



Government of the Republic of Trinidad and Tobago
MINISTRY OF PLANNING AND DEVELOPMENT

**FIRST BIENNIAL TRANSPARENCY REPORT
of the Republic of Trinidad and Tobago
TO THE UNITED NATIONS FRAMEWORK
CONVENTION ON CLIMATE CHANGE
December 2024**



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Trinidad and Tobago's
First Biennial Update Report
In fulfilment of its commitment under the
United Nations Framework Convention on Climate Change

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First Biennial Update Report of the Republic of Trinidad and Tobago
under the United Nations Framework Convention on Climate Change

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Government of the Republic of Trinidad and Tobago

MINISTRY OF PLANNING AND DEVELOPMENT



First Biennial Update Report to the
United Nations Framework Convention on Climate Change

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FOREWARD



The Republic of Trinidad and Tobago, acknowledges the urgent global climate crisis and as a small island developing state, are all too familiar with its critical implications. Moreover, Trinidad and Tobago recognises the need for a robust and transparent multilateral framework for climate action that will build mutual confidence across the globe in an equitable and fair manner, in order to arrive at sustainable solutions to the global climate crisis.

Our approach therefore involves applying a climate lens to national planning and following a low-carbon pathway and building resilience to the inevitable climate change impacts, as outlined in our National Climate Change Policy (NCCP), National Adaptation Plan (NAP) and VISION 2030 development plan, through a process of comprehensive integration.

HON. PENNELOPE BECKLES In this regard, we also recognize our role within the global climate policy framework and are proactively responding. Trinidad and Tobago was among the first to submit our Nationally Determined Contribution (NDC) under the Paris Agreement, demonstrating our dedication to climate action. In recent years, we have established a robust monitoring, reporting, and verification (MRV) system to track greenhouse gas emissions, NDC implementation, and financial information related to these activities, and have now fully integrated reporting requirements under the enhanced transparency framework (ETF) of the Paris Agreement within the MRV system and developed a comprehensive National Transparency System (NTS).

We are therefore in the process of fortifying our policy and legislative landscape in keeping with the requirements under the ETF, including, updating our NCCP to reflect Paris Agreement commitments, enhancing our renewable energy capabilities, developing an e-mobility framework for sustainable transport, and instituting mandatory GHG emissions reporting. Moreover, in order to ensure that submissions under the ETF are timely and in keeping with stipulated modalities, procedures and guidelines, Trinidad and Tobago is dedicating significant resources to improving local institutional and technical capacities as it relates to the MRV of all climate related data. Our next step is to incorporate the NTS into the national legislative framework to make reporting under the ETF mandatory.

Trinidad and Tobago through the submission of this First Biennial Transparency Report reiterates its dedication to responsibly engaging in the multilateral climate dialogue and collaborating with global partners in order to build mutual confidence through transparent action, and drive impactful solutions for climate change, thereby ensuring a sustainable future for our nation and the planet.

Hon. Penelope Beckles
Minister of Planning and Development
TRINIDAD AND TOBAGO

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ACRONYMS AND ABBREVIATIONS

AF	Adaptation Fund
AI	Artificial Intelligence
AFOLU	Agriculture Forestry and Other Land Use
APR	Air Pollution Rules
AQI	Air Quality Index
AR5	Fifth Assessment Report
BAEF	Barrier Analysis and Enabling Framework
BAT	Best Available Techniques
BaU	Business as Usual
BCSL	Brechin Castle Solar Limited
BOD	Biological Oxygen Demand
bpAETT	British Petroleum Alternative Energy Trinidad and Tobago
BTR	Biennial Transparency Report
BUR	Biennial Update Report
CAF	Corporación Andina de Fomento
CARICOM	Caribbean Community and Common Market
CBIT	Capacity Building Initiative for Transparency
CBO	Community Based Organization
CCCCC	Caribbean Community Climate Change Centre
CCS	Carbon Capture and Sequestration
CDB	Caribbean Development Bank
CDM	Clean Development Mechanism
CEC	Certificate of Environmental Clearance
CNG	Compressed Natural Gas
CPS	Cove Power Station
CSO	Central Statistics Office
CTF	Common Tabular Format
Desalcott	Desalination Company of Trinidad and Tobago Limited
DFIs	Direct Foreign Investments
DOCf	Degradable Organic Content Factor
DPRDL	Downstream Petroleum Research and Development Limited
DRI	Direct Reduced Iron
EE	Energy Efficiency

EIA	Environmental Impact Assessment
EMA	Environmental Management Authority
EOG	EOG Resources Trinidad Limited
EOR	Enhanced Oil Recovery
ESCO	Energy Services Companies
ETF	Enhanced Transparency Framework
ETS	Emissions Trading Schemes
EU	European Union
EU GCCA+	European Union Global Climate Change Alliance Plus
EV	Electric Vehicle
FAOSTAT	Food and Agriculture Organization Statistics
FDI	Foreign Direct Investment
FIT	Feed in Tariff
FOD	First Order Decay
FPLF	Forres Park Land Fill
FY	Fiscal year
GAP	Gender Action Plan
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFAC	Green Fund Advisory Committee
GFEU	Green Fund Executing Unit
GHG	Greenhouse Gas
GIS	Geographic Information System
GLF	Guanapo Land Fill
GNI	Gross National Income
GoRTT	Government of the Republic of Trinidad and Tobago
GWP	Global Warming Potentials
HDI	Human Development Index
HEV	Hybrid Electric Vehicle
HPCL	Heritage Petroleum Company Limited
IA	Implementation Agreement
IAM	IAMovement
ICAO	International Civil Aviation Organization

ICT	Information and Communications Technology
IDB	Inter-American Development Bank
IE	Included Elsewhere
InvestTT	InvestTT Limited
IPA	Investment Promotion Agency
IPCC	Intergovernmental Panel on Climate Change
IPPs	Independent Power Producers
IPPU	Industrial Processes & Product Use
ITCZ	Intertropical Convergence Zone
KMS	Knowledge Management System
KPIs	Key Performance Indicators
LAC	Latin America and the Caribbean
LEDs	Light Emitting Diodes
LIC	Light, Industry, Commercial
LNG	Liquid Natural Gas
LPG	Liquefied Petroleum Gas
LULUCF	Land Use, Land Use Change and Forestry
MALF	Ministry of Agriculture Land and Fisheries
MCA	Multicriteria Analysis
MCF	Methane Correction Factor
MEAs	Multilateral Environmental Agreements
MEEI	Ministry of Energy and Energy Industries
MoF	Ministry of Finance
MoH	Ministry of Health
MOWT	Ministry of Works and Transport
MPD	Ministry of Planning and Development
MPU	Ministry of Public Utilities
MPGs	Modalities, Procedures and Guidelines
MRD	Ministry of Rural Development
MRF	Materials Recovery Facility
MRV	Measurement, Monitoring, Reporting and Verification
MSW	Municipal Solid Waste
NA	Not Applicable
NAMA	Nationally Appropriate Mitigation Actions

NC	National Communications
NCCP	National Climate Change Policy
NDA	National Designated Authority
NDCs	Nationally Determined Contributions
NDC- IP	Nationally Determined Contributions Implementation Plan
NDS	National Development Strategy
NE	Not Estimated
NEC	National Energy Corporation
NEP	National Environmental Policy
NGC	National Gas Company
NGOs	Non-Governmental Organizations
NISWRMP	National Integrated Solid Waste Resource Management Policy
NO	Not Occurring
NP	National Petroleum Company of Trinidad and Tobago
NPF	National Performance Framework
NRWRP	National Reforestation and Watershed Rehabilitation Programme
NSAI	Netherland, Sewell and Associates Inc
NSDS	National Spatial Development Strategy
NTS	National Transparency System
ODA	Official Development Assistance
ODS	Ozone Depleting Substances
OECD	Organization for Economic Co-Operation and Development
OGSL	Orange Grove Solar Limited
PET	Polyethylene terephthalate
PPA	Power Purchase Agreement
PPP	Public-Private Partnerships
PSIP	Public Sector Investment Programme
PV	Photovoltaic
QA/QC	Quality Assurance and Quality Control
RE	Renewable Energy
RIC	Regulated Industries Commission
SCCF	Special Climate Change Fund
SDG	Sustainable Development Goals
SIDS	Small Island Developing States

SWDS	Solid Waste Disposal Sites
SWM	Solid Waste Management
SWMCOL	The Solid Waste Management Company Limited
TACCC	Transparency, Accuracy, Consistency, Completeness and Comparability
THA	Tobago House of Assembly
TNA	Technology Needs Assessment
TS	Transfer Station
TTD	Trinidad and Tobago Dollar
TTMS	Trinidad and Tobago Meteorological Service
T&T	Trinidad and Tobago
T&TEC	Trinidad and Tobago Electricity Commission
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UN REDD	United Nations Collaborative Initiative on Reducing Emissions from Deforestation and Forest Degradation
USD	United States Dollar
US EPA	United States Environmental Protection Agency
UTT	University of Trinidad and Tobago
UWI	University of the West Indies
WASA	Water and Sewerage Authority
WHO	World Health Organization
WRAP	Wind Resource Assessment Programme

CHEMICAL TERMS

C	Carbon
CaO	Calcium Oxide
CH ₄	Methane
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
HFCs	Hydrofluorocarbons
N ₂ O	Nitrous Oxide
NF ₃	Nitrogen trifluoride
NO _x	Nitric Oxide
PFCs	Perfluorinated compounds
PM _{2.5}	Particulate Matter
SF ₆	Sulphur Hexafluoride

MEASUREMENT UNITS

%	Percentage
°C	Degree Celsius
Dy	Day
Gg	Gigagram
GJ	Gigajoule
GW	Gigawatt
Ha	Hectares
Kg	Kilogram
km ²	Square Kilometers
kW	Kilowatt
kWh	Kilowatt Hour
m	Meters
M	Million
m ³	Cubic Meter
mmscf	Million Standard Cubic Feet
MtCO ₂	Metric Tons of Carbon Dioxide
Mtpa	Million Tonnes per Annum
MW	Megawatt
MWh	Megawatts Hour

tCO ₂	Tonnes Carbon Dioxide
TJ	Terajoule
W	Watt
wt%	Weight Percentage

INTRODUCTION

The Government of the Republic of Trinidad and Tobago (GoRTT) is pleased to present its First Biennial Transparency Report (BTR1) on climate change in fulfilment of its reporting commitment under the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. The report was compiled according to the modalities, procedures and guidelines (MPGs) for the Enhanced Transparency Framework (ETF) (annex to decision 18/CMA.1). T&T has elected to apply specific flexibility which is discussed in Chapter 7 of the BTR, in light of the country's capacities.

This report highlights GoRTT's actions and progress on climate change and transparency and its commitment to sustainable development by enhancing resilience to climate impacts and reducing greenhouse gas (GHG) emissions across all sectors.

