8. Fairness and Ambition	33
9. Information for Transparency, Clarity and Understanding	34

Abbreviations

Acronym	Definition
AFOLU	Agriculture, Forestry, and Other Land Use
AI	Artificial Intelligence
BAU	Business as Usual
BRT	Bus Rapid Transit
CCGT	Combined Cycle Gas Turbine
CCS	Carbon Capture and Storage
CO ₂	Carbon Dioxide
COP	Conference of the Parties
ESG	Environmental, Social, and Governance
ETF	Enhanced Transparency Framework
EV	Electric Vehicle
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GHG	Greenhouse Gas
HVAC	Heating, Ventilation and Air Conditioning
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
LDAR	Leak Detection and Repair
LNG	Liquefied Natural Gas
MECC	Ministry of Environment and Climate Change
MMtCO ₂ e	Million Metric Tonnes of CO ₂ equivalent
MOU	Memorandum of Understanding
MRV	Monitoring, Reporting and Verification
MW	Megawatt
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NDS-3	National Development Strategy 2024-2030
OCGT	Open Cycle Gas Turbine
OGMP 2.0	Oil and Gas Methane Partnership
PPP	Public-Private Partnerships
PV	Photovoltaic
QNE	Qatar National Environment and Climate Change Strategy
QNV 2030	Qatar National Vision 2030
RDI	Research, Development and Innovation
R&D	Research and Development
SDG	Sustainable Development Goal
Tarsheed	National Program for Conservation and Energy Efficiency
TSE	Treated Sewage Effluent
UNFCCC	United Nations Framework Convention on Climate Change
UN SDGs	United Nations Sustainable Development Goals
USD	United States Dollar

List of Tables

Table 1. Impacts on the Agriculture & Livestock Sector	13
Table 2. Impacts on the Biodiversity Sector	15
Table 3. Impacts on the Water Sector	17
Table 4. Impacts on the Energy & Industry Sector	19
Table 5. Impacts on the Public Health Sector	20
Table 6. Impacts on the Infrastructure & Coastal Resilience Sector	21
Table 7. Selected National and Sectoral Policy Documents and Related Development Priorities in Qatar	23

1. Introduction

The State of Qatar reaffirms its commitment to the Goals of the Paris Agreement and the principles of the United Nations Framework Convention on Climate Change (UNFCCC), particularly the principle of common but differentiated responsibilities and respective capabilities. As a developing country with high vulnerability to climate impacts – ranging from extreme heat and water stress to sea- level rise – Qatar views climate action not only as an environmental imperative but also as a strategic enabler of economic diversification, national resilience, and sustainable development.

As a developing country Party, Qatar will continue to focus on climate change mitigation efforts. In this enhanced Nationally Determined Contribution (NDC 3.0), Qatar increases its climate ambition by targeting the implementation of mitigation actions equivalent to 42 MMtCO₂e of greenhouse gas (GHG) emission reductions by 2040. This represents a progression from Qatar's previous NDC, which expressed its mitigation ambition as a reduction relative to a business-as-usual (BAU) scenario by 2030, corresponding to approximately 37 MMtCO₂e of GHG mitigation. In this NDC, Qatar wishes to move away from linking emission reductions to a BAU scenario. Instead, Qatar is adopting a more transparent approach aligned with the requirements of the Enhanced Transparency Framework (ETF) to deliver quantifiable emissions reductions. This methodological shift reflects Qatar's proactive approach to enhancing the transparency, credibility, and effectiveness of its climate action, ensuring that ambition is defined by measurable outcomes.

Qatar's NDC 3.0 expands the sectoral scope of both mitigation and adaptation pathways. The mitigation component now covers a broader set of sectors, including the Oil & Gas sector, the Power & Water sector, the Industry & Construction sector, the Transport sector, and the Waste sector. The adaptation component articulates robust measures to enhance the resilience of critical systems— namely the Agriculture & Livestock sector, the Biodiversity sector, the Water sector, the Energy & Industry sector, the Public Health sector, and the Infrastructure & Coastal Resilience sector. These adaptation measures are guided by a growing focus on economic resilience, social protection, resource efficiency, circular economy practices, and ecosystem restoration.

Qatar's NDC 3.0 underscores the prominent role Qatar plays in facilitating equitable access to sustainable energy globally, while supporting a just global transition and climate change response. Qatar plays a key role in the global energy transition by providing Liquefied Natural Gas (LNG) to partner countries not only as a cleaner alternative to coal and oil, but also as a backup for intermittent renewables, supporting their efforts to reduce emissions while ensuring affordable energy security and economic development.

In this context, Qatar emphasizes the importance of response measures, particularly in ensuring that climate policies align with its sustainable development trajectory without compromising its own energy security and economic stability, as well as that of countries that rely on Qatar's LNG exports. All national actions and plans described in this NDC will be implemented in accordance with the principles and provisions of the UNFCCC, particularly Articles 4.7 and 12.4. Accordingly, Qatar supports a just and equitable global transition and calls for enhanced international cooperation, notably in the form of climate finance, technology transfer, and capacity building support to enable the implementation of its climate goals.

Through this enhanced NDC, Qatar demonstrates its commitment to climate leadership while preserving the right to sustainable development. This submission reflects a transparent, inclusive, and nationally determined process aligned with the Paris Agreement's broader principles of equity, solidarity, and shared prosperity.

2. National Circumstances

2.1. Geographical and Climate Profile

Physical Geography of Qatar

The State of Qatar is a peninsula situated along the western coast of the Arabian Gulf, bordered to the south by the Kingdom of Saudi Arabia and surrounded by Gulf waters. It covers approximately 11,637 km², including offshore islands, such as Halul, Shira'wa, and Alashat. Geographically, it lies between latitudes 24°27'N and 26°10'N and longitudes 50°45'E and 51°40'E.

Qatar has a 550 km coastline along its western, northern, and eastern boundaries. The terrain is predominantly flat desert, featuring sand dunes in the southeast, limestone outcrops in Dukhan and Jabal Fiwairit, and hill formations in the northwest. Elevations range from 0 to 107 meters above sea level. The country extends nearly 190 km from north to south and 90 km from east to west.

Approximately 80% of the land surface is composed of limestone and dolomite, with gypsum layers present in the south. Vegetation is primarily found in the northern region, particularly in rainwater-draining basins, where fertile soils exist. The landscape also includes numerous coves, inlets, caves, and sinkholes across both rural and urban areas.

Climate Landscape

The State of Qatar is dominated by a subtropical, hot, dry desert climate with low annual rainfall, very high temperatures in summer, and a large difference between day and night temperatures in inland areas. The coastal areas are influenced by the Arabian Gulf and experience lower maximum and higher minimum temperatures, coupled with higher moisture in the atmosphere. June to September is the peak summer season in the State of Qatar with nearly zero rainfall. The mean daily temperatures during June, July, and August are 35.7°C, 36.5°C, and 35.9°C respectively in Doha. The mean daily maximum temperatures in these months are 42.2°C, 42.4°C, and 41.4°C. During summer, the temperatures can exceed 50°C. Winter is cooler with occasional rain. Spring and autumn seasons are warm, mostly dry, and pleasant with mean daily maximum temperatures between 27°C and 40°C and cooler nighttime temperatures between 18°C and 30°C. On average, Qatar receives about 77mm rainfall per year with some years receiving nearly zero rainfall in the past 60 years of record. Most of the rain comes in the form of thunderstorms.

The State of Qatar occasionally experiences events of high winds known as Shamals during winter and summer seasons. Days with northerly to northwesterly winds exceeding the speed of 17 knots and persisting for at least 3 hours are considered as Shamal days. Often, Shamals also bring a lot of dust to Qatar from upstream wind regions.

Key Climate Hazards in Qatar

Qatar's geographic and climatic characteristics make it particularly vulnerable to the impacts of climate change. Its arid environment, flat topography, and extensive coastline increase its exposure to extreme heat, rising sea levels, and variability in precipitation. Key climate hazards in Qatar include rising mean air temperature, changing precipitation patterns, extreme events, and wind-related, coastal, and marine hazards.

These climate hazards pose significant threats to Qatar's infrastructure, economy, biodiversity, and public health, with cascading effects across critical sectors. To address these risks and enhance the resilience of its people, communities, and economic sectors, Qatar has engaged in the development of its National Adaptation Plan (NAP), grounded in robust sectoral climate vulnerability and impact assessments across six sectors, including agriculture & livestock, biodiversity, water, energy & industry, public health, and infrastructure & coastal resilience.

2.2. Social and Economic Profile

Over the past three decades, Qatar has experienced rapid economic growth, primarily driven by its hydrocarbon sector. The associated economic prosperity has enabled the country to pursue national sustainable development and address social and human development gaps across various fields including education, health, and infrastructure. In parallel, the country's population grew fivefold between 2000 and 2023, reaching over 3 million – an inflow heavily supported by Qatar's economic diversification gains. This growth has been accompanied by significant investments in infrastructure, exemplified by the decade-long development program culminating in Qatar's successful hosting of the 2022 FIFA World Cup.

Qatar's growing population, which includes a significant expatriate workforce, has increased demand for essential resources, such as energy, water, and food. Qatar is actively working toward establishing a balance in light of the water-energy nexus. For example, while water desalination is a cornerstone of Qatar's water security, Qatar is introducing more energy efficient technologies to mitigate emissions. Qatar's arid climate and dependence on imported food heighten its exposure to climate-induced disruptions in global supply chains. This underscores Qatar's need for enhanced food security measures. Concurrently, efforts to increase local food production face challenges, such as limited arable land, soil salinity, and water scarcity.

Qatar distinguishes itself as a leading exporter of LNG – a key source of lower-carbon energy, meeting growing energy demand and supporting the transition to lower-emitting, cleaner fuels. Qatar's Oil & Gas sector continues to play a key role in bringing prosperity to the nation and remains the largest contributor to government revenue, GDP, and export earnings.

The Qatar National Vision 2030 (QNV 2030) - the foundation of Qatar's development strategy - recognizes the need to balance economic growth with environmental stewardship and sustainable development. Operationalizing the QNV 2030, the National Development strategy 2024-2030 (NDS-3) seeks to transform Qatar into a diversified, knowledge-based and sustainable economy, with the ambition to become a regional and international hub for investment, trade, and tourism. The State is embracing a comprehensive digital transformation, increasing investments in technology, innovation, and artificial intelligence. This is complemented by a significant growth in educational development and investments in research and development (R&D). As Qatar continues its economic transformation, the government emphasizes inclusivity and resilience, prioritizing a whole-of-society approach. This includes engaging the private sector, academia, and civil society in national development strategies. The transition toward high-skilled expatriates and the upskilling of local talent reflect Qatar's efforts to foster a knowledge-based economy that is less resource-intensive.

2.3. Stakeholder Engagement Process

The development of this NDC is grounded in a robust, transparent methodology built on stakeholder engagement and data collection. This section outlines the processes and approaches undertaken to ensure that the enhanced NDC accurately reflects Qatar's climate ambitions and aligns with global best practices.

Stakeholder Engagement

Stakeholder engagement is central to securing the country's ownership and accountability for both the development and implementation of a credible NDC ambition. Recognizing the multi-sectoral nature of climate action, the development of this NDC involved the active participation of diverse stakeholders, including government ministries, state-owned enterprises, private sector entities, and academia. These stakeholders have contributed valuable insights and expertise, ensuring that the NDC captures a holistic and actionable perspective. Stakeholder engagement activities included a systematic data collection process through engagement forms, consultations, and sector-specific dialogues aimed at identifying challenges, opportunities, and priorities.

Data Collection Process

Accurate and comprehensive data collection is a key component of the methodology, ensuring that the enhanced NDC is built on robust evidence. Data was gathered from a wide range of sources, with a focus on Qatar's key

emitting sectors and areas with significant mitigation potential. The data collection process involved two key elements:

1. **Sectoral Coverage:** Data was collected across five priority sectors:
 - **Oil & Gas**, including measures to reduce emissions and implement carbon capture and storage (CCS) technologies and large-scale solar projects.
 - **Power & Water**, including strategies to increase small-scale solar energy capacity, improve energy efficiency in water desalination and district cooling, and strengthen demand-side approaches.
 - **Industry & Construction**, including measures to improve resource efficiency, encourage sustainable construction practices, and adopt low-carbon manufacturing processes.
 - **Transport**, including initiatives to promote electric vehicles and public transportation uptake, and fuel efficiency standards.
 - **Waste**, including efforts to increase recycling rates, reduce landfill emissions, and promote waste-to-energy solutions.
2. **Key Data Points:** The collected data included details on:
 - Entities responsible for implementation and stakeholders.
 - Implemented, ongoing, and planned mitigation measures, programs, and policies, and their descriptions.
 - Realized and/or anticipated GHG emission reductions.

3. NDC Ambition and Timeframe

As a developing country Party, the State of Qatar will continue to focus on climate change mitigation efforts. Qatar increases its climate ambition by targeting the implementation of mitigation actions equivalent to 42 MMtCO₂e of GHG emission reductions by 2040.

Qatar's NDC ambition has been guided by a national stakeholder engagement process to ensure inclusivity and consideration of diverse perspectives and priorities. The ambition is based on a bottom-up, project-based approach and is grounded in projects that are deemed feasible under current conditions. Qatar is prioritizing viable technologies and solutions that enable emission reductions, removals, or avoidance. Qatar's approach is therefore designed around realistic pathways for implementation, aimed at maximizing the potential of achieving tangible outcomes.

4. Economic Diversification with Mitigation Co-Benefits

Economic diversification is fundamental to Qatar's national development and climate strategy, serving as a proactive pathway toward a diversified, knowledge-based, and sustainable model of economic growth. Under the framework of the National Development Strategy 2024–2030 (NDS-3), Qatar has identified three categories of economic clusters – namely “growth”, “resilience” and “enabling” clusters – that guide its transformation toward a more diversified, knowledge-based and sustainable economy.