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EXECUTIVE SUMMARY

1 National Circumstances

- Geographical profile: Trinidad and Tobago (T&T) is a twin-island developing state located on the southernmost end of the Caribbean archipelago.
- Climate profile: Its climate fluctuates between a Tropical Marine Climate (January-May) and a Moist Equatorial Climate (June-December).
- Temperature distribution: Across both islands, temperatures are relatively constant with minor seasonal variations ranging between 22°C to 32°C. The mean maximum temperatures per decade have gradually and consistently increased from 1950-2020, from a mean maximum temperature of 31.1°C to 32.2°C. Similarly, the number of hot days per decade also increased from 9 hot days between 1961-1970 to 415 hot days between 2011-2020. There is evidence that oceanic temperatures have increased significantly in the last 20 years.
- Precipitation distribution: No significant fluctuation in the Decadal Average Rainfall has been observed from 1961 to 2020. However, in recent years, the frequency of intense rainfall events has increased significantly.
- Climate Change impacts: Climate models have predicted that T&T in the face of climate change would experience increased occurrences of tropical storms, coastal flooding, sea level rise and to the opposite extreme, increased risks of drought periods. This is attributed to the fact that approximately 70% of the country's population, with almost 80% of its socioeconomic activities, were situated near coastal regions. Increased temperatures and longer, more intense drought periods give rise to heat stressors and affect human, animal and crop health while exacerbating the scarcity of freshwater resources. This has exacerbated previous cooling requirements, which has directly impacted energy consumption in the country. Therefore, increased cooling demands is one need where climate change action through technology requires improvement. With the varying weather conditions, biodiversity, especially in vulnerable ecosystems would be negatively impacted. Increased oceanic temperature has also resulted in significant bleaching and destruction of the bounding coral reefs (specifically in Tobago).
- Population profile: In 2022, T&T's total year-end population was estimated at 1,365,805 persons with Trinidad accounting for approximately 96% and Tobago approximately 4%. Around 2017, there is an anomalously high net immigration of Venezuelan nationals, as refugees and asylum seekers, continue to influx T&T to date.
- Economic Profile: According to the Central Statistical Office, in 2022, the gross domestic product (GDP) at constant 2012 prices for the country was TTD150,356.6 million, compared to TTD164,068.7 million in 2018.
- Sector profile- Energy: In contrast to most other Caribbean countries, a large portion of T&T's GDP comes from its energy sector since the country is a net energy exporter. T&T relies extensively on fossil fuels, particularly natural gas, for its electricity generation. The country's natural gas reserves are substantial, estimated at 664 billion cubic meters, and account for 99 percent of its electricity production. Natural gas is also heavily utilized in the industrial sector as a feedstock and for heating purposes, while in transportation, it serves as Compressed Natural Gas and Liquefied Natural Gas (LNG) fuels. However, despite this abundance of natural gas, renewable energy sources are being established throughout the nation to meet sustainability goals.
- Sector Profile - Industry: The Industrial Sector generates nearly 60 percent of government revenue and serves as the primary export commodity, accounting for 83 percent of merchandise exports with the main exports including refined oil products, LNG and natural gas liquids. The largest petroleum sector contributor to real GDP was identified as the

Manufacture of Petrochemicals Industry. The second leading contributor to real GDP was identified with the Natural Gas Exploration and Extraction Industry which declined by 2.1 percent in the fourth quarter of 2021 and declined by 5.5 percent during the January to March 2022 period.

- Sector profile – Agriculture: In both 2021 and 2022, the impact of the COVID-19 Pandemic continued to hinder growth and development within the agriculture sector. Challenges experienced within the sector amounted to disruptions in the availability of inputs for production, specifically fertilizers, chemicals and feeds. In addition, in 2021, due to the closure and or limited working hours of businesses and markets during the quarantine period demand for agricultural products such as poultry, fruits, root crops and vegetables were negatively impacted.
- Sector profile – Waste: With increasing development from population growth, urbanization, industrial expansion and increased consumerism, waste per capita is expected to increase. In 2022 waste generated and sent to disposal sites in Trinidad's Forbes Park, Beetham and Guanapo accounted for 733,623 tonnes of waste. Waste generated and sent to disposal sites in Tobago's Studley Park, was estimated at 16,591 tonnes in 2021 (most recent figure).

2 Institutional Arrangements

- National Measurement, Monitoring, Reporting, Verification and National Transparency System: The GoRTT through its Ministry with responsibility for the Environment, the Ministry of Planning and Development (MPD), designed and operationalized a comprehensive National Climate Mitigation Monitoring, Reporting and Verification (MRV) System in 2018. Since then, in 2024, T&T has established a robust National Transparency System (NTS) to monitor, report, and verify progress on its Nationally Determined Contributions (NDCs) and climate mitigation actions. The NTS facilitates collecting, analysing, and reporting data related to Greenhouse Gases (GHG) emissions, mitigation activities, and support received for NDC implementation.
- The institutional framework of the MRV System: It includes the coordinating entity (the MPD), host/manager of the NTS (the Environmental Management Authority) and data suppliers (emitting/reporting entities). A Technical Policy Guidance Brief was submitted to the Cabinet of the GoRTT, by the MPD, that proposes the promulgation of Climate Change (Greenhouse Gases) Reporting Rules.

3 Greenhouse Gas Inventory

- Time series: 2006–2022.
- Total emissions for 2022: 43714.76 Gg CO₂e. The general trend in emissions shows an increase over the period 2006 (55777.37 Gg CO₂e) – 2010 (60807.14 Gg CO₂e), followed by a general decrease from 2010 onwards. The decrease per annum from 2010 to 2022 is 17,092.38 Gg.
- Total general results by gas for 2022: T&T's emissions are largely dominated by CO₂ (26571.66 Gg CO₂e) which contributes 59 percent of total emissions, followed by CH₄ (15881.32 Gg CO₂e) approximately 39 percent and N₂O (1263.95 Gg CO₂e) approximately 2 percent.
- Energy sector: A total of 27,438.50 Gg CO₂e emissions attributed to the national total. Natural gas usage can be identified as the main driver of emissions within T&T's energy sector. For 2022, the key categories for the energy sector are fugitive emissions from natural gas, electricity production, gas processing and fugitive emissions from oil activities. Overall, when compared with 2006, the associated emissions in 2022 decreased by 30.45 percent.

- Industrial Processes and Product Use sector: The sector is driven by natural gas consumption, owing to the intensities of the ammonia and methanol-related emissions which, together, account for over 85 percent of sectoral emissions. The total emissions for this sector are 15182.78 Gg CO₂e. The key categories are ammonia production, methanol production, nitric acid production and iron and steel production.
- Agriculture sector: Manure management (104.92 Gg CO₂e) and enteric fermentation (81.54 Gg CO₂e) are the larger contributors to the emissions in this sector. However, the agriculture sector only contributes a total of 268.04 Gg CO₂e of emissions. T&T's Land Use, Land Use Change and Forestry sector is a net sink (1663.97 Gg CO₂e) owing to the large contribution of the forestland biomass sub-category. Improvements are needed for this sector in data collection.
- Waste sector: A total of 2481.03 Gg CO₂e of emissions are attributed to this sector. The main sub-categories for T&T's waste sector are the municipal solid waste, which follows the First Order Decay model, and domestic wastewater. Municipal solid waste is a key category in the national inventory contributing 2274.90 Gg CO₂e of emissions. The emissions for this sector may be underreported and improvements in data collection are needed.

4 Tracking progress of Implementation and Achievement of Nationally Determined Contribution

- NDC Description: T&T's aim is to achieve a reduction objective in overall emissions from the power generation, transportation and industrial sectors by 15% by 2030 from Business as Usual, which in absolute terms is an equivalent of one hundred and three million tonnes (103,000,000) of CO₂e. The estimated cost of meeting this objective is USD 2 billion, which is expected to be met partly through domestic funding and conditional on international financing including through the Green Climate Fund. In this regard, T&T will commit to unconditionally reduce its public transportation emissions by 30% or one million, seven hundred thousand tonnes (1,700,000) CO₂e compared to 2013 levels by December 31, 2030.
- Indicators: Through the Capacity Building Initiative for Transparency (CBIT) Project entitled "Strengthening Trinidad and Tobago's capacity in transparency for climate change mitigation and adaptation" conducted over the period October 2021 to September 2024, gender sensitive indicators, templates, protocols and guides to support T&T in tracking progress in implementing its mitigation (NDCs) and adaptation actions were developed. The NDC Implementation Plan includes a total of ninety-four (94) activities within the mitigation areas across the three NDC sectors, these were aggregated to obtain a condensed list of indicators that still address all the relevant activities in the NDC Implementation Plan while ensuring the feasibility of reporting the indicators under the Paris Agreement. This resulted in the development of twenty (20) indicators related to the total of ninety-four (94) activities within the mitigation areas across the three NDC sectors. For each of the indicators, an indicator reference sheet was developed which includes all the relevant information to successfully and timely monitor the progress such as data needs, responsibilities, and indicator management. The template acts as the main reference sheet for stakeholders to monitor progress on the indicator. These indicators will be utilized for tracking progress of the NDCs for future submissions.
- Mitigation: Climate change mitigation actions are being implemented and planned by T&T. The power generation sector includes 8 measures e.g., the development of a 92.2 MW Utility Scale Solar PV Project located at Brechin Castle, Couva which is expected to be completed in 2025. The transport sector includes four measures e.g., the upgrade and replacement of the aircraft fleet of T&T completed in 2024. For waste and wastewater

sector the three mitigation measures are centered on landfill management. There are three main measures for agriculture, forestry and other land use sectors which include sustainable management of forest resources and wetland management.

5 Information related to climate change impacts and adaptation under Article 7 of the Paris Agreement

- Information related to climate change impacts and adaptation under Article 7 of the Paris Agreement is not included in this BTR. T&T has elected to not report on this non-mandatory requirement (MPGs 104-117). T&T submitted its National Adaption Plan (NAP) in 2024, in accordance with the provisions of Article 7 of the Paris Agreement which calls for countries to prepare national adaptation plans (NAPs) and to communicate adaptation actions to the UNFCCC. This NAP also serves as Trinidad and Tobago's first Adaptation Communication

6 Finance, Technology and Capacity Building Needs and Support Received

- National Circumstances and Institutional Arrangements: T&T's Financial Investment Plan for NDC Implementation states that costs of around 2 billion USD, distributed across power generation with 945 million USD, transport with 735 million USD and industry at 320 million USD, are estimated for the country's conditional targets. Finance for climate action in T&T is provided through i) private funding channels, ii) domestic budgets, domestic funds, and incentive mechanisms, and iii) international bilateral and multilateral cooperation and investments dedicated to climate change efforts. National and municipal governments and international development financial institutions are currently the major financial source for climate action in T&T and are likely to remain so in the future.
- Information on Country Priorities and Strategies on aspects of the Party's NDCs under Article 4 of the Paris Agreement: At the National level, T&T's national development is primarily guided via the following four strategies: Vision 2030 - The National Development Strategy of T&T 2016-2030, National Environmental Policy of 2018, National Tourism Policy 2020-2030, and National Spatial Development Strategy for T&T. More specifically pertaining to climate change, the National Climate Change Policy of 2011 and the Carbon Reduction Strategy of 2015 are the two primary national climate change policies that lay out the mitigation priorities set out under T&T's first NDC until the year 2030. At the sectoral level, T&T has developed specific climate change mitigation policies for the Energy, Industry, and Transport Sectors, the three primary sources of GHG emissions in the country. The two primary documents that shape the development and planning processes of priority mitigation actions are the Technology Needs Assessment (TNA) conducted in 2023 for identifying and prioritizing mitigation technologies, and the Gender Action Plan of 2019 identifying the key barriers, opportunities and actions needed for mainstreaming gender in the NDC Implementation in T&T.
- Institutional Arrangements Update with respect to Finance, Technology and Capacity Building Needs and Support since last BUR: Under the CBIT project, the MRV for support was established. Key indicators were developed within the support received sector, which focused on the total financial backing for climate change mitigation from both international and private sources, particularly in power generation, industry, and transport. The NTS is adeptly aligned with the Common Tabular Format.
- Information on financial support needed and received by developing country Parties under Article 9 of the Paris Agreement: T&T has received financial support for climate action across several sectors for the period 2019-2022. The financial support contributed is intended to fund and help the progress of the construction of utility scale solar plants, the development of an e-mobility policy, enabling the conversion of conventional motor

vehicles to run on cleaner compressed natural gas, and developing a poly carbon capture and storage. Additionally, digital transformation is a priority and financial support for digitization across all sectors is needed, which is projected to contribute to emissions reduction.

- Information on technology development and transfer support needed and received under Article 10 of the Paris Agreement: A TNA and Mitigation Analysis Report, conducted in 2023, determined the needs and priorities of the country and developed feasible plans as it relates to the involvement of technology development and transfer as well as capacity-building for enhanced GHG emissions reduction. For the power generation sector energy audit and efficiency improvements of the supply side was ranked number one. The highest ranked technology for the transport sector was carbon capture for which research is ongoing. For industry the reduction of emissions using information communication technology is based on the substitution of natural gas by biofuels. It is estimated that 10% of natural gas consumption can be replaced by alternative fuels by 2050. Further to these plans and priorities, the Ministry of Digital Transformation has embarked on a project called the “The Trinidad and Tobago Digital Transformation Project” which is described as a “Whole-of-society Digital Transformation” that is expected to enable social inclusion and the achievement of the Sustainable Development Goals; and enhance the country’s endogenous capacities and technologies.
- Information on Capacity-Building Supported Needed and Received: The country takes a holistic approach to capacity-building support in terms of both mitigation and adaptation, especially in adaptation. The need to develop capacity in the country led to the introduction of a project called the “Capacity Development for Improved Management of Multilateral Environmental Agreements (MEAs) for Global Benefits” in 2021. This project was funded by the GEF and implemented by the MPD, with the UNDP as its partner. Its aim is to take a multi-faceted approach to capacity-building to create and maintain cooperation and synergies across sectors and organizations to create and enhance integrated approaches to environmental management through the enabling frameworks of policy, legislation and institutions.
- Information on support needed and received by developing country Parties for the implementation of Article 13 of the Paris Agreement and transparency related activities, including for transparency-related capacity-building: For the implementation of Article 13 of the Paris Agreement and preparation of reports such as the Biennial Transparency Report, for transparency purposes, the country received a USD 1,050,400 grant from the Global Environment Facility. It was received specifically by the EMA (the reporting and executing agency), and used to facilitate expertise personnel, necessary consultancy, software (including platforms and other technology), MRV and overall, strengthen Trinidad and Tobago’s capacity in transparency for climate change mitigation and adaptation.

7 Finance, Technology and Capacity Building Needs and Support Received

Flexibility provisions for developing country Parties that need it in the light of their capacities were applied in the preparation of this BTR, and includes MPGs 34 and 35 (QA/QC - Encouragement to develop a QA/QC plan and provide information on general QC procedures implemented), 48 (Gases - option to report fewer GHGs), 57 (Time series - option to report a shorter time series), 85 (Estimates of expected and achieved GHG emission reductions - option to report this information) and 92 (Projections of greenhouse gas emissions and removals - option to report this information), of decision 18/CMA.1.

8 Improvement Plans

- For the GHG inventory the following improvements were rated as a high priority: improvement to the energy balance for the country, collection of country specific activity data for the energy sector, the development of facility specific emission factors for ammonia production, nitric acid production and methanol, the collection of country specific activity data and the development of country specific emission factors for solid waste, improve the collection of activity data for industrial wastewater, improve the accuracy of the uncertainty analysis and elaborate a QA/QC plan.
- Tracking progress of implementation and achievement of nationally determined contribution the following improvements are planned: Improve data collection on the indicators developed to track progress made in implementing and achieving T&T's nationally determined contribution under Article 4 of the Paris Agreement, capacity building to estimate projections of GHG emissions and removals.
- The templates required to track information on financial, technology development and transfer and capacity-building support provided and mobilized under Articles 9–11 of the Paris Agreement were developed under the CBIT project. Although stakeholders were written too, limited responses were provided. As such, this is an area for improvement. The capacity to report on this information was built in 2024. Hence it is envisioned that more data will be available for the next reporting cycle.

1 National Circumstances

1.1 Geographical Profile

Trinidad and Tobago (T&T) is a twin-island developing state located on the southernmost end of the Caribbean archipelago, nearest to the northeastern margin of South America. The islands are believed to have previously been a part of the South American mainland due to its proximity and shape. This is supported by the geological continuation of the Orinoco Geosyncline (across the northerly mountains of Venezuela) and its characteristic rock units across Trinidad's Northern Range and Tobago's Main Ridge; and similarly, the rock units of the southerly provinces in Venezuela, across the Central Range and Southern Range in Trinidad.

The islands are positioned between 10° and 11.5° North of the Equator and between 60° to 62° West of the Prime Meridian with a total area of 5.128 km² (Trinidad - 4.828 km², Tobago – 300km²) (GoRTT, 2021). They are bounded by the Caribbean Sea to the North, Atlantic Ocean to the East, Gulf of Paria to the West and the Columbus Channel in the South (Figure 1-1). It shares maritime boundaries with Venezuela, Grenada and Barbados in the west, north and east respectively.



Figure 1-1: Map of T&T (Mungfali.com, 2017)

1.2 Topography

As depicted in Figure 1-2 Trinidad has mountainous, rocky terrain in the island's northern portion but flat, undulating plains in the central part of the island. Southward, beyond the Northern Range (highest topographical feature of the island ~940m), is a series of rolling hills in the south. The Northern Range continues (geologically) across Tobago and is called the Main Ridge (approximately 550m), which extends 29 km from the southwestern to northeastern end of the island ((Mungfali.com, 2017). In Tobago, the land slopes down from the Main Ridge and into white sandy beaches.

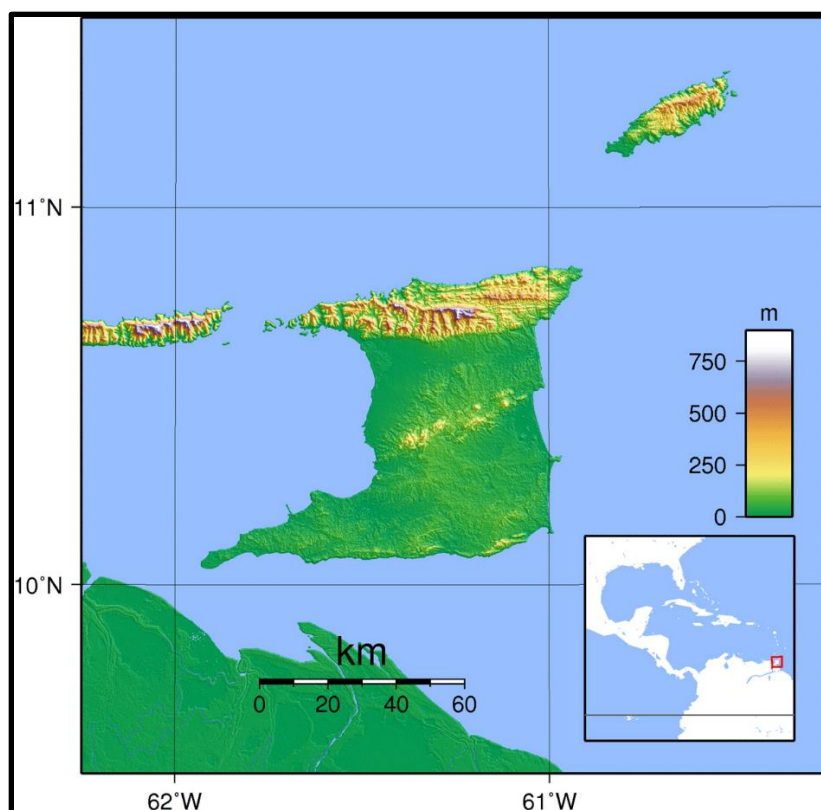


Figure 1-2: Topographical Map of T&T (GoRTT, 2021)

1.3 Climate Profile

T&T's climate fluctuates between a Tropical Marine Climate (January-May) and a Moist Equatorial Climate (June-December). This results in there being two seasons, the dry season and the wet season. Due to its position relative to the equator, the wet season coincides with the hurricane season, and the land is often threatened by tropical cyclones and high rainfall events triggered by the Intertropical Convergence Zone (ITCZ) particularly during the May-November period. Local variations across the islands are due to the differences in their size and individual orography.

1.3.1 Temperature Distribution

Across both islands, temperatures are relatively constant with minor seasonal variations ranging between 22°C to 32°C. T&T experiences an average daily temperature of about 26.5°C with a maximum average temperature of 31.3°C and a minimum average temperature of 22.7°C (Vidiani, 2011).

The First Biennial Update Report (BUR) of the Government of the Republic of T&T (GoRTT) 2021 identified an upward trend in the average annual temperatures across T&T (TTMS, 2024). This upward trend has continued throughout 2018-2022 and is reflected in the steady increase in the mean maximum temperatures by decade shown in Figure 1-3, and the increase in the decadal number of hot days shown in Figure 1-4. Figure 1-3 illustrates that the mean maximum temperatures per decade have gradually and consistently increased between 1950-2020, from a mean maximum temperature of 31.1°C for the decade between 1950-1960, to 32.2°C between 2011-2020. Similarly, the number of hot days per decade also increased from 9 hot days between 1961-1970, to 415 hot days between 2011-2020.

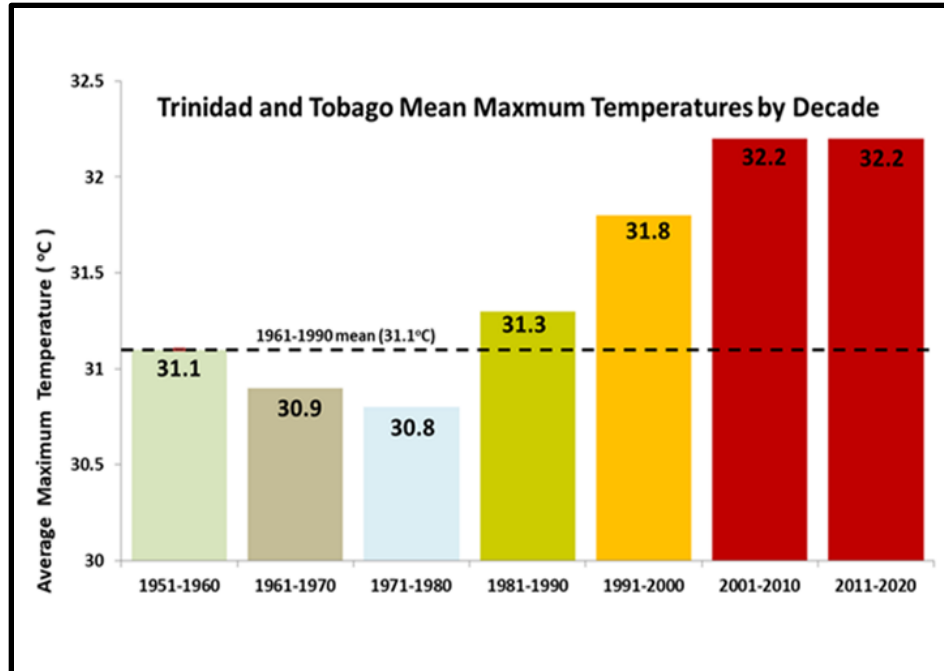


Figure 1-3: Mean Maximum Temperature by Decade (TTMS, 2024)