- *Growth clusters* include sectors, such as manufacturing, logistics, and tourism, which are designed to generate substantial economic value while creating employment and investment opportunities.
- *Resilience clusters* include food and agriculture, and health services - areas aiming to strengthen Qatar's ability to adapt to internal and external shocks, including those posed by climate change.
- *Enabling clusters* include education, financial services, and IT/digital sectors, which are intended to support the implementation of its ambitious economic diversification strategy.

Economic diversification under these clusters is anticipated to support the lowering of the overall carbon intensity of Qatar's economy. Moreover, investments in research, innovation, and human capital development are critical to fostering climate-smart industries, driving lower-carbon solutions, and maintaining economic competitiveness.

Economic diversification also strengthens Qatar's fiscal and institutional capacity to implement climate action. By broadening its revenue base, the State can sustainably finance climate-resilient infrastructure, adaptive technologies, and international cooperation efforts. Additionally, by continuing to supply LNG as a cleaner alternative to coal and oil, Qatar plays a constructive role in the global energy transition, supporting mitigation

efforts through fuel substitution while facilitating equitable access to energy. In this way, economic diversification serves as a strategic bridge between Qatar's national development goals and its climate action, ensuring a future that is both economically robust and environmentally responsible.

In this NDC, Qatar increases its climate ambition by targeting the implementation of mitigation actions equivalent to 42 MMtCO₂e of GHG emission reductions by 2040, with mitigation outcomes expected to materialize across five sectors (Oil & Gas, Power & Water, Industry & Construction, Transport, and Waste). As per Article 4.7 of the Paris Agreement, mitigation co-benefits resulting from adaptation pathways contribute to the NDC ambition.

4.1. Oil & Gas

The State of Qatar benefits from abundant hydrocarbon resources, which are vital to its economic and social development. At current production levels, Qatar exports around three-quarters of the natural gas it produces, hence, these natural gas resources are also critical to supporting other countries in transitioning away from more carbon-intensive fossil fuels, such as coal and oil.

Sectoral Mitigation Efforts

The Oil & Gas sector in the State of Qatar is at the forefront of national mitigation efforts. The sector's initiatives are diverse and include deploying cleaner fossil fuel technologies, developing engineered sinks to store emissions, diversifying the energy mix, and driving operational excellence across existing facilities and infrastructure.

Carbon Capture and Storage. In line with the Paris Agreement objectives of balancing anthropogenic emissions with removal sinks of greenhouse gases, the Oil & Gas sector is prioritizing the adoption of technology levers that are grounded in the best available science, have reached sufficient levels of technology maturity, and are currently available to be commercially deployed. Accordingly, Qatar is taking a leading role in deploying carbon capture and storage (CCS) technology at scale across the Oil & Gas sector. The sector's significant investments and capacity additions position Qatar among global leaders in deploying CCS and cleaner fossil technologies. In 2019, the largest CO₂ capture and sequestration facility at the time in the Middle East and North Africa (MENA) region commenced sequestration operations at Ras Laffan in Qatar. This facility has a design capacity of 2.2 million tons of CO₂ capture and storage. Additionally, several greenfield and brownfield projects are being developed, leading to an expected fivefold increase in CCS capacity within Qatar.

Renewable Energy. Leveraging its abundant sunshine, the State of Qatar is advancing solar energy as a key pillar of its renewables strategy to diversify the local energy mix. Currently, three solar power plants with a combined capacity of approximately 1.7 gigawatts are operational in the country. Additional projects are underway to double this capacity. These projects complement existing gas-based electricity generation, ensuring that growing power demand is met while reducing the emissions intensity of the sector. In addition, various end-use applications across the industry, buildings, and transport sectors in Qatar are progressively undergoing electrification and implementing small-scale renewable energy systems. To further strengthen the role of renewables in the national energy mix, several initiatives are also being implemented to advance the transition toward a smart grid. These initiatives focus on infrastructure upgrades to enable greater integration of renewable energy.

Energy Efficiency. A multitude of operational emissions reduction efforts are being targeted across the entire value chain, encompassing LNG, upstream, midstream, and downstream operations producing energy and associated products. All assets in the sector are actively implementing energy efficiency improvement projects. These interventions focus on performance monitoring, as well as the identification and implementation of energy-saving initiatives. The primary objective of these efforts is to reduce natural gas consumption by optimizing its utilization as feedstock and fuel, as well as minimizing power demand to achieve indirect savings in gas use. In addition, activities to phase out and replace older equipment and processes with modern technologies will deliver improved efficiency and support further mitigation of emissions.

Flaring. Eliminating routine flaring and undertaking projects to minimize other sources of flaring to the lowest technically feasible levels is a key target across the sector. Flaring mitigation projects are being implemented

across all assets. The sector has already implemented several world-class flaring reduction projects, including the Al Shaheen Oil Field Gas Recovery and Utilization Project, as well as the Jetty Boil-Off Gas Recovery Project at the LNG loading facilities.

Methane Emissions. Another key priority for the sector is methane emissions mitigation and abatement. The sector is aiming for near-zero methane emissions across all assets in Qatar. To support this ambition, all upstream and midstream assets are required to execute methane emissions implementation plans to fulfill the Oil and Gas Methane Partnership (OGMP 2.0) reporting requirements. Additionally, all assets are implementing Leak Detection and Repair (LDAR) programs. LDAR activities are being supported with the use of advanced monitoring technologies, including satellites, drones, advanced cameras, and sensors.

Local Mitigations with a Global Impact. The combination of these initiatives supports not only the mitigation of emissions within the State of Qatar but also Qatar's international commitments to supply energy and associated products at a lower carbon intensity.

4.2. Power & Water

The Power & Water sector accounts for the second largest share of GHG emissions in Qatar. With demand for both water and electricity projected to rise due to population and GDP growth, the State of Qatar continues to invest heavily in power and water infrastructure to ensure reliability and reduce the sector's carbon intensity. Currently, gas-fired thermal power plants account for the majority of Qatar's total capacity, while most power plants are cogeneration plants that have thermal water desalination. Qatar aims to reduce the carbon intensity of power and water generation while managing demand through efficiency and conservation measures. Qatar aims to expand its renewable energy capacity by promoting small-scale solar photovoltaic (PV) uptake, and to increase the efficiency of its gas-fired power plants by replacing aging units with new, high-efficiency power plants. Qatar also aims to reduce the carbon intensity of water desalination by increasing the share of reverse osmosis. Lastly, Qatar is introducing energy efficiency measures, such as the deployment of district cooling, and energy and water conservation measures aimed at buildings and agriculture.

Sectoral Mitigation Efforts

Replacement of Retiring OCGT with CCGT. Qatar plans to retire Open-Cycle Gas Turbines (OCGT) and replace them with more efficient Combined-Cycle Gas Turbines (CCGT).

Adoption of Reverse Osmosis in Desalination Plants. Desalinated seawater constitutes the main source of Qatar's municipal water supply. To reduce carbon emissions from seawater desalination, Qatar aims to accelerate the adoption of electricity-driven reverse osmosis technology. Reverse osmosis is anticipated to be more efficient than the thermal processes currently used, thereby reducing energy requirements and subsequently GHG emissions associated with desalinated water production.

Adoption of District Cooling. District cooling plays an important role in Qatar's climate change mitigation efforts, offering energy efficiency gains compared to conventional air conditioning systems. With 76 district cooling plants operational, Qatar's district cooling capacity has reached approximately 1.2 million tons of refrigeration (TR), accounting for about 20% of the country's total cooling demand.

Adoption of TSE for Agriculture, Landscaping, District Cooling, & Industry. Enhancing sustainable water management through circularity and efficiency is also a key element of Qatar's mitigation strategy. Qatar increasingly relies on Treated Sewage Effluent (TSE) water for landscaping, agriculture, district cooling, and industry. As national water demand grows, the reuse of TSE is anticipated to offset additional demand for seawater desalination, which is more energy intensive in comparison to wastewater treatment, and therefore contributes to GHG mitigation.

Demand-Side Management Measures. Qatar has intensified efforts to improve energy and water efficiency in the building sector, through a combination of regulatory measures, public awareness programs, and technology deployment. New regulations, including mandatory star-rating standards for air conditioners, were introduced in 2020 to promote the adoption of high-efficiency household equipment. In addition, conservation codes now

regulate the use of efficient plumbing fixtures and provide guidelines for water use in buildings. Qatar aims to introduce a comprehensive framework for training and certifying facility management companies. This framework will establish standardized criteria to assess and enhance the capabilities of facility management companies, with a particular focus on conserving energy and water. These policies are especially critical given that buildings represent a significant share of national electricity consumption and cooling demand, positioning efficiency improvements in this sector as a key contributor to Qatar's climate-mitigation efforts.

4.3. Industry & Construction

The Industry & Construction sector accounts for the third-largest share of GHG emissions in Qatar. Identified as a growth cluster under the NDS-3, the industrial sector is a key pillar of Qatar's economic growth. Efforts to localize supply chains and enhance in-country value creation will support the provision of specialty chemicals, manufacturing, engineering, and maintenance services. Innovation, technology development, and transfer in relation to clean technologies, renewable energy, and process efficiency are considered important factors in reducing industrial emissions while maintaining industrial growth.

Sectoral Mitigation Efforts

Industry

The industry sector plays an important role in providing essential products for daily use, as well as for various transition and adaptation-related applications. Mitigations undertaken by the sector primarily focus on improving energy efficiency, while incorporating circular practices.

Renewable Energy & Energy Efficiency Measures. The sector is deploying measures focused on optimizing energy consumption, increasing production efficiency and adopting advanced technologies, including small-scale renewables, to lower the emission intensity of production.

Flaring & other NOx Reduction Projects. Facilities in the sector are undertaking flaring reduction projects. New projects are also focused on use of best available technologies and practices, such as ultra-low NOx burners, near-zero liquid discharge, and selective catalytic reduction for boilers and furnaces to regulate post-combustion emissions, as well as waste and off-spec material recycling.

Adoption of Circular Economy Practices. Circular economy practices are gaining prominence in Qatar's manufacturing sector, with these practices aimed at reducing environmental impacts through the reuse of materials, recycling of industrial by-products, and the treatment and reuse of wastewater.

The adoption of circular economy practices is supported by the Qatar National Manufacturing Strategy 2024–2030, notably by creating investment opportunities in the recycling sector, analyzing waste data to support industrial planning, and launching incentive programs to facilitate their adoption. More specifically, two key initiatives are outlined:

- The first initiative involves investing in innovative technologies and creating value chains for transformational technologies, through (1) investment in targeted, mature, and relevant technologies and enabling their access within Qatar's supply chains, and (2) developing and promoting green finance solutions to encourage investment in sustainable projects and eco-innovation.
- The second initiative involves promoting the development of a sustainable economy market by (1) developing channels to identify and incentivize demand for recyclable materials, (2) promoting local demand for recycled aggregates through guidelines and quality assurance, (3) working toward the at-source separation of construction and demolition waste, through waste screening, waste management plans, and incentive mechanisms, (4) establishing public procurement guidelines and enforcing compliance, (5) considering an Extended Producer Responsibility scheme to encourage producers to produce and package more sustainable products and invest in recycling, and (6) creating incentive mechanisms to encourage individuals, as well as private and public entities, to purchase recycled products to promote the growth of a thriving circular economy market.

Construction

To mitigate construction-related emissions, the sector is gradually adopting circular economy measures and energy-efficient technologies.

Recycling in Construction. Key initiatives include the establishment of recycling yards to process construction waste, and the mandate requiring increasing the use of recycled materials in public infrastructure and construction projects. Additionally, projects related to sustainable road construction are incorporating recycled asphalt materials, such as crumb rubber modified binders and reclaimed asphalt pavement.

4.4. Transport

The Transport sector accounts for the fourth-largest share of GHG emissions in Qatar. As a significant portion of transport-related GHG emissions is associated with land-based mobility, the sector's priorities are to accelerate the development of public mobility infrastructure, promote a shift to public and non-motorized modes of transport, and enable the uptake of low-emission vehicles for both private and public mobility.

Sectoral Mitigation Efforts

GHG emission reduction efforts in the transport sector are guided by the Transportation Master Plan for Qatar 2050, a comprehensive framework launched in 2022 that provides the blueprint for the development of the country's land transportation systems in a staged, chronological, and coherent manner through 2025, 2030, 2035 and 2050. The plan aims to create an integrated, efficient, and sustainable transportation network that not only meets the mobility needs of Qatar's population but also contributes to the nation's broader goals of sustainability, economic diversification, and enhanced quality of life.

Qatar's mitigation strategy for road transport encompasses four key pillars: the development of public transport infrastructure, the electrification of the public transport vehicle fleet, the renewable energy generation for electric transit buses, and the deployment of public electric vehicle (EV) charging infrastructure.

Development of Public Transport Infrastructure. The shift to public transport and non-motorized modes of transport is a key component of reducing GHG emissions from land transport. The provision of high-quality, affordable public transport options is key to incentivizing a shift in transport mode choices. Public transport in Qatar continues to provide passengers with multiple options and is facilitating multi-modal connections.

- The current Doha Metro network is expected to see extensions to existing metro lines, as well as a new Light Rail scheme connecting within and to Lusail New Town.
- Rail transport in Doha is complemented by an integrated, extensive Bus Rapid Transit (BRT) system. The BRT network will be further expanded with additional bus routes, providing alternative, lower-cost options for key corridors, improving local accessibility to workplaces, and incentivizing the use of public transport buses over private vehicles.
- In terms of waterborne transport modes, Qatar aims to develop a continuous passenger ferry service between Hamad Port and Doha Port, with several intermediate stations.
- At the regional level, Qatar's future public transport development plans are expected to include the implementation of a Long-Distance & Regional Rail Network by 2030.