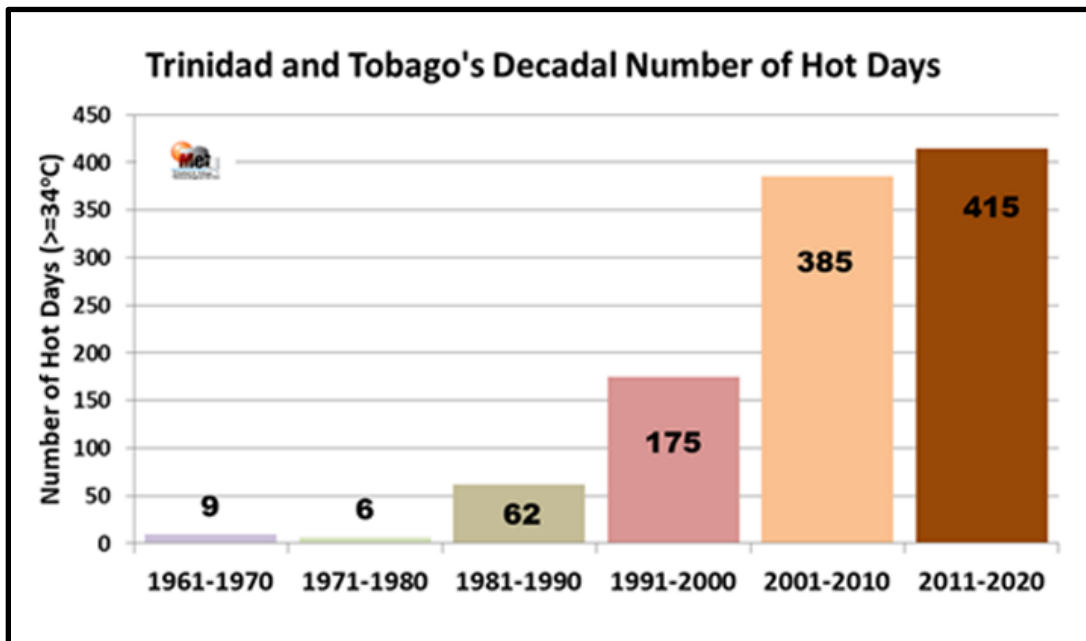


Figure 1-4: Decadal Number of Hot Days (TTMS, 2024)

This increased warming has led to an increase of the previous cooling requirements, which has directly impacted energy consumption in the country. For example, more air conditioning and refrigeration are required for businesses and residences, the environmental cost of which is increased greenhouse gas emissions in the atmosphere and a positive feedback system (TTMS, 2024). The increase in cooling demands is therefore an area where technology improvements are required, in relation to climate action.

With respect to the environment, there is evidence of increased oceanic temperatures occurring as a result of the rate of sea level rise, which has increased significantly in the last 20 years, partly due to thermal expansion of the oceans. Marine biologists noted that in 2001, the sea-level rise at four different locations around T&T was 1.6 mm per year, but by 2021 was 3.0 mm per year. This comes on the heels of exacerbated coastal flooding, the damages of which, being a small island developing state, will cost the country millions of dollars to mitigate if such high-rate increases proceed (Communications Earth and Environment, 2023).

Increased oceanic temperature has also resulted in significant bleaching and destruction of the bounding coral reefs (specifically in Tobago). These reefs are a main tourist attraction and so their destruction has been consequential on the tourism sector.

Furthermore, the droughts brought on by the El Nino phenomenon have been exacerbated by global warming, resulting in decreased agricultural productivity and destruction of natural forests over recent years, effects that can possibly be mitigated under climate action plans. T&T's climate exhibits high variability from year to year, season to season and during seasons. Both seasons are variable and prone to intense rainfall, flooding, hot spells, dry spells, and bush fires but all of these are experienced more intensely.

1.3.2 Precipitation Distribution

With respect to rainfall, no significant fluctuation in the decadal average rainfall has been observed from 1961 to 2020 as illustrated in Figure 1-5.

However, in recent years, the frequency of intense rainfall events has increased significantly and, while these extreme events are highly spatially variable, there is a consistent increasing trend particularly from 1990-2018 and especially in reference to annual 3-day maximum rainfall totals. As rainfall increases, localized flooding results in damage to property, destruction of agricultural crops, accidents, comprised integrity of infrastructure and water quality degradation, which all pose a threat to the health and safety of the citizens, and requires substantial funds to mitigate.

Figure 1-6 shows the percentage of average rainfall for June to August 2021. It can be seen that most of the country experienced rainfall of 76-90% average, with some parts of East Trinidad experiencing 96-100% rainfall on average.

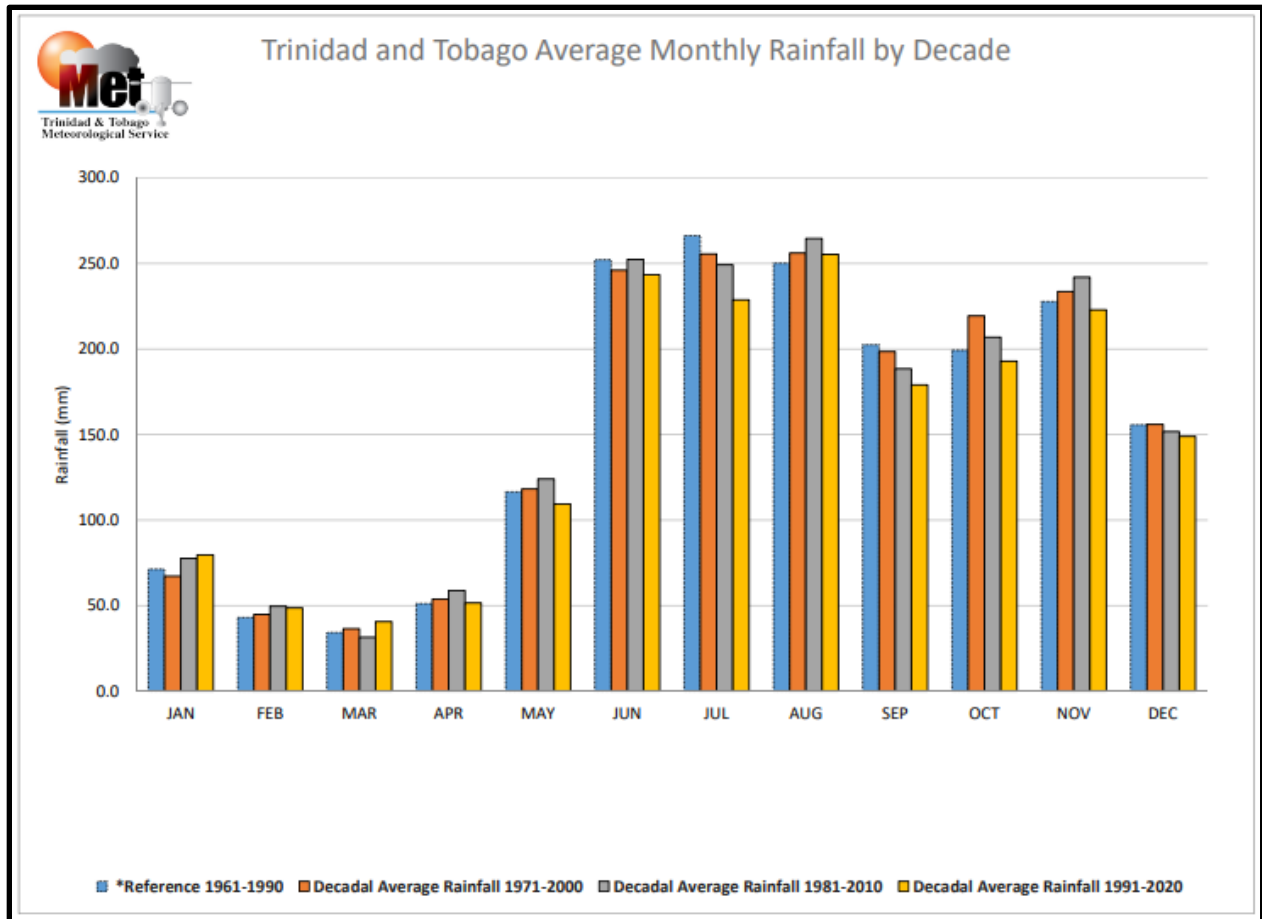


Figure 1-5: Average Monthly Rainfall by Decade (T&T Newsday, 2021)

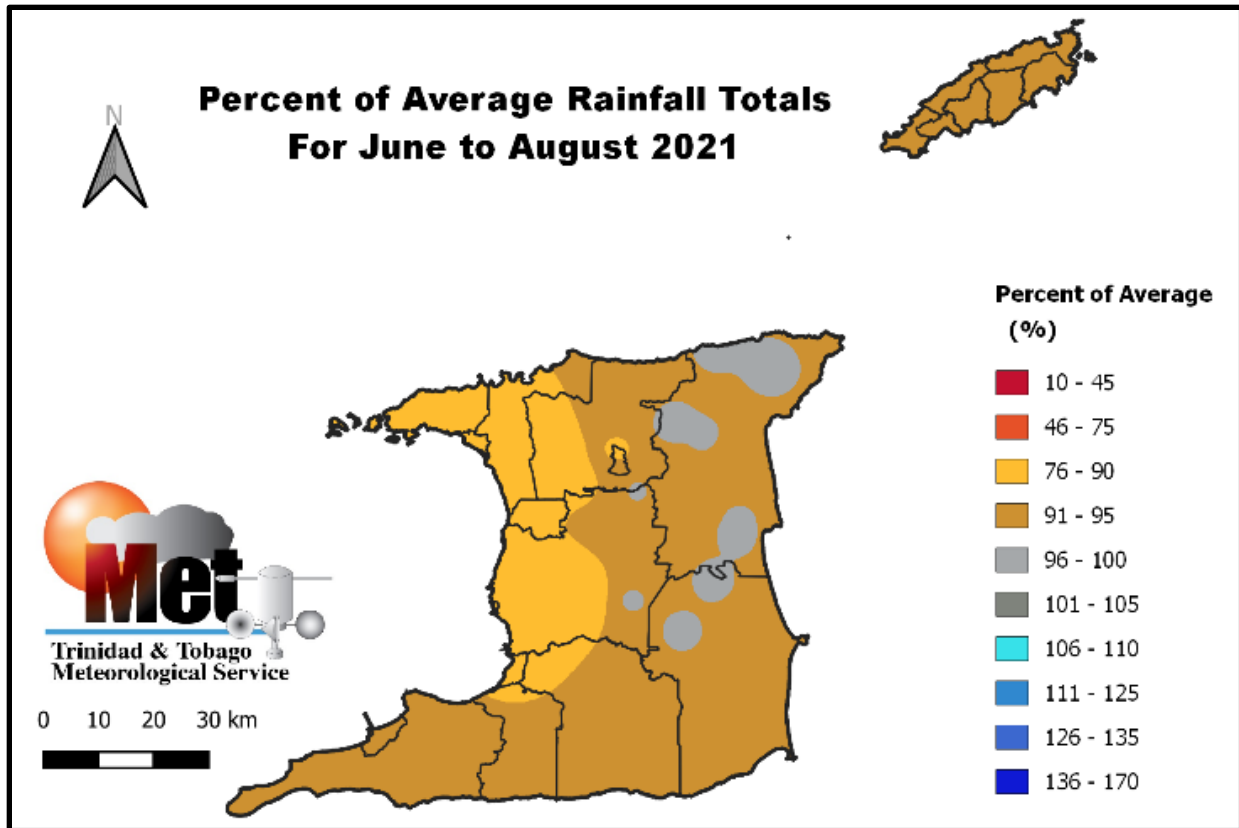


Figure 1-6: Percentage of Average Rainfall Totals for June to August 2021 (TTMS, 2024)

1.4 Biodiversity

T&T share a tropical rainforest ecosystem and biodiversity (both flora and fauna) like that of Venezuela and Guyana of the South American mainland. There are many natural swamps, aquifers, rivers, mangrove coastlines, coral reefs, and forests, each with their own unique collection of species. Several of these areas are protected areas because of the rare and endemic plant and bird species they provide a habitat for. For example, the Asa Wright Nature Centre, Main Ridge Forest Reserve, Buccoo Reef, Caroni and Nariva Swamps. The Main Ridge has been a legally established forest reserve since 1776, making it one of the oldest protected areas in the world with many endemic bird species.