Electrification of Public Transport & Taxis. Qatar aims to maximize the use of electric urban transit buses and plans to transition its traditional taxi fleet to hybrid, plug-in hybrid, and electric vehicles to reduce emissions.

Renewable Energy Generation for Public Buses. In 2022, the Lusail Bus terminal – the world's largest electric bus depot with a capacity of 478 buses – was equipped with 11,000 PV solar panels that generate 4 MWh of electricity per day.

Deployment of EV charging infrastructure. To address one of the main barriers to the adoption of electric vehicles (EVs) by private car buyers, Qatar is significantly expanding its network of public EV chargers. To improve EV charging convenience, a user-friendly smartphone app has been developed, enabling users to locate charging stations, check availability, initiate charging sessions, and track energy usage.

Improving Standards. Qatar aims to establish various standards and requirements for road transportation, addressing all new light-duty vehicles and heavy-duty vehicles

LNG Vessel Program. The LNG Vessel Program to increase LNG export capabilities is focused on modernizing existing fleets with advanced vessels designed for higher operational efficiency. The vessels are equipped with dual-fuel systems that will utilize LNG as the primary fuel, hence, lowering emissions compared to the use of conventional bunker fuels. Efforts to optimize fuel consumption further include deploying advanced hull designs, air lubrication systems, and underwater coatings.

4.5. Waste

Waste-related GHG emissions mostly emanate from organic waste decomposition and wastewater treatment and discharge activities. The growth of population, urbanization, and industry, as well as the development of new economic sectors, pose challenges related to sustainable waste management. The wastewater infrastructure in Qatar -including the wastewater network - is being expanded to accommodate growing populations in urban and industrial areas. In addition, national efforts across multiple stakeholders are underway to integrate wastewater management with water reuse, notably in landscaping, agriculture, district cooling, and industry.

Sectoral Mitigation Efforts

Released in October 2021, the Qatar National Environmental and Climate Change Strategy (QNE) identifies the enhancement of circular economy and waste management practices as one of its five key pillars. The QNE sets ambitious 2030 objectives, notably enhancing its waste accounting capacity, closing, and rehabilitating unsanitary landfills, increasing the material recycling rate of municipal waste, reducing per capita food waste, and encouraging the reduction of food losses along production and supply chains. An integrated national solid waste program was launched in 2022 to operationalize these ambitions.

Closure and Rehabilitation of Mesaieed and Um Al Afaiee Old Landfills. This includes capping and covering closed landfills with engineered layers, and transforming former dump sites into safe, usable land.

Waste-to-Energy Generation. A proportion of non-recyclable waste in Qatar is used to generate electricity, which is fed into the national grid. Qatar plans to double its waste-to-energy capacity by 2030.

Looking ahead, Qatar aims to enhance the role and participation of the private sector in waste treatment and recycling, which is expected to improve efficiency through the deployment of advanced technologies for smart waste management, vehicle tracking, and container monitoring systems.

5. Adaptation Measures with Mitigation Co-Benefits

Qatar's commitment to climate resilience extends beyond economic diversification and the implementation of mitigation measures — it reflects a broader dedication to safeguarding its people, communities, and economic sectors. By preparing for climate risks, Qatar not only mitigates threats but also unlocks opportunities for sustainable economic growth and development.

Qatar's National Adaptation Plan (NAP) proposes a comprehensive framework to address vulnerabilities and enhance resilience against climate change impacts. Qatar has identified six key sectors as potentially vulnerable to climate change: agriculture & livestock, biodiversity, water, energy & industry, public health, and infrastructure & coastal resilience. The impacts of climate change on these sectors affect the country's economy, environment, and social well-being. This section outlines the climate change impacts on these sectors and the current adaptation efforts underway to safeguard Qatar's future.

Qatar's Climate Adaptation Goals

- **Agriculture & Livestock Adaptation:** Safeguarding Qatar's Food Security
- **Biodiversity Conservation:** Preserving Qatar's Natural Heritage
- **Water Management:** Sustainable Use of Qatar's Water Resources
- **Energy & Industrial Resilience:** Securing Qatar's Future Livelihoods
- **Health Preparedness:** Protecting Public Health from Climate Risks
- **Infrastructure & Coastal Resilience:** Ensuring Infrastructure Endurance

Qatar's NAP aligns with the framework provided by the Global Goals on Adaptation and its thematic areas. It is however tailored to Qatar's climate vulnerabilities, and focuses on reducing vulnerability, strengthening resilience, and enhancing adaptive capacity in Qatar.

In line with global community's negotiations, Qatar's upcoming NAP is designed to be a living document, ensuring a continuous and iterative approach to adaptation planning, allowing for adjustments and improvements over time in response to global commitments, changing climate conditions and evolving knowledge.

Proposed Key Cross-Sectoral Adaptation Measures

1. **Early Warning Systems and Disaster Risk Management:** Reduces disaster risk and enhances preparedness by integrating flood forecasts, climate-health alerts, asset protection plans, and climate-aware business continuity plans and emergency response systems.
2. **Integrated Water-Energy Nexus Adaptation Measures:** Improves resource efficiency and resilience by using reverse osmosis desalination, treated sewage effluent for energy cooling, and passive cooling systems that reduce the interconnected vulnerabilities of the water and energy sectors.
3. **Environmental Health and Ecosystem-Linked Adaptation:** Protects public health and ecosystems through safe pesticide use, pest surveillance, expanded foul sewer networks, and low-emission odor control systems to address pollution and biodiversity risks simultaneously.
4. **Circular Economy, Water Recycling and Circular Resource Use, Waste Management, and Resource Efficiency:** Advances sustainable resource use through sludge reuse in cement, recycled construction materials, ESG platforms, and sustainable procurement policies that reduce waste and support climate-resilient markets.
5. **Climate Data, Monitoring, and Artificial Intelligence (AI) Integration:** Enhances climate decision-making by embedding AI into infrastructure monitoring, flood modeling, air quality systems, and risk management tools.
6. **Green Finance for Adaptation and Environmental, Social, and Governance (ESG) Goals:** Mobilizes climate finance through Qatar's Sovereign Green Financing Framework, sustainable finance data platforms, and ESG-aligned investment criteria that drive funding toward climate-resilient development.

5.1. Agriculture & Livestock Sector

Sectoral Climate Vulnerabilities

The agriculture and livestock sector depends on stable climatic conditions for its crops, livestock, and workforce, making it vulnerable to increasing temperatures, shifting precipitation patterns, and sea-level rise. While Qatar has made commendable strides in adopting climate-smart agriculture practices, the sector remains vulnerable to water scarcity and rising temperatures. Similarly, the fishing industry is vulnerable to changing sea temperatures while fluctuation in nutrient levels impact fish stock, causing them to migrate in more favorable regions and environments.

Impact on the Sector

Table 1. Impacts on the Agriculture & Livestock Sector

Direct Impact	Description of Direct Impact	Type of Impact
Decrease in crop yield.	Decrease in crop yield due to worsening climate and environmental conditions, which may affect the cost of production and profitability of the sector.	Economic

Reduction in integrity of natural capital.	Reduction in natural capital, through decreased soil and water quality, leading to a reduction in the resilience of crops and livestock.	Economic
Change in characteristics of coastal ecosystems.	Change in characteristics of coastal ecosystems, including the number and health of fish species, and the size and health of corals.	Environmental
Increase in consumption of fossil fuels to address cooling needs.	Increased greenhouse gas emissions from fossil fuels used for space cooling in livestock farming.	Environmental

Current Adaptation Initiatives in Agriculture and Livestock Sector

In Qatar, government-led agriculture and livestock initiatives are steadily evolving, driven by the nation's commitment to food security.

- **National Food Security Strategy 2018-2023.** The National Food Security Strategy 2018-2023 contributed significantly to developing the food security system in Qatar by implementing four key pillars, one of which is the development of domestic agricultural production. Key initiatives to increase domestic production and productivity included:
 - Increasing vegetable production by establishing a hydroponics greenhouse cluster (e.g., tomatoes, peppers, cucumbers, squash, lettuce).
 - Expanding and improving production capacity for a relevant range of livestock and fisheries.
 - Capping production of fresh milk and poultry and redirecting additional capacity toward milk derivatives, frozen poultry, or egg production.
 - Reducing groundwater-based fodder production by switching to TSE.
 - Promoting smart irrigation systems to optimize water use and enhance agricultural resilience.

The strategy was also backed by a strong support system combining easy access to capital, efficient transport and logistics, and attractive subsidy programs and public-private partnerships, which provided the right ecosystem for private sector's participation. This strategy has resulted in a significant increase in farmlands, with over 950 agricultural productive farms operating across the country, including a significant increase in land used for farming organic products.
- **National Food Security Strategy 2024-2030.** The new National Food Security Strategy 2024-2030 includes 17 initiatives aimed at achieving sustainable food security through guiding principles that include promoting healthy consumer habits, ensuring food safety and quality, enhancing sustainability and adaptation to climate change, and building effective partnerships. The strategy aims to further increase self-sufficiency in vegetables, fresh red meat (sheep and goats), and fresh fish, while maintaining self-sufficiency in the production of fresh dairy and poultry. This will be achieved by enhancing local production using modern agricultural techniques and sustainable practices, reducing dependence on external food supplies and ensuring the sustainability of meeting market needs through local production. The national focus is on increasing self-sufficiency, while improving the productivity of agricultural lands. This will be achieved by using agricultural technology, regulating quality assurance, and facilitating licensing processes.
- **Strengthened Enabling Environment.** In addition, the government plans to strengthen the enabling environment to maximize the private sector's participation in the agricultural sector. The government is aiming to:
 - Facilitate the deployment of more efficient and sustainable greenhouse technology, including climate-control solutions.
 - Review pricing mechanisms and achieve a balance between protecting producers and consumers.
 - Encourage efficiency and professionalism through production-based support and farmers support programs.
 - Set up a dedicated fund to finance high-tech greenhouses and upgrade existing facilities, notably greenhouse technology and irrigation systems.
 - Adapt agricultural licensing processes and standards to enhance farmland productivity and efficiency.
 - Establish a framework to enable the implementation of current and future projects in vegetable production and improve public-private sector collaboration, by (1) establishing a "single-window" system to provide guidance and support throughout the project process, and (2) conducting joint feasibility studies.
 - Set up a knowledge and digital data bank in the agriculture field to enable monitoring the implementation of strategy and data-driven decision-making; establish a specialized entity/team to collect, analyze and digitize data.

- Diversify local production of fertilizers.

Proposed Key Adaptation Measures

1. **Climate-Resilient and Smart Farming Practices:** Promotes drought-tolerant crops, regenerative agriculture, and climate-controlled greenhouses, including smart irrigation systems, seed banks, and algal tanks to boost food security, restore soil health, and adapt to rising temperatures and water stress.
2. **Climate-Informed Advisory and Risk Management Services:** Strengthens early warning systems, institutional coordination, and agricultural R&D, including irrigation efficiency studies and disease outbreak prevention, to help farmers manage climate risks and maintain productivity under extreme weather events.
3. **Climate-Smart Livestock and Aquaculture:** Enhances livestock and fishery resilience by introducing passive cooling systems, expanding local feed production, and developing coastal fish farms using Recirculating Aquaculture Systems, to adapt to heat stress, prevent overfishing, and minimize supply disruptions.

Mitigation Co-Benefits of the Agriculture & Livestock Sector

The Agriculture, Forestry, and Other Land Use (AFOLU) sector's GHG emissions stem from enteric fermentation and manure management activities. Considering Qatar's dry climate and limited freshwater resources, climate-smart agriculture practices and innovations have been an integral part of the strategy. Vertical farming and hydroponics are among the modern practices utilized to increase production in a water-efficient manner. In addition, considering the limited groundwater availability and the energy intensity of desalinated water, Qatar aims to reduce its desalinated water consumption, using treated sewage effluent for animal feed, especially fodder.

5.2. Biodiversity Sector

Sectoral Climate Vulnerabilities

Qatar's biodiversity includes a wide range of marine and terrestrial species that have adapted to the harsh and variable conditions of the Arabian Peninsula. Its ecosystems support diverse flora and fauna, and new species continue to be discovered. Along Qatar's coast, marine life thrives in environments, such as coral reefs, salt marshes, mangroves, and seagrass beds. The country is home to a diverse range of species, including important discoveries, such as branchiopods and mysid shrimp. Marine species, such as the endangered hawksbill turtle and the vulnerable dugong, are also part of the marine ecosystem. For terrestrial species, Qatar is rich in terrestrial animals and plant species, many of which are rare.

Both terrestrial and marine biodiversity in Qatar faces growing exposure to extreme heat and other climate-related risks. Coastal ecosystems are particularly vulnerable to shifts in sea temperatures, rising sea levels, intense storm events, and ocean acidification, potentially affecting various animal species. Similarly, terrestrial biodiversity faces threats from sea-level rise, droughts, and humidity changes, impacting habitats and migratory patterns.