In recent years, due to Tobago's susceptibility to the effects of anthropogenically increased global warming and climate change, the biodiversity of the Buccoo Reef has been drastically affected. With changes in weather patterns and the increase in hurricanes in the region, several coral bleaching events have led to severe coral diseases and a severe reduction in coral recruitment. These effects are exacerbated by illegal fishing in the areas, anchoring at the reef, sewage discharge, sediment runoff from tourism and residential development. Many policies have been proposed and implemented to try to mitigate and hopefully reverse these effects. They include no-fishing regulations, improved watershed management, plans for the construction of a wastewater treatment plant. However, financing is limited to entrance fees for the park which is insufficient to support these projects. Therefore, increased financing is necessary to combat these climate change effects and revive the reef (TTMS, 2024).

1.5 Climate Change Impacts and Adaptation

The twin island Republic of T&T is made up of the two main Small Island Developing States (SIDS). Like other SIDS, T&T is vulnerable to the impacts of Climate Change and is tasked with the dual challenge of mitigating the impacts of the ever-changing climate and adapting to the new normal that it brings. According to studies, climate models have predicted that T&T in the face of climate change would experience increased occurrences of tropical storms, coastal flooding, sea level rise and to the opposite extreme, increased risks of drought periods (World Resources Institute, 2024). This has a devastating effect on the economy, as not only infrastructure and land would be lost but the contribution of the tourism industry would crumble leading to increased undesirable circumstances.

One of the foremost concerns for the country is the presence of extreme weather events, especially hurricanes and storms which leave a trail of destruction in their wake. As island nation's, T&T's low-lying coastal areas are at most risk due to the event of rising sea levels resulting in increased flooding and coastal erosion, not to mention the loss of infrastructure and most importantly, lives. This is attributed to the fact that approximately 70% of the country's population, with almost 80% of its socioeconomic activities, are situated near coastal regions (Rivers, 2018). Conversely, as islands situated in the tropics, climate change presents a multifaceted challenge. Increased temperatures and longer, more intense drought periods, not only give rise to heat stressors but affect human, animal and crop health while exacerbating the scarcity of freshwater resources (IMA, 2016). More so, with the varying weather conditions, biodiversity especially in vulnerable ecosystems would be negatively impacted, affecting essential ecosystem services that would aid in naturally occurring mitigation efforts.

In addressing climate change, the prime contributors of greenhouse gasses (GHGs), that is, energy industries, electricity generation and transportation, require strategic rethinking, as well as implementing clean renewable energy technology, while maximizing the power of policy change and implementation. Likewise, adaptation efforts can be achieved through revised policies and legislations, focusing on resilient infrastructure, and forming local and international partnerships for accessing resources, funding, and effective climate change adaptation techniques. Trinidad and Tobago integrates climate change resiliency into national development through a pathways approach addressing climate risks.

Consequently, it is crucial that actions and policies regarding adaptation are immediately and effectively established to build a resilient economy in addressing climate change.

1.6 Government Structure

T&T has a unitary parliamentary Republic style of government with a non-executive President, and a Prime Minister. The President is non-executive, elected by an electoral college and serves as the Head of State, while the Prime Minister is democratically elected and leads the Cabinet. He or she is usually the leader of a political party with the most elected members in the House of Representatives (41 total members) and their cabinet is responsible for the parliament and the executive branch of government (United Nations in the Caribbean (2022); Commonwealth Governance of T&T, (2024)).

Following the Westminster style of democracy, the government functions through 3 branches of government: the Executive, Judicial and Legislative branches as depicted in Figure 1-7.

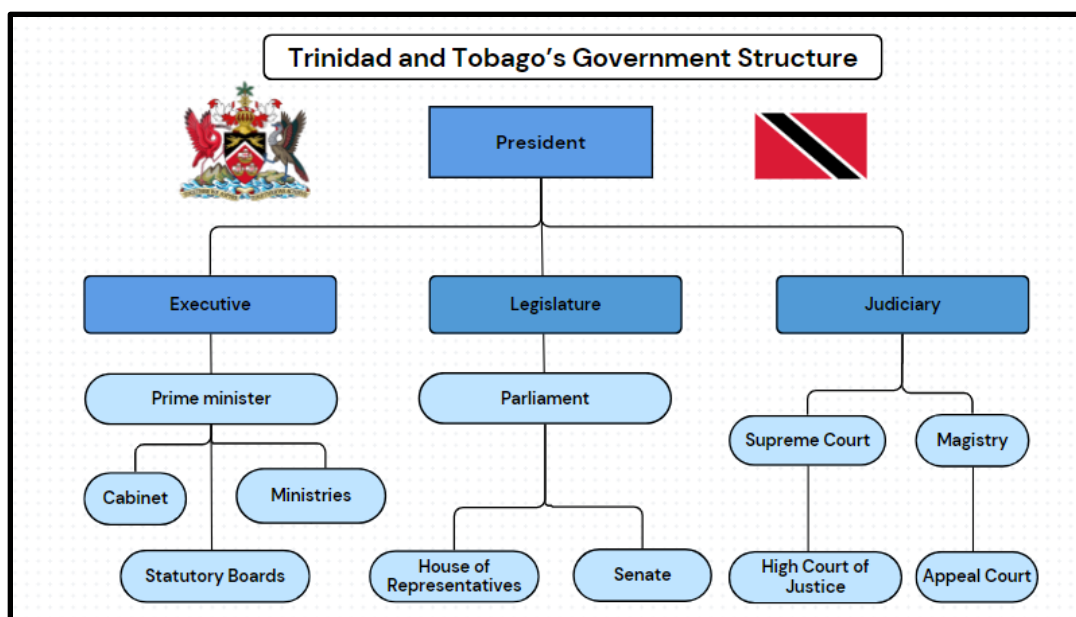


Figure 1-7: T&T's Government Structure

- The Executive Branch:

This comprises the President (Chief of State), Prime Minister (Head of Government) and the Cabinet of Ministries (including the heads of 24 ministries and the Office of the Attorney General) and Statutory Boards.

- The Legislative Branch:

This comprises a bicameral Parliament consisting of a lower house and upper house.

- Lower House: The Senate which comprises 31-members who are appointed by the President under the advisement of the Prime Minister and Leader of the Opposition.
- Upper House: The House of Representatives which comprises 41 democratically elected members.

- The Judicial Branch

This is based upon English common law. Its Supreme Court of Judicature comprises the High Court of Justice (for major offences) and the Court of Appeal (which is presided over by the chief of justice).

- The Court of Appeal hears appeals from both the High Court and Magistrate's Court (which deals with minor offences).
- In some circumstances, appeals can be made to the Privy Council in the UK, which serves as the final court of appeal for a final ruling.

1.7 Population Profile

In 2022, T&T's total year-end population was estimated at 1,365,805 persons. with Trinidad accounting for approximately 96% and Tobago approximately 4%. The population density was estimated at 298.45 persons per square kilometre (Commonwealth Parliamentary Association, 2021). Illustrated by Figure 1-8, the 2022 Population Pyramid constructed for T&T illustrates the population distribution between age and sex with females accounting for 50.2% (680,542) and males 49.1% (685,263). The largest age grouping between 25 to 59 years accounted for 50% (683,215) of the population with the second largest age grouping aged 24 and under, representing

36.6% (499,863). The smallest age grouping comprised of retired persons aged 60 and over accounting for 13.4% (182,727) of the entire population, according to the latest information from the Central Statistical Office (CSO).

Population pyramids and demographics were last conducted by the CSO of T&T in 2021 and are displayed as Mid-Year Population Estimates in Figures 1-9 and 1-10. Figure 1-10 shows the Sex Ratio, Ageing Index, Total (age) Dependency ratio and the Youth Dependency Ratio. In 2021 Mid-Year population estimates, the Sex Ratio indicates there are 49.8% female's vs 50.2% males, and the Ageing Index indicates a ratio of 43.5 of number of elders per 100 persons younger than 15 years old in the population. The Total (age) Dependency Ratio indicates a ratio of 41.9 of the number of dependents aged 0 to 14 and over the age of 65, compared with the total population age 15 to 64 and the Youth Dependency Ratio indicates a ratio of 29.2 of people younger than 15 compared to the working age population 15 to 64 (GoRTT Review of the Economy, 2022).

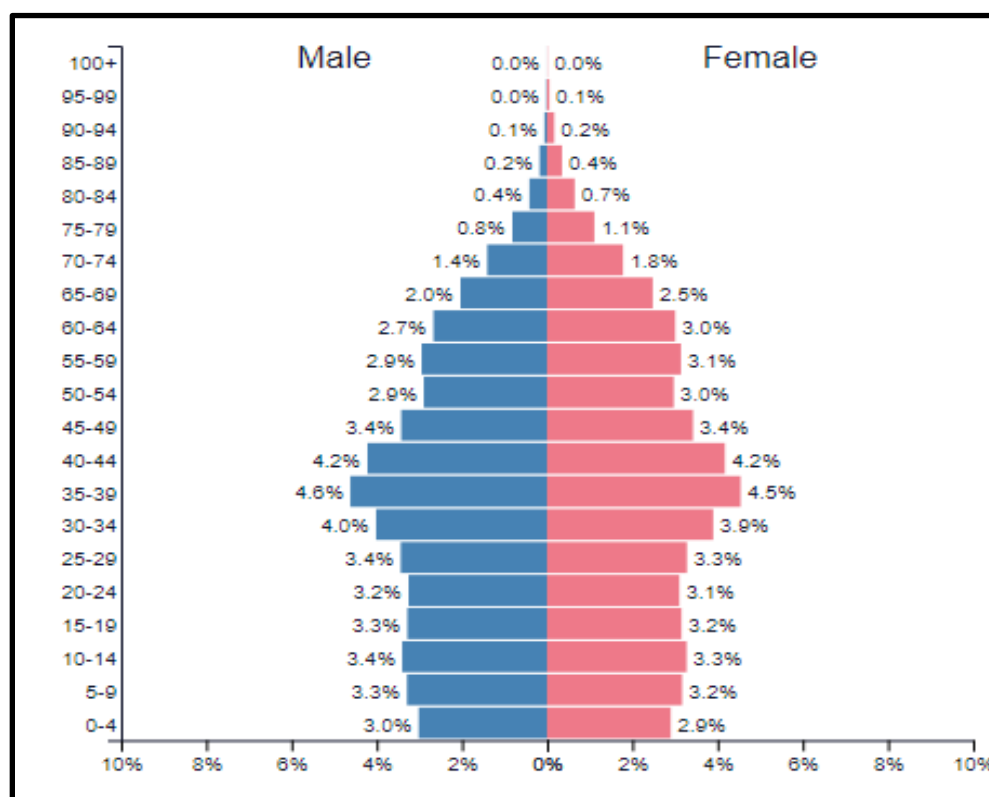


Figure 1-8: Showing the Population Pyramid constructed for T&T's 2022 (Population Pyramid.net, 2024)