Impact on the Sector

Table 2. Impacts on the Biodiversity Sector

Direct Impact	Description of Direct Impact	Type of Impact
Damage to commercially important habitats and species.	Hazards, such as storms, may damage commercially important habitats, including mangroves and seagrass, and threaten commercially important species, such as shrimp and crustaceans.	Economic
Contamination of natural habitats of local flora and fauna.	Flooding of waste and wastewater facilities can contaminate water sources and soil, harm natural habitats, and expose local plants and animals to pollutants.	Environmental

Increase in desalination costs.	Increased jellyfish blooms could impose additional maintenance costs on desalination plants.	Economic
Decrease in food security.	Reduction in food security due to potential impacts on fishery stocks.	Social
Increase in species' mortality and extinction rates.	Mortality and extinction rates could increase for terrestrial and marine species if already sensitive habitats are altered or degraded.	Environmental
Reduction in sea and land quality.	The overall sea and land quality may be reduced due to biodiversity loss and ecosystem degradation.	Environmental

Current Adaptation Initiatives related to Biodiversity

- **Strong Institutional Framework.** Qatar is committed to biodiversity conservation through various national strategies that align with its QNV 2030. The National Biodiversity Strategy and Action Plan 2025 (NBSAP) serves as a key framework for raising awareness, conserving ecosystems, and safeguarding vulnerable species. Other national strategies, such as the Integrated Coastal Zone Management Plan and the Integrated Coastal Zone Management Plan for Ecological Assessment (2014), emphasize sustainable coastal development, conservation, and enhancing resilience against risks associated with sea-level rise. More recently, the QNE identifies biodiversity as one of the five key pillars to be prioritized through five goals: (1) Conserve and effectively manage and protect land, (2) Protect and recover threatened species with protection and recovery plans in place, (3) ensure all fish sustainably caught, (4) Enhance awareness, participation and capabilities of biodiversity conservation, and (5) Ensure biodiversity conservation is incorporated in national and corporate planning.
- **Land Conservation.** Qatar is designating protected land areas to conserve and effectively manage land-based resources.
- **Mangrove Rehabilitation.** Enhancing mangrove cover in Qatar is part of a broader effort to protect biodiversity and enhance coastal resilience, while providing mitigation co-benefits. This includes advancing coastline mapping efforts and undertaking collaborative projects to identify the best conditions for mangrove restoration.
- **Biodiversity Rehabilitation.** To strengthen marine conservation, Qatar is working on the rehabilitation of coral reefs, vital for marine biodiversity, and the preservation of the Al Thakira Mangroves, which provide essential ecological functions, such as coastal protection and habitat for various species. In addition, efforts are underway to conserve migratory bird species, such as flamingos and ospreys, by creating protected wetlands and designated breeding sites, and deploying turtle-nesting monitoring programs to mitigate biodiversity loss. Qatar is also actively involved in protecting endangered species, such as the Arabian Oryx and dugong, which are key symbols of the nation's commitment to preserving its unique wildlife. Furthermore, Qatar is tackling the issue of invasive species, which threaten the integrity of local ecosystems, through comprehensive control and management strategies. Qatar is also investing in terrestrial biodiversity through projects aiming to preserve the fragile desert landscapes while promoting biodiversity and ecosystem services.

Proposed Key Adaptation Measures

1. **Protected Areas, Natural Habitat Conservation, and Ecological Connectivity:** Enhances ecosystem resilience to climate change by expanding protected areas, creating wildlife corridors, restoring wetlands, such as Al Thakira, and safeguarding terrestrial, coastal, and aquifer habitats.
2. **Regulatory, Policy Instruments, and Educational Campaigns for Biodiversity Protection:** Strengthens Qatar's resilience to biodiversity loss by enacting net-positive biodiversity legislation, considering offset programs and building public awareness through education and stakeholder capacity-building initiatives.
3. **Monitoring, Research, and Early-Warning Systems for Biodiversity Conservation:** Improves adaptive management by tracking ecosystem changes through biodiversity assessments of temporary desert meadows (known as "Rawdat"), digitized herbarium records, AI-based threat detection, and expanded research and early-warning systems.
4. **Species and Genetic Conservation (In Situ and Ex Situ):** Safeguards biodiversity under climate stress through genomics research on Qatari flora, in vitro propagation of endangered plants, and species conservation plans that protect genetic diversity and manage invasive species.

Mitigation Co-Benefits of the Biodiversity Sector

The State of Qatar embeds ecosystem restoration through afforestation and greening efforts. These include large-scale planting along the eastern coast and new coastal sites, seedling production/nurseries to restore mangrove ecosystems, integration into urban development with ecological and aesthetic roles, and multisector partnerships for research, conservation, and global collaboration. Launched in 2019, Qatar completed the “Plant One Million Tree Initiative” in 2022. Regulatory guidelines for construction requirements, with guidelines set for planting on rooftops, also contributed to the beautification of major highways, industrial areas, public parks, schools, and residential complexes. The initiative expanded green spaces from 3.5 km² in 2015 to 16.7 km² in 2023. Building on this success, Qatar launched in 2022 the “Plant Ten Million Trees Initiative”.

5.3. Water Sector

Sectoral Climate Vulnerabilities

Qatar’s water sector is sensitive to climatic changes due to the intrinsic link between water supplies and the climate. The combination of arid climate, high evaporation rates, low annual rainfall, and groundwater dependence increases the sensitivity of Qatar’s water sector. Enhancing groundwater recharge and strengthening sustainable water management is important to ensure this vital resource remains a reliable buffer against the impacts of climate change. Groundwater recharge depends on stable temperatures, rainfall, and humidity levels, and is therefore sensitive to extreme heat and drought events. Desalination, a vital water source, is sensitive to ocean temperature and salinity levels, affecting both water quality and process efficiency. The sector’s water storage facilities, and especially underground storage, are also sensitive to sea-level rise and coastal flooding.

In Qatar, both water supply and demand are highly exposed to increases in mean temperature and occurrences of extreme heat. Water sources and water network infrastructure, including piping and groundwater aquifers, are exposed to rising temperatures. Located along Qatar’s coast, desalination plants are exposed to sea-level rise, storms, and coastal inundation. On the demand side, with most consumers located in cities, the urban heat island effect exacerbates hot extremes, leaving consumers highly exposed to temperature variability.

Impact on the Sector

Table 3. Impacts on the Water Sector

Direct Impact	Description of Direct Impact	Type of Impact
Increase in operational costs of desalination.	Rising ocean temperatures, acidity, and salinity could increase desalination costs by requiring additional treatment to make the water suitable for use.	Economic
Increase in government spending to sustain provision of desalinated water.	Rising desalination costs may lead to higher government spending, thereby reducing resources available for other sectors.	Economic
Increase in demand for drinking water.	Higher temperatures increase the need for drinking water, while droughts and changes in sea conditions reduce water availability. Reduced rainfall and rising evaporation rates also decrease groundwater recharge, further limiting freshwater supplies.	Social
Increase in greenhouse gas emissions due to intensifying desalination.	Increased desalination needs may raise energy consumption, leading to higher emissions. Simultaneously, declining groundwater recharges due to higher temperatures and reduced precipitation further increases reliance on desalination.	Environmental

Current Adaptation Initiatives in the Water Sector

Qatar's current adaptation initiatives are designed to address the challenges posed by climate change to its water sector. Through these measures, Qatar aims to minimize the economic, environmental, and social impacts of climate change on its water resources and ensure long-term water security.

- **Advancing Research & Innovation.** Qatar is transforming water management through innovation and strategic planning to ensure long-term sustainability. Advanced irrigation systems are being pioneered to optimize water use through electronic management. Additionally, researchers are developing cutting-edge technologies, such as membrane distillation and hybrid processes, to enhance water recovery from brine streams, making desalination more efficient and sustainable.
- **Smart Monitoring and Management Systems.** Qatar is spearheading the Smart Monitoring and Management of Water Cycle Project to improve rainfall monitoring and optimize stormwater infrastructure. By identifying the best locations for water storage and infiltration, Qatar is maximizing rainwater utilization to support long-term water security.
- **Water Conservation Measures.** Qatar has made considerable progress in water recycling, making it suitable for landscape irrigation and other non-potable uses. Following the prohibition of potable water use in cooling stations, 33 out of 76 district cooling plants have transitioned to recycled water for cooling purposes, with plans to convert the remaining facilities.
- **Groundwater Replenishment.** 313 recharge wells have been rehabilitated, and 370 new recharge wells have been developed to enhance groundwater replenishment, strengthening the country's resilience against water scarcity. In addition, 328 production wells in five potable well fields have been rehabilitated and are ready to be used for water security during emergencies.
- **Increased Emergency Water Storage Capacity.** Qatar has been increasing its emergency water storage capacity since 2009, reaching 10.6 million m³ in 2021.
- **Community Engagement for Water Conservation.** At the community level, the National Program for Conservation and Energy Efficiency (Tarsheed) Program, launched in 2012, successfully raised awareness, and reduced per capita water consumption, driving behavioral change toward sustainability.

Proposed Key Adaptation Measures

1. **National Strategy for Water Use, Reuse Efficiency, and Monitoring:** Improves water security by regulating usage, expanding greywater and treated sewage reuse in Heating, Ventilation, and Air Conditioning (HVAC) and agriculture, reducing non-revenue water losses, and enabling real-time monitoring through a national water database.
2. **Water Resource Management and Ecosystem Restoration Measures:** Restores natural systems by reactivating wadis¹, assessing groundwater resources, and designing wetlands to improve water retention, biodiversity, and flood control under climate stress.
3. **Development and Modernization of Water Infrastructure:** Strengthens system reliability through green infrastructure, smart reservoir systems, aquifer storage projects, and upgraded wastewater facilities that increase recycling and resilience during peak demand or drought conditions.
4. **Enhancing Awareness and Outreach, Including National-Scale Studies:** Builds public and institutional adaptive capacity through conservation campaigns, water footprint education, and comprehensive studies on sustainability and desalination impacts to inform national policy.

Mitigation Co-Benefits of the Water Sector

To reduce carbon emissions from seawater desalination, Qatar aims to accelerate the adoption of electricity-driven reverse osmosis technology. Reverse osmosis is more efficient than the thermal processes currently in use and, with the introduction of renewables into the power grid, can reduce GHG emissions associated with desalinated water production. In addition, Qatar increasingly relies on Treated Sewage Effluent (TSE) for landscaping, agriculture, district cooling, and industry. The reuse of TSE reduces the need for seawater desalination, which is more energy-intensive than wastewater treatment, and therefore contributes significantly to GHG mitigation.

¹ Wadis are valleys, ravines, or channels that are dry except in the rainy season

5.4. Energy & Industry Sector

Sectoral Climate Vulnerabilities

The energy sector in Qatar is sensitive to extreme heat, humidity, sea-level rise, storms, and flooding. These climate hazards may affect both energy supply and demand. To strengthen the resilience of the industrial sector, Qatar invests in research related to climate-resilient technologies. There are also plans to diversify energy sources by expanding renewable energy, through solar power plants, such as those in Mesaieed and Ras Laffan industrial cities.

Impact on the Sector

Table 4. Impacts on the Energy & Industry Sector

Direct Impact	Description of Direct Impact	Type of Impact
Increased expenditure on maintenance and repair of energy and industry infrastructure.	Extreme heat, humidity, and sea-level rise may damage energy infrastructure and industry facilities, increasing maintenance costs, repairs, and generate operational disruptions.	Economic
Increase in costs associated with cooling energy generation.	Higher temperatures increase cooling demands in energy generation, leading to higher operational costs and potentially increased energy prices.	Economic
Higher cooling demand and population growth drive up emissions	Rising temperatures, extreme events, and population growth boost energy and water demand and associated emissions.	Environmental
Power outages and health risks from extreme heat.	Extreme heat can cause power outages and health risks, reducing productivity in the energy and industrial sectors.	Social

Current Adaptation Initiatives in the Energy and Industry Sector

Qatar's current adaptation initiatives in the energy and industry sectors aim to address climate change challenges by minimizing economic, environmental, and social impacts. These measures focus on enhancing energy efficiency, reducing emissions, and ensuring the resilience of industrial infrastructure to secure long-term sustainability in these sectors.

- **Economic Diversification.** Qatar is promoting a diversified and resilient economy while enhancing energy security.
- **Industrial Resilience.** Qatar is undertaking climate risk assessments for major industrial sites to safeguard critical infrastructure.
- **Adaptive Capacity.** Research into urban heat alleviation techniques has shown promise in highly urbanized areas of Doha. This research, supported by government funding, highlights Qatar's commitment to climate resilience.

Proposed Key Adaptation Measures

1. **Mitigation and Energy Efficiency Measures with Adaptation Benefits:** Enhances public health and energy system resilience by promoting solar power, electric vehicles, green appliances, energy-efficient HVAC systems, and solar water heaters.
2. **Energy Infrastructure to Support and Improve Existing Adaptation Measures:** Strengthens foundational infrastructure through greenfield projects and retrofits to ensure energy reliability and support broader climate adaptation efforts.
3. **Adaptation Measures with Mitigation Co-Benefits:** Improves climate resilience while cutting emissions through smart energy actions, such as installing peaking power units, weather-responsive cooling systems, and smart meters, to optimize utility use and reduce stress on infrastructure.
4. **Economic Diversification:** Reduces climate and market vulnerability by expanding sustainable economic zones, investing in clean-tech R&D, building a future-ready workforce, and supporting circular industries.

Mitigation Co-Benefits of the Energy & Industry Sector

Recognizing the interconnected challenges of water and energy security, Qatar is investing in energy-efficient desalination technologies and advanced cooling systems to reduce industrial water consumption while ensuring reliable freshwater supplies. Industries are incorporating waste-to-energy projects, resource recovery, and recycling programs to promote environmental sustainability while minimizing emissions from industrial processes. Qatar is promoting the integration of renewable energy sources, such as solar power. These efforts are complemented by investments in electric vehicle infrastructure, Tarsheed code, district cooling systems, and digital monitoring platforms, all of which contribute to reducing emissions, optimizing energy use, and enhancing the resilience of the energy sector to climate-related risks.

5.5. Public Health Sector

Sectoral Climate Vulnerabilities

The public health sector exhibits vulnerabilities due to the relationship between health service demand, supply, and climate hazards. On the demand side, the public health is vulnerable to temperature-related risks, such as extreme heat events and high humidity. This exposure is further amplified by the urban heat island effect in Doha, where the majority of the population is situated. These risks are closely linked to health issues, such as heat stress, exhaustion, and other illnesses. Consequently, healthcare demand may escalate, potentially increasing the vulnerability of service delivery.

On the supply side, rising sea levels and flooding may compromise access to public health services by damaging transport infrastructure or making it inaccessible. Moreover, medical facilities are concentrated in Doha, which is situated in low-lying areas and therefore exposed to risks of sea-level rise and associated coastal flooding, which places additional strain on the public health system.

Impact on the Sector

Table 5. Impacts on the Public Health Sector

Direct Impact	Description of Direct Impact	Type of Impact
Increase in heat-related illness and respiratory disease.	Increase in the number of cases of heat stress and exhaustion, admitted to hospitals. Increase in vector- or water-borne diseases due to flooding and insufficient drainage. Increase in respiratory health conditions due to sandstorms.	Economic & Social
Increased operational cost.	Increase in operational cost of healthcare services; increase in staff cost, equipment replacement, etc.	Economic
Increase in greenhouse gas emissions.	Increase in emissions of greenhouse gases due to increase in energy use to accommodate increases in demand.	Environmental
Increase in waste generation.	Increase in waste, including toxic and hazardous waste as well as household medical waste.	Environmental

Current Adaptation Initiatives in the Public Health Sector

Adaptive capacity within the public health sector is primarily focused on initiatives aimed at addressing extreme heat conditions and their impact on vulnerable populations. Qatar has implemented strategies to mitigate the impacts of extreme heat on the population, such as educational campaigns and structural measures including hydration stations, and climate literacy programs.

- **New Air Quality Platform.** In 2024, Qatar launched the Air Quality Platform, which provides real-time data from 40 monitoring stations, using a color-coded index accessible to the public.

- **Heat Stress Prevention Measures.** Recognizing the impact of rising temperatures, Qatar has introduced heat stress prevention measures, including shaded rest areas, hydration stations, and revised work schedules to protect outdoor workers from extreme heat exposure.
- **Climate-Sensitive Disease Surveillance.** To address climate-sensitive diseases, Qatar has strengthened its disease surveillance systems, monitoring vector-borne illnesses, such as dengue and malaria, as well as respiratory conditions aggravated by dust storms.
- **Food Safety Regulation.** Food and water security remain a priority, with ongoing investments in desalination technologies, water conservation strategies, and strengthened food safety regulations to mitigate contamination risks under extreme climate conditions.
- **Enhanced Readiness.** Qatar is integrating climate resilience into its healthcare infrastructure, ensuring that hospitals and emergency services are well-equipped to respond to climate-induced health crises.

Proposed Key Adaptation Measures

1. **Heat Stress Protection and Emergency Preparedness:** Protects communities and workers from rising temperatures through early warning systems, heat action regulations, such as Decree No. 17/2021, and coordinated emergency responses that reduce heat-related health risks.
2. **Monitoring, Surveillance, and Climate-Health Research:** Builds adaptive capacity by expanding air quality and indoor air monitoring, enhancing disease surveillance (e.g., vector-borne diseases), and conducting climate-health research on respiratory illnesses to guide evidence-based public health planning.
3. **Climate-Resilient Public Health Systems and Infrastructure:** Strengthens healthcare resilience through eco-friendly hospitals, the integration of the internationally recognized “One Health” framework, low-carbon operations, and improved medical waste management—ensuring the system withstands climate shocks while reducing environmental impact.

Mitigation Co-Benefits of the Public Health Sector

The public health sector is strengthening health infrastructure resilience to climate-related disruptions while reducing emissions from healthcare operations. Most recent public hospitals have adopted sustainable building and operations practices in their health centers, including energy and water efficiency, waste management, and indoor air quality. In addition, they are implementing sustainable medical waste management practices to reduce environmental pollution, decrease health risks, and enhance resilience to climate-induced environmental stresses.

5.6. Infrastructure & Coastal Resilience Sector

Sectoral Climate Vulnerabilities

A large proportion of Qatar’s critical infrastructure and urban development is concentrated in low-lying coastal areas, increasing vulnerability to sea-level rise. Qatar’s flat terrain places much of its infrastructure just a few meters above sea-level, making it highly susceptible to coastal inundation. At-risk infrastructure includes transportation networks, residential and commercial developments, healthcare and education facilities, energy and utility systems, telecommunications, cultural institutions, public administration buildings, and sports venues. In addition to sea-level rise, infrastructure is exposed to extreme heat, which accelerates material degradation, particularly in urban areas affected by the heat island effect.

Impact on the Sector

Table 6. Impacts on the Infrastructure & Coastal Resilience Sector

Direct Impact	Description of Direct Impact	Type of Impact
Increased expenditure on maintenance and repair of infrastructure.	Increased expenditure on maintenance and repair due to increased deterioration of infrastructure and potential damage from extreme events, such as storms and flooding.	Economic
Disruption to economic activity.	Transport disruptions and power outages interrupt economic activities, leading to revenue losses.	Economic

Damage to coastal infrastructure.	Rising sea levels and storm surges weaken foundations and damage coastal infrastructure leading to higher maintenance costs, service disruptions, and economic losses.	Economic
Impact on food security due to disrupted supply chains.	Qatar is highly reliant on imported products, including consumables. Disruption to the supply chain through damage to infrastructure may decrease food security.	Social

Current Adaptation Initiatives in the Infrastructure & Coastal Resilience Sector

Qatar, with its rapidly expanding cities and distinct geographical landscape, faces a unique set of challenges when it comes to infrastructure and coastal resilience. As a developing nation, Qatar continues to address challenges through strategic research and investments to protect its shores and ensure sustainable development for future generations.

- **Guarding the Coastline.** With the growing threat of storm surges and rising sea levels, saltwater intrusion is increasingly affecting freshwater systems, raising salinity levels, and thereby requiring additional treatment for use in drinking water, irrigation, and ecosystem maintenance. In response, Qatar has invested in reinforced sea walls and breakwater structures as robust defenses designed to reduce coastal erosion and protect urban areas from the impacts of climate change.
- **Managing Stormwater Efficiently.** Qatar has introduced cutting-edge drainage systems designed to manage stormwater and reduce flood risks, especially in the country's low-lying coastal zones. These efforts not only protect infrastructure but also ensure that future growth remains uninterrupted by natural disasters.
- **Green Cities for the Future.** Green spaces, wetlands, and parks are strategically placed throughout urban areas, reducing the impact of stormwater and helping the country adapt to rising sea levels. These spaces create a harmonious balance between development and the environment.
- **Data-Driven Resilience.** Qatar has invested heavily in satellite mapping, tide gauges, and environmental sensors to monitor climatic changes in real time. This research enables informed decisions that ensure the country's coastal areas and infrastructure remain protected.

Proposed Key Adaptation Measures

1. **Urban Planning, Green Infrastructure, and Drainage Management:** Improves resilience to floods and heat by integrating stormwater systems, green-certified buildings, shaded walkways, underground utilities, and tree planting.
2. **Coastal and Flood Resilience:** Protects vulnerable coastlines and infrastructure through sea wall upgrades, storm surge modeling, shoreline monitoring, and flood prevention plans using nature-based drainage solutions, such as environmental focal areas.
3. **Sustainable Transport and Mobility:** Supports climate-resilient mobility by piloting autonomous vehicles, transitioning taxi fleets to low-emission vehicles, and studying climate risks to transport infrastructure, such as metro networks.

Mitigation Co-Benefits of the Infrastructure & Coastal Resilience Sector

Qatar's green building transformation sets mandatory standards for energy efficiency and sustainable design in new constructions, leading to widespread adoption of energy-efficient technologies, reducing electricity and water consumption, and promoting the use of renewable energy solutions. As a result, Qatar has seen a significant increase in the number of green-certified buildings, contributing to lower greenhouse gas emissions, improved indoor environmental quality, and enhanced climate resilience across the built environment.

6. Means of Implementation

The global response to climate change is guided by the principles of Common but Differentiated Responsibilities and Respective Capabilities. Hence, collective global action involves multiple pathways to a just transition, requiring diverse means of implementation. Based on national circumstances and socio-economic capabilities,

Qatar is pursuing multiple implementation mechanisms to advance its economic diversification agenda, while simultaneously enabling the implementation of its NDC's mitigation and adaptation objectives.

To achieve its NDC, Qatar is strengthening the following **eight means of implementation**, in line with best practices for NDC enhancement and UNFCCC transparency requirements:

1. **Institutional Coherence & Alignment** – Ensuring cross-sectoral integration of climate objectives to maximize synergies and minimize potential trade-offs.
2. **Legal & Regulatory Frameworks** – Developing robust policies to accelerate mitigation and adaptation projects.
3. **Awareness, Education & Capacity Building** – Building technical expertise and leadership to drive a sustainable, knowledge-based economy.
4. **Research, Development & Innovation** – Advancing cutting-edge technologies in carbon capture, energy efficiency, renewables, and climate-smart agriculture.
5. **Finance and Risk Management** – Incentivizing green investments and aligning financial flows with national climate goals.
6. **International Cooperation** – Expanding partnerships in renewable energy, alternative fuels, circular economy solutions, and policy best practices.
7. **Social & Inclusivity Considerations** – Integrating social equity considerations to ensure broad ownership and co-benefits.
8. **Transparency** – Enhancing measurement, reporting, and verification (MRV) to ensure accountability and track progress.

These means of implementation will further leverage Qatar's strong institutional capacity, with the private sector actively supporting and the government in playing a more enabling role. In addition, these eight means of implementation will simultaneously support Qatar's sustainable development and economic diversification priorities. This chapter elaborates on these implementation strategies, demonstrating how Qatar is translating its climate ambitions into actionable, measurable, and inclusive pathways.

6.1. Institutional Coherence & Alignment

Qatar's institutional coherence is fundamental for the successful implementation of NDC measures. Qatar's climate policy is anchored in Qatar National Vision 2030 (QNV 2030), which integrates sustainable development across the four pillars of national development – economic, environmental, social, and human. This alignment cascades through the National Development Strategy 2024-2030 (NDS-3), explicitly linking economic diversification and foreign investment attraction to climate goals. Institutional coordination is enforced via cross-ministerial committees – such as the Climate Change and Clean Development Committee and the Sustainable Finance Committee.

Table 7. Selected National and Sectoral Policy Documents and Related Development Priorities in Qatar

Policy Documents	Development Priorities
Qatar National Vision 2030 (QNV 2030)	▪ Human Development: Cultivating a well-educated, healthy, and capable population, key objectives include enhancing education and healthcare systems, fostering a skilled and ethical workforce, and promoting research and innovation to drive national progress. ▪ Social Development: Aiming to build a cohesive and just society, this pillar emphasizes the preservation of cultural heritage, promotion of social cohesion, empowerment of women, and strengthening of family values. It also encourages active participation in global partnerships for development. ▪ Economic Development: Establishing a diversified, knowledge-based, and sustainable economy. Strategies include economic diversification and fostering a business environment that attracts both domestic and foreign investment. ▪ Environmental Development: Strengthening environmental sustainability, by protecting natural resources, reducing pollution, and promoting sustainable urban development.

Policy Documents	Development Priorities
Third National Development Strategy 2024-2030 (NDS-3)	▪ Sustainable Economic Growth: Adopt a sustainable growth model to transform into a competitive, productive, diversified, and innovative economy. ▪ Fiscal Sustainability: Strengthen the long-term stability, health, and resilience of the government budget and its balance sheet. ▪ Future-ready Workforce: Enable and develop citizens into globally competitive individuals and attract high-skilled expatriates as long-term partners in Qatar's transformation journey. ▪ Cohesive Society: Preserve Qatar's values and strong family bonds, fostering active citizenship, an integrated community, and harmonious society to thrive in a globalized world. ▪ Quality of Life: Provide quality of life for all through excellence in healthcare and public safety, with a vibrant cultural life, becoming a best-in-class environment for families. ▪ Environmental Sustainability: Conserve natural resources, protect ecosystems, reduce greenhouse gas emissions, and build resilience against future environmental threats. ▪ Government Excellence: Become a world-class provider of government services to citizens, residents, businesses, and institutions, and a top nation for effective, efficient, and transparent governance.
Ministry of Environment and Climate Change Strategy 2024-2030	Pillar 1 - Environmental Sustainability and Climate Change ▪ Protection of environment and biodiversity: Protecting, monitoring, and enhancing environmental components, ensuring optimal and sustainable use of environmental resources, preserving biodiversity, and ensuring comprehensive management of hazardous radioactive and chemical materials. ▪ Effective management of climate change: Ensuring effective climate change management through mitigation and reduction of greenhouse gas emissions, adaptation, partnership, and cooperation, raising public awareness, and enhancing resilience. ▪ Boosting environmental and sustainability practices: Support and oversee environmental sustainability measures, including the circular economy (waste reuse), green development, and energy conservation. Pillar 2 - Innovation and digital transformation ▪ Promoting research, innovation, and digital transformation: Sustainable development, through supporting scientific research, encouraging innovation in all sectors, supporting, and adopting digital transformation, and adopting global best practices. Pillar 3 - Governance ▪ Develop and implement policies and legislation: An effective legal and regulatory framework, data governance and information security, regular review, and effective implementation, to achieve national goals and strategies. Pillar 4 - Sustainable institutional development ▪ Strengthening institutional capacities: Strengthening institutional capabilities, managing data and risks, attracting talent, and developing human resources. ▪ Promoting community cooperation and participation: Constructive cooperation with local and international entities, enhancing community participation, and adhering to regional and international agreements.
Qatar National Environment and Climate Change Strategy (QNE) 2021-2030	The QNE sets 2030 environmental targets and goals related to: ▪ GHG Emissions and Air Quality ▪ Biodiversity ▪ Water ▪ Circular Economy & Waste Management ▪ Land Use It has been updated and aligned with the NDS-3.