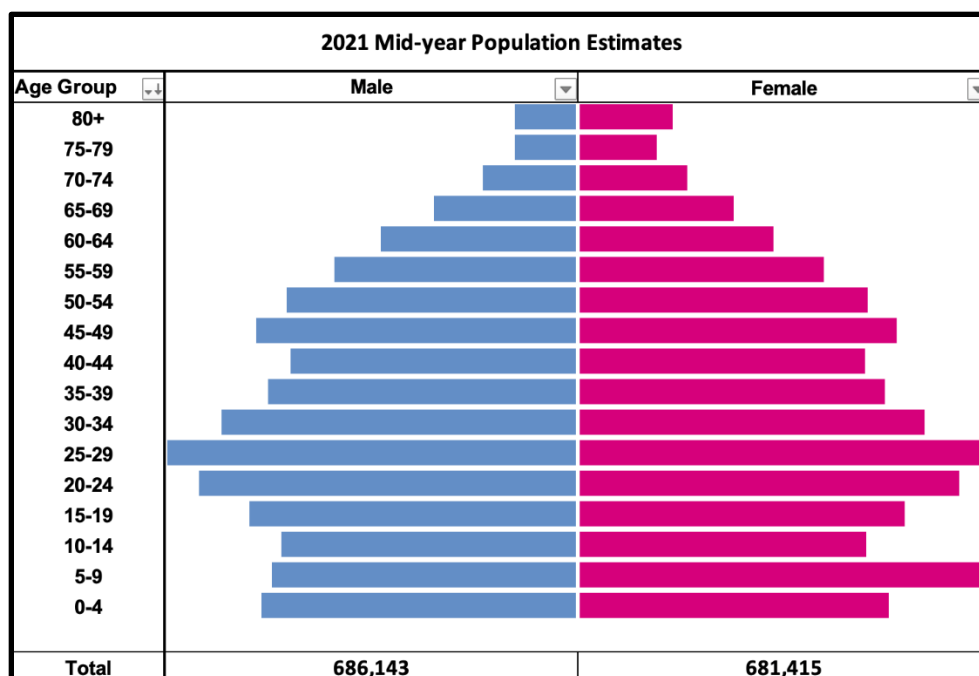


Figure 1-9: Showing the Population Pyramid constructed for T&T's 2021 Population (Population Pyramid.net, 2024)

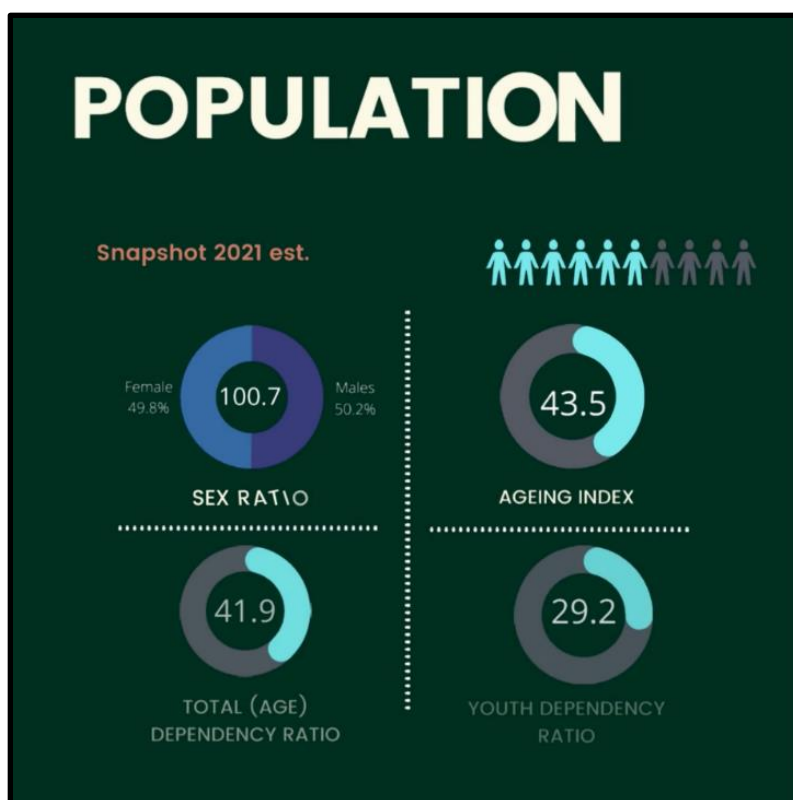


Figure 1-10: Showing the Population Demographics for T&T in 2021 (CSO, 2021)

At the time of the first BUR (GoRTT, 2021), T&T's population estimate was 1,359,193 persons in 2018 (CSO, Not Dated). Since then, T&T's annual provisional death rate has trended upwards since the onset of Covid-19 pandemic in 2020. The provisional death rate which measures the number of deaths per one thousand persons, is estimated to have increased from 9.8 in 2021 to 13.4 in 2022. The number of Covid-19 deaths amassed to 4,390 with a peak at 2,717 persons in December 2021 after declining to 1,103 deaths in June 2022 primarily due to the Delta variant supplanted by milder more transmissible Omicron variants. Due to this the provisional birth rate was estimated to decrease marginally from 10.4 to 10.3 during the period (GoRTT, 2018). Table 1-1 reports the population statistics, birth rate, death rate, infant mortality rate and average life expectancy for the 2018-2022 period and the pre-industrial marker year 1990.

Table 1-1: Comparing Population Statistics for T&T for 2018-2022, 2006 baseline year and 1990 (GoRTT, 2022; CSO, 2021)

Year	Total Population	Birth Rate	Death Rate	Infant Mortality Rate	Average Life Expectancy
2022	1,365,805	11.802	8.886	20.276	73.79
2021	1,367,558	12.127	8.744	20.702	73.67
2020	1,366,725	12.453	8.601	21.129	73.55
2019	1,363,985	12.778	8.459	21.555	72.43
2018	1,359,193	13.104	8.316	21.981	73.31
2006	1,297,944	13.70	7.69	28.605	68.78
1990	1,267,000	21.435	7.520	29.111	68.00

Statistics indicate that between 2018-2022, birth rates have decreased, and death rates have fluctuated slightly but are mostly stable while the Human Development Index (HDI) indicators of infant mortality steadily decreased and average life expectancy steadily, slightly increased. Therefore, the country's population has maintained a transitional state since the first BUR of the GoRTT 2021. This coincides with the higher-than-average overall HDI indicator for the country which was 0.81 in 2021 (latest evaluation), compared to the world average of 0.745 for 2021 (Macro Trends, 2024).

1.7.1 Population Density

Trinidad's northern and western areas are more densely populated than the south and eastern areas. Approximately 52.4% of the population is concentrated in urban areas and approximately 545,000 persons reside in the capital city of Port of Spain and environs. The population density was approximately 298.45 people per km² (The Global Economy, 2024). In Tobago, the southern area is more densely populated than the rest of the island (Figure 1-11).



Figure 1-11: Showing a Density Map of T&T by 2021 Year-End (CSO, Not Dated)

1.7.2 Immigration

Prior to 2016, T&T experienced net emigration, primarily to the United States of America. In recent years however, due to the worsened economic and political instability in the Bolivarian Republic of Venezuela around 2017, emigration/ immigration trends have reversed. Since then, there is an anomalously high net immigration of Venezuelan nationals, as refugees and asylum seekers, continue to influx T&T to date. As such, the immigration policy since 2016 has focused on addressing the humanitarian needs of these refugees, but it is not without its challenges. The challenges have been made especially difficult in this case because of the irregular and undocumented status of most of the immigrants (GeoRef.net, Not Dated). Therefore, while concerted efforts are being made by the GoRTT to optimize support and the benefits of the situation over the negative effects, migration is an aspect of the current population profile that has become an increasingly significant challenge to achieving the envisioned 2030 Nationally Determined Contributions (NDCs). Compared to 2015, 2016 saw a 62% increase in the number of asylum seekers and by 2021, Venezuelan nationals accounted for 86% of the United Nations High Commissioner for Refugees (UNHCR) registered population of refugees (UNDP Latin America and the Caribbean, 2022). By 2021, only 17,106 Venezuelans were registered with the UNHCR (UNHCR The UN Refugee Agency, 2017). Figure 1-12 shows the stark increase in refugees to T&T from 2016 to date.

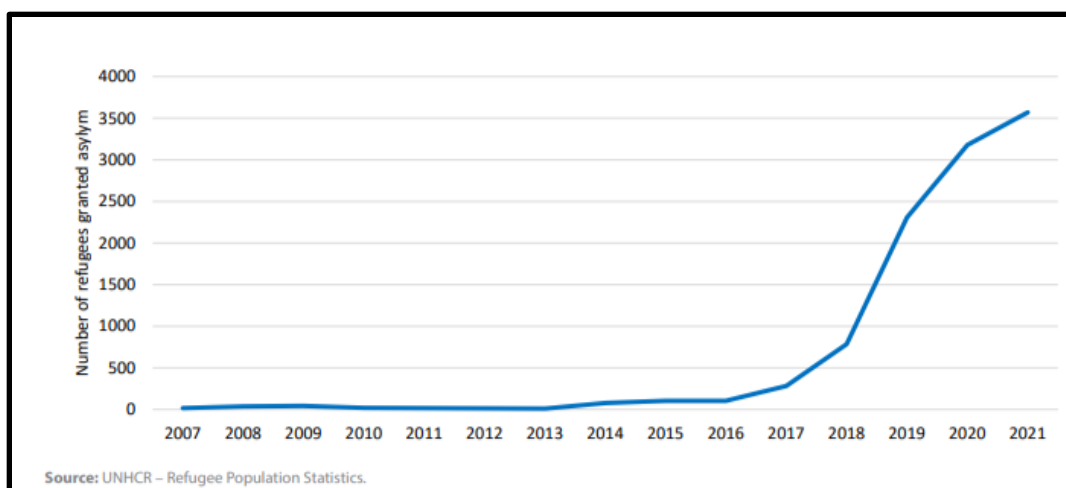


Figure 1-12: Showing UNHCR-mandated Refugees in T&T 2007-2021 (Inter-Agency Coordination Platform for Refugees and Migrants from Venezuela, 2021)

Historically, data shows that migrant populations often significantly elevate emissions beyond business-as-usual (BaU) levels and negatively impact Air Quality Index (AQI) values, specifically Particulate Matter of diameter ≤ 2.5 mm ($PM_{2.5}$) levels, in developing countries. Additionally, countries with net immigration tend to have mean average Carbon Dioxide (CO_2) emissions per capita that are generally three times higher than those in countries with net emigration (UNHRC The UN Refugee Agency, 2024; Migration Watch UK, 2010); Morris, D.W. 2021).

1.8 Economic Profile

1.8.1 Gross Domestic Product

According to the CSO, in 2022, the gross domestic product (GDP) at constant 2012 prices for the country was 150,356.6 million T&T Dollars (TTD), compared to 164,068.7 million TTD in 2018. The country has a relatively high GDP per capita compared to the average for the region, approximately 148,714.5 million TTD in 2022 (Table 1-2).

In contrast to most other Caribbean countries, a large portion of T&T's GDP comes from its energy sector since the country is a net energy exporter. The energy sector accounts for approximately 80% of all merchandise exports and 26% of all government revenues during the fiscal year 2021 to 2022 time-period (Central Bank of T&T, 2022). Table 1-3 was adapted from the 2022 T&T Review of the Economy, and reports the GDP, Real GDP Percentage change (%), Percentage change and Percentage contribution to GDP.

Table 1-2: Showing Annual GDP Indicators for T&T for 2012 to 2022 (CSO, Not Dated)

Year	GDP at current prices (TT\$ Millions)	GDP at constant 2012 prices (TT\$ Millions)	Constant price growth rate (%)	Implied deflators (2012=100)	GDP per capita
2022	202,984.9	150,356.6	1.5%	135	148,714.5
2021	165,559.6	148,160.5	-1.0%	111.7	121,139.9
2020	140,474.0	149,713.7	-9.1%	93.8	102,750.2
2019	160,588.6	164,661.5	0.4%	97.5	117,616.8
2018	166,352.3	164,068.7	-0.6%	101.4	122,175.3
2017	162,981.2	165,063.2	-4.8%	98.7	120,023.4
2016	158,205.8	173,387.2	-7.5%	91.2	116,734.3
2015	172,361.5	187,500.6	-0.8%	91.9	127,507.2
2014	190,335.2	188,969.8	3.9%	100.7	141,250.3
2013	184,967.0	181,957.8	3.5%	101.7	137,732.1
2012	175,750.4	175,750.7		100.0	131,365.6

Table 1-3: Economic Performance of T&T's Energy and Non-Energy Sectors (GoRTT, 2022)

	2018 ^r	2019 ^r	2020 ^r	2021 ^p	Q4 2021 ^p	Q1 2022 ^p	2022 ^f
GDP (Constant 2012 prices)							
Real GDP (% change)	-0.9	0.1	-7.7	-1.0	-0.9*	-0.1*	2.0
<i>of which:</i>							
Energy Sector							
% change	-3.2	-4.3	-12.2	-2.7	3.4*	-5.1*	2.3
% contribution to GDP	33.3	31.9	30.3	29.8	30.0**	30.9**	29.9
Non-Energy Sector							
% change	-0.2	3.0	-6.2	-1.2	-2.5*	2.2*	3.6
% contribution to GDP	65.4	67.4	68.5	68.3	72.7**	72.0**	69.3

Calculated by the Ministry of Finance (MoF) based on the CSO's GDP estimates (excluding the 2022 forecast) under T&T System of National Accounts industrial.

1.8.2 Impact of Covid-19 Pandemic on T&T's Economic Profile

Due to its reliance on hydrocarbon-energy for use and revenue, the country's economy is subject to global fluctuations in commodity prices and global economic headwinds. This was evident during 2018-2022, the height of the Covid-19 pandemic.

- Natural gas production has maintained a production of over 4.0 billion cubic feet per day for most of the 2000s but reverted to pre 2000s levels (pre-boom) in 2020 with a 2.7 billion

cubic feet average for the first 3 quarters of 2020 and was 5% less than that for the same period in 2019. Similarly, the onset of the pandemic in 2019 saw a downward trajectory for Liquid Natural Gas (LNG) which recovered in 2022 as the pandemic waned globally as its production increased by 22% for the first 3 quarters. As a result, the energy sector portion of the GDP increased by a record 6.9% in the third quarter of 2022. These trends are reflected in Figures 1-13 and 1-14.

- Other industries also saw immense price increases in 2022 as several exported petrochemical products, namely urea, methanol and ammonia experienced a 74%, 18% and 147% price increase over the 3 quarters respectively, although their production was significantly lower compared to previous years.

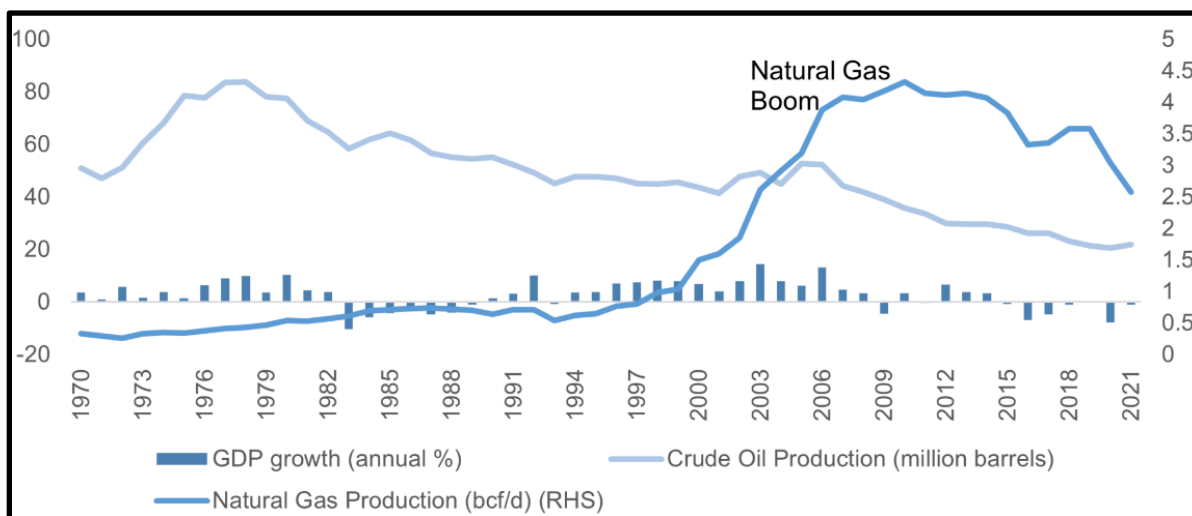


Figure 1-13: Oil Production, Natural Gas Production and GDP Growth (Central Bank of T&T, 2023)

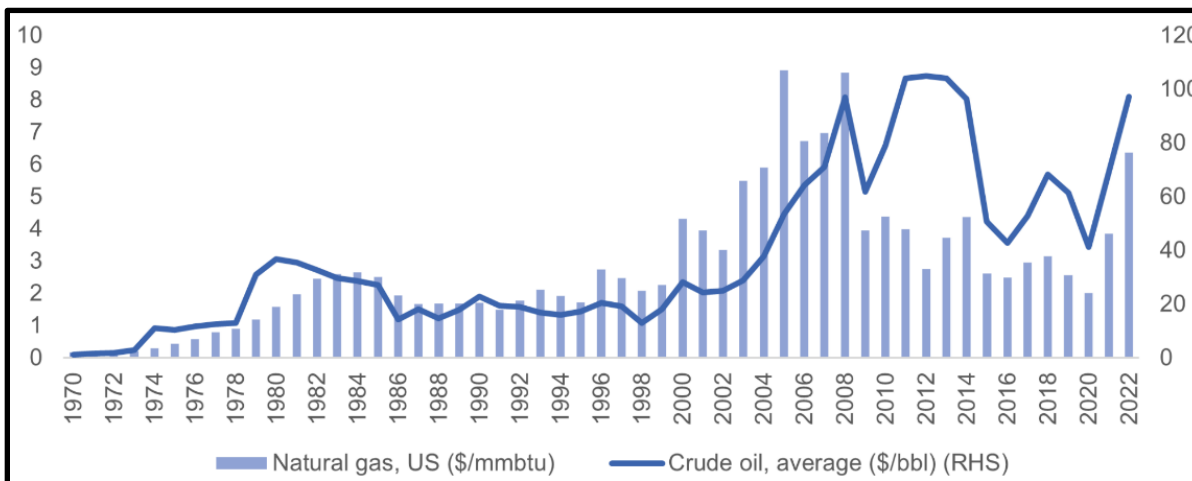


Figure 1-14: Showing the Natural Gas and Crude Oil Prices (World Bank Commodity Price "Pink Sheet", 2023)

- Overall, T&T's revenues for 2022 increased by 45% over fiscal year 2021 (FY2021) and an overall 0.6% GDP fiscal surface; but growth has slowed. This may be accounted for by the rise in the service sector and industry sector in the last 10 years.

- However, inflation pressures caused by increasing commodity prices continue to significantly influence domestic price levels. The inflation rate reached 13.8% at the end of 2022 although 5.5% had been previously sustained up until then. This caused food prices to reach the highest year-over-year increase. Therefore, although sometimes they can also prove to be strengths, these fluctuations and susceptibility to global economic events and headwinds pose significant challenges and problems for T&T's economic profile.
- Another major issue is that while there is diversification in the energy sector (in products and export markets), economic diversification is lacking and has largely failed by previous efforts. The diversification comes in the form of developing renewable technology to reduce GHG emissions, but it makes the reduction difficult and is made even more difficult to implement related legislation. Major efforts are being made for cooperation between the stakeholders in the energy, industrial and the environmental sectors to ensure that GHG levels are mitigated to acceptable levels.

1.9 Sector Profile

1.9.1 Energy

T&T rely extensively on fossil fuels, particularly natural gas, for its electricity generation. The country's natural gas reserves are substantial, estimated at 664 billion cubic meters, and account for 99% of its electricity production (GoRTT, 2021). Natural gas is also heavily utilized in the industrial sector as a feedstock and for heating purposes, while in transportation, it serves as Compressed Natural Gas (CNG) and LNG fuels. However, despite this abundance of natural gas, renewable energy sources are being established throughout the nation to meet sustainability goals.

Currently, electricity production in T&T is managed by the T&T Electricity Commission (T&TEC) and three Independent Power Producers (IPPs), each with distinct contractual obligations and capacities allocated to T&TEC as shown in Table 1-4. In addition to the Cove Power Station (CPS) and Scarborough Power Station, T&TEC assumes exclusive responsibility for transmitting, distributing, and retailing electricity to industrial, commercial, and residential consumers throughout T&T. The technology employed for electricity generation includes both simple cycle gas turbines and combined cycle gas turbines equipped with heat recovery steam generators.

T&TEC customer base expanded by 1.5% in 2020 to 2021 from 501,309 to 508,892 respectively with the residential class accounting for 88.3%, commercial class (10.8%) and industrial and street lighting classes (<1%) as expanded in Table 1-5.

T&TEC managed to maintain an electricity service coverage of 99.3% in 2021 with a small percentage of the population not connected to the national electricity grid due to inaccessibility to overhead power lines or installation of the lines being economically infeasible. To rectify this problem, the rural electrification programme was established and has since installed ten (10) systems for households located far from the national grid, with a combined income below a defined ceiling.

Table 1-4: Overview of Power Producers| Based on Information from T&TEC and validation from Ministry of Public Utilities (MPU) (GoRTT, 2021).

Owner	Location	Installed Capacity (Megawatt) (MW)
T&TEC	Cove Eco-Industrial and Business Park, Lowlands, Tobago	84
Powergen	Pt. Lisas	824 (862)
	Penal	210 (236)
Trinity Power Ltd.	Pt. Lisas	225
Trinidad Generation Unlimited	La Brea	720
Total		2101 (2137)

Table 1-5: Number of Active Accounts by Class (2020-2021) (Regulated Industries Commission (RIC), 2023).