Policy Documents	Development Priorities
Qatar National Biodiversity Strategy and Action Plan (NBSAP) 2015-2025	The NBSAP sets out feasible, ambitious, targeted, specific and time bound targets that are in line with national priorities. - Increased knowledge of current and future status of biodiversity in Qatar - Public participation in biodiversity conservation and increased interest & awareness - Preservation of coastal ecosystems and sustainability of marine resources - Preservation of key terrestrial biodiversity through effective management of protected areas - Incorporation of biodiversity conservation into national planning processes - Enhanced local capacity for biodiversity conservation - Protection of Qatar's genetic resources and ensuring their equitable sharing. The NBSAP is currently being updated.

Climate Change Governance in Qatar

In Qatar, the Ministry of Environment and Climate Change (MECC) is the primary governmental body responsible for climate change matters. Key responsibilities of the MECC include representing Qatar in international climate negotiations, formulating, and implementing national climate change policies, and promoting environmental sustainability, biodiversity conservation, and pollution control. The MECC is the designated national competent authority responsible for ensuring the development, adoption, and implementation of the nationwide strategic policies and plans leading to the mitigation of GHG emissions and adaptation to the adverse impacts of climate change. In addition, the MECC mobilizes national stakeholders responsible for implementing mitigation and adaptation measures, with periodic interim reporting on the status of overall success nationwide. Moreover, the MECC is responsible for preparing and submitting Qatar's reports and communications related to climate change, including those under the UNFCCC and its protocols.

Implementation Committees

Given the cross-cutting nature of climate change, ministries in Qatar play a central role in planning and implementing not only NDS-3 goals, but also NDC ones. Each ministry ensures that its plans, projects, and budgets align with the overarching goals and four pillars of QNV 2030. In addition, several cross-ministerial committees have been established to monitor and operationalize climate-related initiatives.

- The **Climate Change and Clean Development Committee** was established in 2011 and reformed in 2025. The committee aims to prepare a national plan on climate change aligned with the country's efforts to adapt to climate change and reduce its effects.
- The **Sustainable Finance Committee** is mandated to develop ESG frameworks aligned with international standards; identify projects and assets eligible for sustainable finance instruments; review, evaluate and monitor the use of proceeds generated by sustainable finance issuances; and evaluate the challenges facing sustainable finance and propose appropriate solutions.

6.2. Legal & Regulatory Framework

Qatar's commitment to environmental protection and climate resilience begins at the highest level of governance with its 2004 Constitution. **Article 33 of the Constitution** states that the State shall preserve the environment and its natural balance in order to achieve comprehensive and sustainable development for all generations. This foundational provision establishes the legal and moral responsibility of the government to embed sustainable development into its national policies and long-term development planning.

Law No. 30 of 2002, also known as the *Environmental Protection Law*, is Qatar's primary piece of environmental legislation. It lays out a comprehensive legal framework to regulate environmental conservation, combat pollution, and manage natural resources responsibly. The law mandates that any new development project undergoes an environmental impact assessment and gain regulatory approval before proceeding. This law and its related bylaws are currently being updated.

Law No. 26 of 2008 was enacted to support the rationalization of electricity and water consumption through the establishment of the National Program for Conservation and Energy Efficiency (Tarsheed) campaign. The law was later amended under Law 20 of 2015 to update and strengthen key provisions.

Resolution No. 170 of 2021 establishes guidelines for the sorting and management of solid waste, promoting recycling and enhancing environmental responsibility.

Resolution No. 310 of 2020 establishes a comprehensive air quality monitoring network and enforces international standards for data collection and reporting. By ensuring continuous and accurate monitoring of air quality, the resolution allows for timely interventions to protect public health and the environment.

Resolution No. 20 of 2022 regulates the import, export, re-export, transport, and circulation of hydrochlorofluorocarbons and related devices in Qatar. The resolution aligns with global efforts to protect the ozone layer under the Montreal Protocol.

Law No. 19 of 2024 has been issued to establish a comprehensive regulatory framework for district cooling services, aiming to support national climate adaptation objectives by improving energy efficiency, reducing greenhouse gas emissions, and fostering the transition to sustainable urban infrastructure.

6.3. Awareness, Education & Capacity Building

Building awareness and developing human capacity is essential to achieving Qatar's climate goals, as it ensures that all sectors of society are informed, engaged, and equipped to take meaningful action. Awareness fosters a culture of sustainability, while capacity development ensures that the vision of a climate-resilient Qatar can be practically realized. Together, they form the human and institutional foundation necessary to meet both national and international climate goals making them indispensable pillars of Qatar's climate strategy.

Awareness

Qatar's climate ambitions, such as those outlined in this NDC, require coordinated efforts not only from government entities but also from industries, institutions, and individuals. Raising awareness helps the public understand the importance of reducing GHG emissions, conserving energy, and making sustainable choices that support national climate objectives.

In 2024, Qatar commissioned a knowledge, attitudes, and practices study on climate change awareness in Qatar. The study aimed to assess public perceptions, attitudes, and practices related to climate change across Qatar's diverse population. The study also captured the public's climate knowledge, explored socio-economic factors influencing climate-related behaviors, and provided insights for policy design and community engagement. Building on this study, the government is developing a multi-year National Climate Change and Sustainability Awareness Campaign, aimed at raising awareness, engaging the youth, strengthening partnerships, showcasing Qatar's ambition and driving action.

The National Program for Conservation and Energy Efficiency (*Tarsheed*) plays a pivotal role in advancing climate awareness and promoting sustainable practices across Qatar. Since its inception in 2012, Tarsheed has implemented a multifaceted approach to engage the public, institutions, and industries in energy and water conservation efforts.

Various national initiatives also aimed at raising awareness and promoting dialogue around sustainability and climate change.

- Qatar Sustainability Week is an annual campaign to engage the community in a wide range of sustainability-oriented discussions and activities, raising awareness and showcasing the progress Qatar has made in the areas of sustainability. Activities vary in scope and nature and include beach and desert clean-ups, tree and mangrove planting, recycling initiatives, seminars, and lectures on sustainability-related topics, such as water management, circular economy, and Islamic environmental values.

- A biennial summit on the theme of sustainability and climate change in hot and arid environments. The summit mobilizes leading global experts around events for the general public including talks, expert-led discussions, and community-led exhibitions.
- Qatar Environment Day is an annual observance that falls on February 26th and aims to educate and raise awareness for the environment.

Many other stakeholders contribute to promoting climate awareness and sustainable consumption choices across Qatar's society and economy.

Education

Qatar has made significant efforts to integrate climate change considerations into the school curriculum to build awareness among students from an early age. The school curriculum also incorporates climate-related subjects in order to scale up green skills readiness related to the five areas of the QNE, which include greenhouse gas emissions & air quality, biodiversity, water, circular economy & waste management, and land use. Qatar has adopted the school curriculum as a fundamental component of education, including both theoretical and practical approaches.

In addition, Qatar offers bachelor, master, and PhD programs that provide formal training on clean energy, climate change and sustainability, equipping graduates with the knowledge and skills required by industry, government and other organizations to address environmental challenges and contribute to the country's sustainable development and climate goals. These programs reflect Qatar's commitment to building the workforce required for a diversified, knowledge-based, and sustainable economy.

Capacity Building

Capacity building, through education, training, and skill development, ensures that Qatar has a workforce capable of designing, implementing, and maintaining low-carbon technologies and infrastructure, from renewable energy systems to green buildings. Capacity building also empowers policymakers, financiers, engineers, educators, and community leaders with the knowledge needed to make informed decisions and drive innovation. Moreover, a population with strong environmental literacy and technical expertise will be vital for creating new green jobs and industries. Several organizations in Qatar engage in capacity building and skill development activities in the areas of sustainability and climate change.

The Qatari government conducts regular climate-health training for healthcare workers aimed at equipping medical professionals with knowledge on climate-related health risks and adaptation strategies. The training targets members of the medical fields, including doctors, nurses, and public health professionals.

Independent think tanks are active in Qatar and generate knowledge and insights on global energy and sustainable development topics and communicate these to the broader community. This includes regular roundtables, attended by industry leaders and senior stakeholders, to provide them with the latest knowledge on energy sustainability issues. Think tanks also publish papers, books and reports, and host podcasts, webinars, and other public events on the theme of sustainable energy and climate change.

Efforts are also underway to engage the private sector through campaigns and training sessions on how to incorporate climate and environmental considerations in their business development. These training sessions raise awareness on sustainability principles and the positive impacts of integrating sustainability into business strategies. In the future, awareness and training programs on circular economy, green mobility, water conservation and sustainable management, and carbon footprint monitoring are envisaged.

6.4. Research, Development & Innovation

Research, Development and Innovation (RDI) is a pillar of Qatar's strategy to develop into a diversified, knowledge-based, and sustainable economy. Qatar's NDS-3 recognizes the importance of a strong innovation ecosystem and targets increasing gross expenditure in R&D, a considerable portion of which comes from businesses. To achieve this ambitious target, Qatar is building on its strong university research ecosystem,

leveraging its innovation-related institutions, and introducing key initiatives to support entrepreneurs and start-ups in scaling up their technologies and bringing them to market.

Qatar's university research relies on a combination of well-established national players and their research institutes, as well as leading international universities with branch campuses in the country. These entities have been the main recipients of the government's R&D funding as they continue to advance climate change and environmental research, often in collaboration with government entities and other stakeholders.

Building on the steady growth and strong performance of university research in Qatar over the last decades, a national strategy for research, development and innovation has been developed with the aim of transforming Qatar's R&D ecosystem, emphasizing sustainability in energy, environment, and resource management. This national strategy is intimately aligned with Qatar's sustainable development and economic diversification objectives, aiming to position the nation as a global leader in sustainable innovation. It identifies five national priority areas: energy, health, environment, urban development, and food security. Among these, the environment sector is of significance, focusing on mitigating climate change impacts and enhancing environmental resilience.

To make research more effective, funding continues to target two complementary programs: one dedicated to innovative scientific research, and another one aimed at addressing specific national priorities. The second program supports research projects that address key environmental priorities, including:

- *Environmental Quality and Monitoring:* (1) monitoring persistent organic pollutants in Qatar, (2) evaluating seawater quality, and (3) quantifying environmental damages
- *Biodiversity Conservation:* (1) innovative nature-based solutions for marine habitat rehabilitation, (2) mapping endangered marine species in Qatar and identifying novel technologies for their conservation, and (3) conservation in action.
- *Climate Change, Impact and Resilience:* (1) assessing economic impacts of climate change in Qatar, (2) devising advanced early warning and monitoring systems, and (3) advancing CCUS in industry in Qatar.

Apart from university research, several innovation-related institutions exist in Qatar that offer support to technology developers and entrepreneurs in scaling up their technologies and taking them to the market.

This includes accelerators, incubators, and innovation hubs for tech-product development in Qatar. Focus is on supporting companies, start-ups or already established, in commercializing their market-ready technologies by offering them a range of services, including mentorship and collaborative opportunities.

Efforts are also underway to attract leading companies and to establish industrial clusters around emerging technologies. Qatar's innovation system, comprised of universities, research institutes and incubators, is a key enabler for the emerging clusters, and at the same time, the clusters will provide the market pull and commercial focus for Qatar's innovation system to realize its full potential. National efforts also focus on attracting foreign direct investment (FDI) in support of the sustainable development and economic diversification agendas. The gap between R&D and commercialization is also being addressed by strategic initiatives, such as the development of a venture capital industry in Qatar.

6.5. Finance and Risk Management

Achieving Qatar's climate goals, as outlined in its NDC, requires significant investment through a combination of government and private-sector contributions. Mobilizing private finance, including Foreign Direct Investments (FDI), remains of significance to achieve national climate ambitions. This aligns with the country's broader aim to position the private sector as an important driver of economic growth, while reducing reliance on government spending.

Measures to leverage private finance for climate goals

1. Improve the business environment

To leverage private finance, Qatar is continuously developing an attractive investment environment through a business-friendly regulatory framework and significant government support that encourages FDI. In line with the country's goal of establishing a diversified, knowledge-based and sustainable economy, Qatar introduced reforms to its legislation governing foreign investment, foreign property ownership, and public-private partnerships.

2. Increase Qatar's global competitive advantage through specialized clusters

To further attract private investments, Qatar is transforming its economic growth model by concentrating efforts on high-productivity and specialized economic clusters where Qatar already has, or can establish, a competitive advantage. These clusters complement the energy sector, specializing in manufacturing, logistics, and tourism, hence contributing significantly to economic growth, while those focused on agriculture and health provide additional national resilience. In addition, the clusters centered on IT, education, and finance aim to support the growth of other economic sectors.

3. Facilitate and promote technological innovation for green/low-carbon technologies led by the private sector

Qatar aims to further tailor fiscal and financial incentives to enhance R&D activities from local and multinational companies. Qatar is already leveraging the established research and innovation hubs to offer tailored incentives for climate-focused R&D, such as carbon capture and energy efficiency. This includes funding grants that partially cover R&D project costs to mitigate financial risks typically associated with R&D investment.

4. National budget to fund critical but unbankable climate priorities

The State of Qatar finances foundational projects, especially those strengthening the enabling environment (laws, policies, research), public infrastructure (water, transport, energy access), and social equity measures, while enabling private investors through mechanisms, such as blended finance support when necessary (such as PPP described below).

5. Strengthening Public-Private Partnerships (PPPs)

To increase private sector contribution to climate action, Qatar aims to improve the coordination and management of PPP projects and schemes. PPPs can significantly boost climate-focused investments by deploying targeted de-risking instruments and creating bankable project pipelines. PPPs are being used across diverse projects, including desalination plants and waste-to-energy facilities. By combining climate policy and enhanced risk-sharing mechanisms, Qatar aims to transform climate ambitions into investable opportunities.

6. Aligning Domestic Financial Systems with National Climate Goals

In 2024, a national strategy focusing on ESG and sustainability for the financial sector was launched, recognizing the importance of aligning domestic financial systems with climate mitigation and adaptation goals. The aims of the strategy are to strengthen the financial system's human and institutional capacity, and to enhance its resilience.

7. Accessing International Green Capital Markets

In 2023, Qatar introduced its first sovereign Green Financing Framework, which will allow investors to support Qatar's investments in climate action, environmental protection and sustainable development. To operationalize the framework, the State of Qatar established a Sustainable Finance Committee, whose mandate is to evaluate, select, and monitor eligible projects, and thus ensure their alignment with the framework's eligibility criteria, international standards, and national priorities. Qatar's debut green bond proceeds have been allocated toward clean transportation, sustainable water & wastewater management, and climate change adaptation projects.

Utilization of Article 6

Qatar plans to fulfil the NDC through domestic measures. However, if deemed necessary, Qatar may consider voluntary cooperation and approaches referred to in Article 6. Qatar is in the process of establishing robust domestic frameworks to authorize and track transferred credits, ensuring they represent real, additional, and permanent reductions.

6.6. International Cooperation

Qatar welcomes technical assistance and capacity-building designed for developing country Parties under the UNFCCC to help them achieve their climate goals. Qatar actively engages with intergovernmental organizations and UNFCCC Parties to leverage international expertise and resources, particularly in the form of financial, technological, capacity building, and knowledge sharing cooperation. Qatar's international cooperation is driven by:

- **National Contribution to Global Efforts.** As a responsible energy producer, Qatar recognizes the pressing need for a just transition to a more sustainable energy future. Each country and region has its own distinct energy requirements and conditions, necessitating individualized solutions rather than a one-size-fits-all approach.
- **Climate Finance Cooperation.** In the recent past, Qatar made voluntary, targeted financial contributions to climate funds and/or initiatives, fostering global climate resilience and sustainable development.
- **Technology Cooperation.** Technology cooperation is essential for Qatar to pursue its NDC ambitions by enabling access to advanced solutions, fostering innovation, and supporting a cost-effective lower-carbon transition.
- **Capacity-Building and Knowledge-Sharing Cooperation.** Working with intergovernmental organizations, Qatar builds technical expertise, institutional readiness, and ensures policy alignment to achieving its climate goals.

By leveraging global partnerships across finance, technology, and institutional development, Qatar is effectively creating an enabling environment to pursue its NDC implementation, while supporting a just and inclusive transition.

National Contribution to Global Efforts

Over decades, Qatar has maintained a pioneering role in making energy accessible to the world through the exports of LNG. The Oil & Gas sector in Qatar continues to invest heavily in the infrastructure required to meet the growing global demand for this lower-carbon energy.

The State of Qatar's focus on providing a secure and affordable supply of cleaner natural gas is an important step toward helping the global power sector rapidly reduce GHG emissions. This accelerates emissions reduction without delay to deliver tangible progress on Paris Agreement's mitigation objectives – delivering measurable impact today. Qatar's growing LNG exports have the potential to meet the power requirements of over one and a half billion people in developing countries, while reducing approximately half the emissions that would result if this power generation were coal-based. Alternatively, if these LNG exports were solely used to generate electricity for electric transport, they could supply the annual charging requirements of over three hundred million electric vehicles worldwide. Electric vehicles powered by natural gas-based electricity could, in turn, avoid more than half of the emissions that would otherwise be produced by an equivalent fleet of internal combustion engine vehicles running on conventional road transport fuel.

Alongside its international contributions, the Oil & Gas sector is mobilizing investments in cleaner and lower-carbon energy technologies including carbon capture and storage, efficiency improvement initiatives, renewable energy integration, flaring reduction, and methane abatement to further mitigate production-related emissions to deliver one of the lowest-carbon intensity LNG products globally.

Climate Finance Cooperation

In the recent past, Qatar announced voluntary, targeted financial support toward small developing island states and the least developed states to achieve their goals related to sustainable development to enhance peace and security.

Technology Cooperation

In line with the Paris Agreement, the State of Qatar recognizes the importance of technology development, readiness, bankability, and transfer as part of global climate action. Qatar's cooperation on technology is multi-faceted and includes collaborations and partnerships with other Parties, international and intergovernmental organizations. The focus on mitigation technologies includes the commercial development and deployment of cleaner fossil fuel technologies, as well as alternative and renewables technologies. Qatar's cooperation initiatives also include the development of supply chains supporting energy transition technologies and applications, such as critical minerals. Qatar is also supporting the development of technologies to strengthen resilience and enhance adaptive capacity, such as climate-smart agriculture technologies. In addition, Qatar is collaborating on efforts to minimize the risks, loss, and damage related to adverse effects of climate change. These efforts focus on the development and deployment of early warning systems, monitoring technologies, as well as adaptive capacity for emergency preparedness.

Capacity Building & Knowledge Sharing Cooperation

Qatar leverages capacity-building and knowledge-sharing opportunities to accelerate not only climate action, but also its sustainable development in general. The State of Qatar continues to operationalize several Memoranda of Understanding (MOU), notably with intergovernmental organizations in areas including NDC, NAP, national communications, transparency, heat stress, food security, circular economy, among others. The State of Qatar also hosts the headquarters of the Global Dryland Alliance, an 11 member states organization facing dryland challenges and aiming to strengthen food security through collaborative research, innovation, and partnerships. As host country, Qatar supports the alliance by facilitating research infrastructure and promoting the exchange and implementation of sustainable solutions.

In terms of bilateral cooperation, Qatar signed MOUs on climate change with other governments, aiming to strengthen collaboration on climate change, biodiversity preservation, wildlife protection, pollution control, coastal management, and other sustainable practices.

6.7. Social & Inclusivity Considerations

The State of Qatar aims to ensure that its climate actions are inclusive and benefit all segments of society. In line with national strategies and international best practices, Qatar's NDC integrates social inclusion considerations across mitigation, adaptation, and implementation measures.

- The NDS-3 reinforces QNV 2030's social and human development pillars, emphasizing that no one is left behind in the transition to a diversified, knowledge-based and sustainable economy. Central to this effort is the development of a future-ready workforce through education and skills training.
- Qatar has undertaken legal reforms and launched institutional initiatives to advance women's empowerment, in alignment with QNV 2030 and the NDS-3.
- Qatar is addressing youth empowerment in education, employment, health, and civic engagement, while NDS-3 sets national ambitions for workforce inclusion, women's participation, and support for people with disabilities.
- Qatar has enacted a comprehensive heat stress protection framework, including Resolution No. 17 of 2021 which protects outdoor workers, many of whom are men and migrant laborers, against high levels of exposure to heat stress by prohibiting outdoor work during the hottest hours in summer. Enforcement campaigns are conducted annually to ensure compliance, significantly reducing heat-related illnesses among laborers.

Qatar has invested heavily in education (scholarships, technical training) and is aligning curricula with green skills needed for NDC implementation. These efforts ensure that the next generation of Qatar's workers – women and men alike – are equipped to thrive in sectors, such as renewable energy, clean transportation, and environmental management.

6.8. Transparency

To meet the Paris Agreement's Enhanced Transparency Framework (ETF) requirements, Qatar is developing an expanded, comprehensive National Measurement, Reporting, and Verification (MRV) system. Building on the system that Qatar has deployed for meeting its reporting obligations under the UNFCCC, the new integrated architecture aims to track progress toward its NDC ambitions, strengthen the accuracy and transparency of Biennial Transparency Reports, expand the systems for preparing consistent and comprehensive national GHG inventories, and lay the groundwork for future NDC updates. By institutionalizing MRV as a continuous, system-wide process rather than relying on fragmented, project-based data collection, Qatar aims to streamline data management, improve comparability across reporting cycles, optimize resource use, and cultivate lasting technical expertise within its national institutions.

In addition to the MRV system, the State of Qatar is also developing a national framework to enhance its readiness for a potential utilization of Article 6. This framework seeks to enhance transparency and promote environmental integrity across various mitigation projects in Qatar by ensuring accuracy of mitigations through verification activities and the avoidance of double-counting associated environmental benefits.

7. Response Measures

The State of Qatar's response to climate change is rooted in the principles of the UNFCCC, notably Articles 3.2, 4.8e, 4.8h, and 4.10, which call for special consideration of developing countries that are particularly vulnerable to the impacts of climate response measures. Advancing climate ambition must be part of and in alignment with a holistic and integrated plan for delivering on all related United Nations Sustainable Development Goals (UN SDGs). This integrated pathway will help promote peace, foster prosperity, strengthen international partnerships, and safeguard the planet.

In alignment with these principles, Qatar is actively working to reduce the socio-economic effects of global climate action. Central to its approach is the pursuit of a diversified, knowledge-based and sustainable economy, as called for by the Qatar National Vision 2030 and articulated in Qatar's National Development Strategies. These strategies focus on balancing climate goals with national sustainable development.

Despite many efforts and considering its role as a leading producer and exporter of natural gas, Qatar remains significantly vulnerable to climate response measures. Qatar plays a pivotal role in supporting progress on its partners' climate targets – many of which are developing countries- by reliably supplying them with a cleaner alternative to coal and oil and providing a critical backup for intermittent renewables.

It must be recognized that emissions from the energy system are global challenges that demand global solutions. End-to-end analysis of energy value chains demonstrates that most emissions from hydrocarbon energy come from their end use.

Structural changes are required in energy end-use systems, including improved efficiency and demand management, fuel switching, and the permanent storage of unmitigated emissions. Therefore, to simultaneously pursue sustainable development and climate action, the focus needs to be on ensuring:

- a. A secure and affordable supply of lower-carbon energy,
- b. A rapid deployment of mitigation technologies, such as Carbon Capture and Storage (CCS), and
- c. A robust emissions management in production and processing of all energy carriers.

Qatar is also strengthening its institutional capacity to manage the risks linked to climate response measures. This includes embedding climate considerations into national development plans, enhancing collaboration between the public and private sectors, and promoting innovation to support emerging industries. The country's drive toward a diversified, knowledge-based, and sustainable economy is supported by workforce development and the attraction of high-tech investments, further insulating it from external economic shocks.

Additionally, Qatar actively participates in global cooperation efforts to promote the fair implementation of climate response measures. Qatar advocates for climate finance, technology transfer, and capacity-building support to assist developing nations in adapting to a low-carbon economy.

By aligning domestic development with global climate responsibilities, Qatar showcases its ambition for fair and effective climate action. Its strategy aims to reduce economic vulnerabilities while fostering a more sustainable, diversified, and resilient economy guided by equity, ensuring universal access to sustainable energy, and advancing a fair and just transition that leaves no one behind.

8. Fairness and Ambition

Qatar's approach to climate action is rooted in principles of equity and shared responsibility, reflecting its status as a developing country under the provisions of the UNFCCC. Despite its relatively small population and limited contribution to global emissions (approximately 0.3% of the global emissions), Qatar has set ambitious climate goals that balance national development priorities.

Qatar's contribution to the Paris Agreement is grounded in the principle of common but differentiated responsibilities and respective capabilities, recognizing both its national circumstances and its role in the global climate effort. As a developing country with hydrocarbon exports, Qatar faces the dual challenge of maintaining economic stability while transitioning to a low-carbon future. While Qatar's share of global emissions remains small, Qatar is taking active steps to reduce emissions intensity, diversify its economy, and invest in sustainable development, reflecting a fair and responsible approach that aligns with its capabilities and developmental needs. Moreover, Qatar plays a key role in the global energy transition by providing LNG to partner countries not only as a cleaner alternative to coal and oil, but also as a backup for intermittent renewables, supporting their efforts to reduce emissions while ensuring energy security and economic development.

To mitigate the expected growth in national emissions, the State of Qatar is implementing sector-specific mitigation measures based on principles of fairness. These measures will further contribute to the collective global reduction efforts. In addition, cross-sectoral national adaptation initiatives are being undertaken. These initiatives offer mitigation co-benefits, while also strengthening national resilience to climate change impacts.

Qatar's NDC 3.0 demonstrates enhanced ambition across mitigation, adaptation, and enabling efforts toward climate action both internationally and domestically.

- In terms of mitigation, Qatar increases its climate ambition by targeting the implementation of mitigation actions equivalent to 42 MMtCO₂e of GHG emission reductions by 2040. This represents a progression from Qatar's previous NDC, which expressed its mitigation ambition as a reduction relative to a business-as-usual (BAU) scenario by 2030, corresponding to approximately 37 MMtCO₂e of GHG mitigation. Qatar is expanding renewable energy deployment, scaling up carbon capture and storage, and advancing economic diversification in line with the Qatar National Vision 2030.
- In terms of adaptation, Qatar is in the process of developing a National Adaptation Plan (NAP) aligned with the Global Goals on Adaptation and designed to strengthen the country's resilience in agriculture and livestock, biodiversity, energy and industry, infrastructure and coastal resilience, public health, and water sectors.

Qatar's enhanced ambition under this NDC aligns with national sustainable development objectives and reflects its continued contribution to global climate action. It also underscores the prominent role Qatar plays in facilitating equitable access to sustainable energy globally, while supporting a just global transition and climate change response. All national actions and plans described in this NDC will be implemented in accordance with the principles and provisions of the UNFCCC, particularly Articles 4.7 and 12.4.

Qatar reaffirms its commitment to contribute to the objectives of the Paris Agreement and the UNFCCC. Guided by national development priorities and informed by science, Qatar seeks to contribute constructively to the global climate effort through practical, inclusive, and forward-looking policies. This NDC reflects not only a clear step forward in ambition but also Qatar's determination to be a reliable partner in advancing a just and effective global transition. As implementation progresses, Qatar aims for best efforts in ensuring continuous improvement, and collaboration with the international community to achieve shared climate goals and protect future generations.

Qatar reserves the right to further elaborate and update this NDC in line with its special national circumstances and sustainable development imperatives with a view to avoid the adverse effects of economic and social consequences of response measures.

9. Information for Transparency, Clarity and Understanding

1. Quantifiable information on the reference point (including, as appropriate, a base year):	
a. Reference year(s), base year(s), reference period(s), or other starting point(s).	Base year: 2019 Target year: 2040
b. Quantifiable information on the reference indicators, their values in the reference year(s), base year(s), reference period(s), or other starting point(s), and, as applicable, in the target year.	Not applicable.
c. For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or policies and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide other relevant information.	Not applicable.
d. Target relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction.	Qatar increases its climate ambition by targeting the implementation of mitigation actions equivalent to 42 MMtCO ₂ e of GHG emission reductions by 2040.
e. Information on sources of data used in quantifying the reference point(s).	The Base year (2019) emissions are updated and recalculated due to methodological improvements. Target year level projections are based on project-level mitigation measures, as submitted by key stakeholders to the Ministry of Environment and Climate Change in Qatar. <u>Scope of NDC:</u> Covers anthropogenic emissions and removals of • carbon dioxide (CO₂) • methane (CH₄) • and nitrous oxide (N₂O) <u>Excluded from Scope of NDC:</u> Emissions and removals of • hydrofluorocarbons (HFCs) • perfluorocarbons (PFCs) • sulfur hexafluoride (SF₆) • and nitrogen trifluoride (NF₃) <u>Methodologies:</u> Two methodologies were used to develop the GHG emissions inventory • the Intergovernmental Panel on Climate Change (IPCC)'s 2006 GHG Inventory guidelines • the European Union's Monitoring and Reporting Regulation (EU MRR; EU 2012) <u>Sectoral approach:</u> The emissions and mitigations were evaluated sector-wise • Energy (Oil and Gas, Power and Water) • Construction and Industry • Transport • Waste • AFOLU <u>GHG emissions estimation:</u> • Based on activities in each source category and sector • Use of site-specific activity data and a mix of site-specific and default emission factors • Tier-1 approach was applied if higher-tier data was unavailable • Global warming potentials (GWP) for a 100-year time horizon from the IPCC's fifth Assessment Report (AR5)

f. Information on the circumstances under which the Party may update the values of the reference indicators.	As mentioned above, the national total greenhouse gas emissions in 2019 may be updated and recalculated due to methodological improvements. Information on updates will be reported in the NIRs and reflected in the BTRs.
2. Time frames and/or periods for implementation:	
a. Time frame and/or period for implementation, including start and end date.	1 January 2020 - 31 December 2040
b. Whether it is a single-year or multi-year target, as applicable.	Single-year target
3. Scope and coverage	
a. General description of the target.	Qatar increases its climate ambition by targeting the implementation of mitigation actions equivalent to 42 MMtCO ₂ e of GHG emission reductions by 2040.
b. Sectors, gases, categories, and pools covered by the nationally determined contribution, including, as applicable, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines.	<u>Economic diversification sectors include:</u> • Energy (Oil and Gas, Power and Water, Transport, selected Industry & Construction) • IPPU (selected Industry & Construction) • Waste. <u>Gases include:</u> • carbon dioxide (CO₂) • methane (CH₄) • nitrous oxide (N₂O)
c. How the Party has taken into consideration paragraph 31(c) and (d) of decision 1/CP.21.	<u>Qatar's NDC does not include:</u> • perfluorocarbons (PFCs) • hydrofluorocarbons (HFCs) • sulfur hexafluoride (SF₆) • and nitrogen trifluoride (NF₃). Qatar is expanding its GHG inventory systems to cover these emissions. Once Qatar assesses that these emissions are a key category to address, these GHGs will be incorporated.
d. Mitigation co-benefits resulting from Parties' adaptation efforts and/or economic diversification plans, including description of specific projects, measures and or initiatives of Parties adaptation actions and/or economic diversification plans.	Economic Diversification plans: Refer to Chapter 4 (Economic Diversification with Mitigation Co-Benefits). Adaptation with Mitigation Co-benefits: Refer to Chapter 5 (Adaptation Measures with Mitigation Co-Benefits).
4. Planning processes	
a. Information on the planning processes that the Party undertook to prepare its nationally determined contribution and, if available, on the Party's implementation plans including, as appropriate:	
a(i). Domestic institutional arrangements, public participation, and engagement with local communities and Indigenous peoples, in a gender-responsive manner	Refer to section 2.3. Stakeholder Engagement Process and Target-Setting Methodology. <u>Overall responsibility:</u> Ministry of Environment and Climate Change (MECC) in the State of Qatar. <u>Process:</u> MECC centrally coordinated the various stakeholder's consultation processes. Stakeholders included: • Other Ministries • Government bodies • International development agencies • Public, semi-private, and private entities Feedback on measures, activities, and actions implemented by the public, semi-private, and private entities was considered while tracking implementation of previous NDC actions and setting NDC ambition.

a(ii). Contextual matters, including, inter alia, as appropriate	
a(ii)a. National circumstances, such as geography, climate, economy, sustainable development, and poverty eradication	Refer to section 2.1. (Geographical and Climate Profile) and 2.2. (Social and Economic Profile).
a(ii)b. Best practices and experience related to the preparation of the nationally determined contribution	Refer to section 2.3. (Stakeholder Engagement Process).
a(ii)c. Other contextual aspirations and priorities acknowledged when joining the Paris Agreement	Refer to Chapter 2. (National Circumstances).
b. Specific information applicable to Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including the Parties that agreed to act jointly and the terms of the agreement, in accordance with Article 4, paragraphs 16-18, of the Paris Agreement.	Not applicable.
c. How the Party's preparation of its nationally determined contribution has been informed by the outcomes of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement.	Qatar has considered the outcomes of first global stocktake. As a result, enhanced ambitions include • emissions mitigation • adaptation and resilience measures
d. Each Party with a nationally determined contribution under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on:	
d(i). How the economic and social consequences of response measures have been considered in developing the nationally determined contribution;	The mitigation measures identified in the NDC have been linked to • economic diversification plans • assessment of their climate impacts and co-benefits, including employment
d(ii). Specific projects, measures and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also yield mitigation co-benefits, which may cover, but are not limited to, key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communication, construction, tourism, real estate, agriculture, and fisheries.	Refer to Chapter 4 (Economic diversification with mitigation co-benefit), and Chapter 5 (Adaptation with mitigation co-benefit).

5. Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals	
a. Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA.	The mitigation actions identified in the NDC have used a combination of technological interventions. The applied methodologies to determine the mitigation benefits of these interventions are in accordance with methodologies and common metrics assessed by the IPCC and adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement. The State of Qatar has ensured methodological consistency, including on baselines, between the communication and implementation of nationally determined contributions. The updated MRV system being established and deployed to track the progress of the NDC captures appropriate methods and methodologies to track mitigation actions.
b. Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the nationally determined contribution.	The impacts of policies and measures included in the NDC have also been assessed in accordance with the CMA guidance.
c. If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate.	Qatar's current GHG inventory is based on - metrics agreed upon by the CMA - methodologies and good practice guidance from the IPCC
d. IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals.	Methodologies and metrics include 2006 IPCC Guidelines for estimating greenhouse gas emissions and removals Global warming potentials (GWP) for a 100-year time horizon from the IPCC's fifth Assessment Report (AR5)
e. Sector-, category- or activity specific assumptions, methodologies, and approaches consistent with IPCC guidance, as appropriate, including, as applicable.	
e(i). Approach to addressing emissions and subsequent removals from natural disturbances on managed lands.	Not applicable
e(ii). Approach used to account for emissions and removals from harvested wood products.	Not applicable
e(iii). Approach used to address the effects of age-class structure in forests;	Not applicable
f. Other assumptions and methodological approaches used for understanding the nationally determined contribution and, if applicable, estimating corresponding emissions and removals, including:	
f(i). How the reference indicators, baseline(s), and/or reference level(s), including, where applicable, sector-, category- or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources, and models used;	- All the climate actions identified in the current NDC have individual set of baseline and reference values assessed. - All NDC mitigation actions have detailed methods and methodologies identified to estimate the overall emission reductions as approved by the CMA. - A comprehensive NDC tracking system is being developed in country to help track the NDC actions. An online web-based system where the stakeholders can provide the relevant data and information for tracking both adaptation and mitigation actions are being developed.



f(ii). For Parties with nationally determined contributions that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable;	The State of Qatar has set non-GHG targets for the following interventions: 1. 4 Gigawatts renewable energy capacity by 2030. The total installed capacities of all renewable energy interventions to generate electricity will be considered. 2. Closing old landfills and/or rehabilitating them will result in fewer GHG emissions. 3. Double waste-to-energy capacity by 2030. All national actions and plans described in this NDC will be implemented in accordance with the principles and provisions of the United Nations Framework Convention on Climate Change, particularly Articles 4.7 and 12.4.
f(iii). For climate forcers included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated	Not applicable
f(iv). Further technical information, as necessary;	Not applicable
g. The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable.	Qatar plans to fulfil the 2040 NDC ambition through domestic measures. If deemed necessary, Qatar may consider voluntary cooperation and approaches referred to in Article 6. of the Paris Agreement once this is operationalized. Qatar is in the process of establishing robust domestic frameworks to authorize and track transferred credits, ensuring they represent real and permanent reductions that avoid double counting.
6. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances:	
a. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances.	In considering fairness and ambition, the State of Qatar takes into account its national circumstances, including: 1. Qatar is a developing country Party that is still undergoing sustainable development. Despite Qatar's strong fiscal position, development gaps persist across sectors in terms of human capacity and access to technology. 2. Qatar has a limited historical and current responsibility to climate change. 3. Qatar is playing an important role in ensuring reliable and secure access to lower-carbon energy globally, hence, supporting sustainable development and a just transition across the world. 4. Qatar is also playing a significant role in supporting and safeguarding energy security and affordability. 5. Qatar's NDC proposes a progressive emissions mitigation ambition, which is informed by the latest available science and achieved through clear sectoral technology pathways. 6. Qatar welcomes international cooperation, notably in the form of capacity building support and technology transfer to realize its climate ambitions. Despite its developing country Party status, Qatar is providing climate finance assistance, technology development, and deployment support, as well as undertaking capacity building and knowledge sharing activities.
b. Fairness considerations, including reflecting on equity.	Refer to Question 6(a).
c. How the Party has addressed Article 4, paragraph 3, of the Paris Agreement.	Qatar increases its climate ambition by targeting the implementation of mitigation actions equivalent to 42 MMtCO₂e of GHG emission reductions by 2040. This represents a progression from Qatar's previous NDC, which expressed its mitigation ambition as a reduction relative to a business-as-usual (BAU) scenario by 2030, corresponding to approximately 37 MMtCO₂e of GHG mitigation.

d. How the Party has addressed Article 4, paragraph 4, of the Paris Agreement.	The scope of the NDC ambition focuses on the implementation of enhanced mitigation projects across the following economic sectors representing over 90% of Qatar's economy • Oil and Gas, • Power and Water, • Industry and Construction, • Transport, • Waste, and • AFOLU.
e. How the Party has addressed Article 4, paragraph 6, of the Paris Agreement.	Not applicable
7. How the nationally determined contribution contributes toward achieving the objective of the Convention as set out in its Article 2:	
a. How the nationally determined contribution contributes toward achieving the objective of the Convention as set out in Article 2.	Qatar's NDC demonstrates enhanced ambition across mitigation, adaptation, and enabling efforts, and hence supports the objective of the Convention. ■ In terms of mitigation, Qatar aims to implement GHG emission mitigation actions equaling 42 MMtCO₂e 2040. ■ In terms of adaptation, Qatar is the process of developing a NAP aligned with the Global Goals on Adaptation, with the aim of strengthening resilience in 6 sectors, including agriculture & livestock, biodiversity, water, energy & industry, health, and infrastructure & coastal resilience. ■ Furthermore, Qatar has increased its support for South-South cooperation, particularly for least developed countries and small island developing states. Qatar's enhanced ambition under this NDC is aligned with national sustainable development objectives and reflects its continued contribution to global climate action. It also underscores the prominent role Qatar plays in facilitating equitable access to sustainable energy globally, while supporting a just global transition and climate change response. All national actions and plans described in this NDC will be implemented in accordance with the principles and provisions of the United Nations Framework Convention on Climate Change, particularly Articles 4.7 and 12.4.
b. How the nationally determined contribution contributes toward Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.	Qatar is working toward and supporting other countries to work toward the long-term temperature goal set out in Article 2, paragraph 1(a), as demonstrated by its enhanced GHG emission mitigation ambition. Qatar reaffirms its recognition of the need for global climate action and the imperative of collective international efforts to respond to the threats and impacts of climate change. Qatar's climate change response is twofold: ■ <u>National level</u>: Taking local action by implementing sector-specific mitigation initiatives and advancing adaptive measures to enhance resilience ■ <u>International level</u>: Contributing to a just global transition by improving access to lower-carbon energy solutions and supporting global adaptation efforts, including efforts to enhance the resilience of food production systems and other vulnerable sectors.