Year	Customer Class				Total
	Residential	Commercial	Industrial	Street Lighting	
2021	449,680	55,062	4,102	48	508,892
2020	442,415	54,740	4,107	47	501,309
Percentage Change (%)	1.6	0.6	-0.12	2.1	1.5

Despite the increase customer base, energy purchases from the power generators declined by 1.24% from 2020 to 2021 with total electricity sales decreasing by 1.8% over the same period (Figure 1-15) (RIC, 2023). More so, as reported by T&TEC, the country's electricity consumption per capita declined by 1.8% in 2021 when compared to 2020 shown in Table 1-6. T&T's electricity consumption per capita was higher than several countries within the Latin American and Caribbean region due to its high level of electricity consumption for industrial purposes.

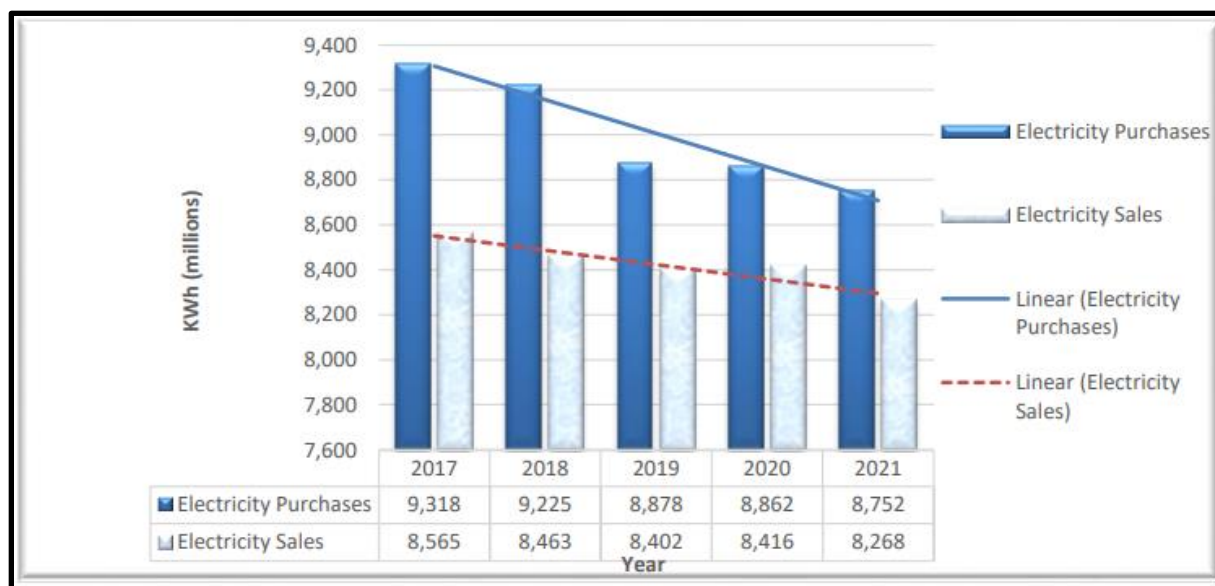


Figure 1-15: Electricity Purchases vs. Sales: Five-Year Trend (2017-2021) (RIC, 2023)

Table 1-6: Electricity Consumption Per Capita for T&T (2019-2021)

Year	Electricity Consumption Per Capita (kWh/capita)	Change from Previous Year (%)
2021	6,046	1.8
2020	6,158	0.03
2019	6,160	1.1

1.9.2 Renewable Energy

In the National Development Strategy (2016) the GoRTT committed to the addition of 10% of renewable energy to the national power supply by 2021 and 30% by 2030. In achieving this commitment several projects have been developed and are underway to facilitate the inclusion of renewable energy. These projects are listed in Table 1-7.

Table 1-7: Renewable Energy Past and Ongoing Initiatives in T&T

Year	Project	Location	Agency	Comments
2021(GoRTT, 2023)	Installation of Electric Vehicle (EV) Chargers and purchase of EV.	Port-of-Spain	Ministry of Energy and Energy Industries (MEEI)	Two (2) EV chargers were installed at the Waterfront Centre and one (1) EV vehicle was purchased for the MEEI.
2022	Piarco Solar Park	Piarco	MPU, T&TEC, MEEI	Installed capacity of 500-700kW offsetting 5-7% of the airport electrical load.
2022	Rural Solar Electrification	N/A	MPU, T&TEC, MEEI	10 installations have been completed.
Ongoing (GoRTT, 2023)	Wind Resource Assessment Programme (WRAP)	N/A		3.0 million TTD was allocated for the project with data generated for a minimum of one (1) year as per industry standard. A minimum of two (2) sites will be monitored.
Ongoing	EV chargers' installation	Queens Park Savannah	T&TEC, MPU, MEEI	Tentatively 800-900kW installed capacity with up to five (5) stations.
Ongoing	Solar Photovoltaic (PV) Project	Brechin Castle Couva	MEEI	Estimated to reduce 160,930t CO ₂ with a utility scale of 302,500MWh and an annual electricity production of 92.2 MW.

In 2024, the Directors of Orange Gove Solar Limited (OGSL) comprising a joint venture partnership with bp Alternative Energy T&T (bpAETT), Shell Renewables Caribbean Limited, and Downstream Petrochemical Research and Development Limited (DPRDL) indicated that the Solar Project at Orange Grove Facilities was decommissioned as advised by the GoRTT. The

GoRTT indicated that the land at Orange Grove originally allocated to the solar project is to be used for an alternative purpose of national interest and that the first commercial scale solar project will progress with construction of the solar project at the Brechin Castle site only.

Despite cancellation of the Solar Park best efforts are being made to achieve the goals set in the National Development Strategy with the Nation making progress in completing the Renewable Energy target and completing a draft of the Energy Policy and Energy Action Plan. It is also estimated that 10.59 MW of energy is supplied by Renewable Energy through Solar projects currently installed (CCREEE, 2023). More so, development in education of Renewable Energy through Tertiary Programmes at various institutes are offered as shown in Figure 1-16.

1.9.3 Industry

1.9.3.1 Petroleum

T&T's industrial sector, heavily reliant on crude oil and natural gas, spans various activities including petroleum exploration and production, pipeline operations, natural gas processing, refining, iron and steel processing, LNG production, cement manufacturing, and petrochemical production. The Industrial Sector generates nearly 60% of government revenue and serves as the primary export commodity, accounting for 83% of merchandise exports with the main exports including refined oil products, LNG and natural gas liquids.

The largest petroleum sector contributor to real GDP was identified as the Manufacture of Petrochemicals Industry. Although the industry recorded an 8.6% increase during the preceding October to December 2021 period, an economic decline of 5.8% was registered during the first three months of 2022. This decline was primarily because of planned and unplanned maintenance activities as well as schedules turnarounds and power outages which all led to a rise in total plant downtime (GoRTT, 2022).

The second leading contributor to real GDP was identified with the Natural Gas Exploration and Extraction Industry which declined by 2.1% in the fourth quarter of 2021 and declined by 5.5% during the January to March 2022 period. The decline was attributed to scheduled upgrades, developmental activities as well as less gas being demanded from the downstream sector which inadvertently led to the industry's constrained performance.

The third leading contributor to real GDP was identified as the Crude Oil Exploration and Extraction Industry. In December 2021, the industry recorded a sharp increase by 15.3% while only having a growth of 7.6% during the period of January to March 2022. The industry indicated growth mainly to the startup of production from BHP/Woodside's Ruby Delaware project in May 2021. It was also because of higher output measures undertaken by some upstream oil producers, such as workovers, well intervention activities, and higher than anticipated oil prices globally compounded by Russia Ukraine conflict (GoRTT, 2022).

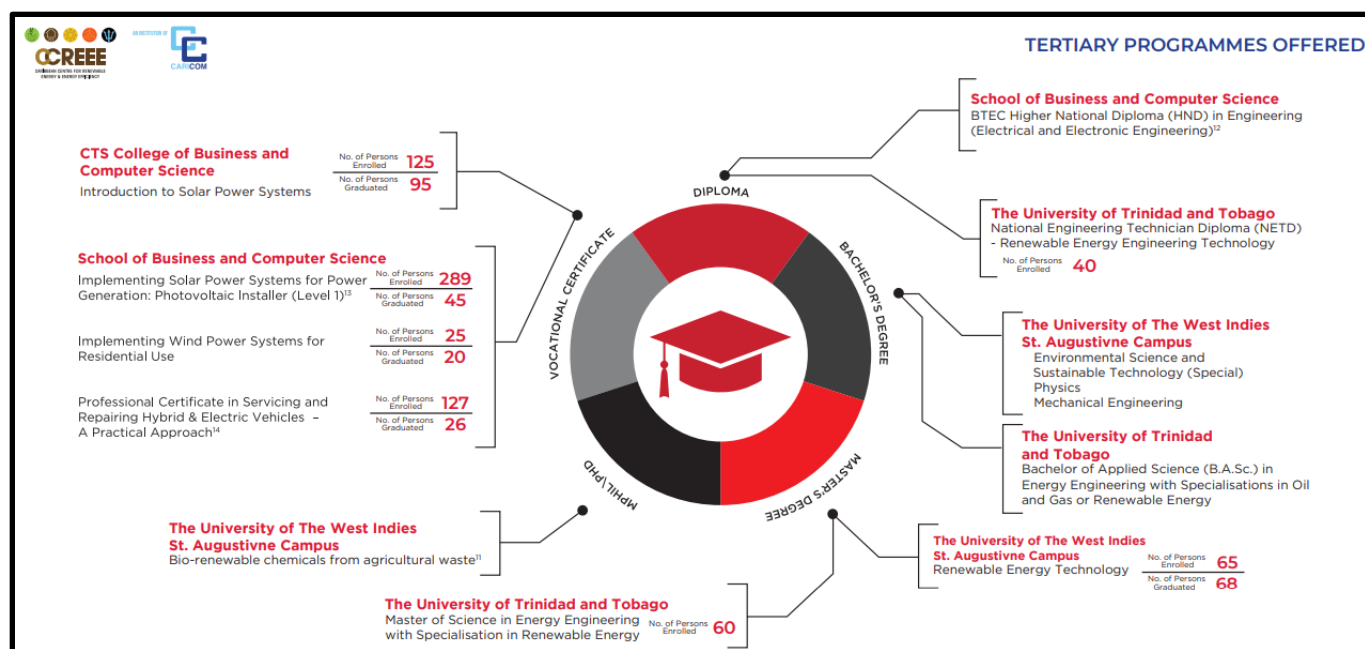


Figure 1-16: Tertiary Programmes Relating to Renewable Energy (Energy Report Card, 2021)

Petroleum and Natural Gas Distribution grew 10.9% in the final three months of 2021, with a marginal decline of 0.3 in the first quarter of 2022 which was attributed to lower petroleum and natural gas sales for 2022. Petroleum Support Services industry fell by 7.6% during October to December 2021 period with a significant decline of 7.6% during the first quarter of 2022. Similarly asphalt which contributed the least to real GDP registers a decline of 26.8% in the fourth quarter of 2021 which increased to a 54.9% decline during the first quarter of 2022 (GoRTT, 2022).

Exploration, Development Activity and Drilling

T&T continues to be an attractive investment opportunity to investors. In 2022, the oil and gas industry attained 1.2 billion United States Dollars (USD) thorough direct foreign investment in the upstream sector with an expected 1.3 billion USD to be invested in 2024.

An audit prepared and conducted by Netherland, Sewell and Associates Inc. (NSAI), on December 31, 2018, discovered that oil reserves rose by 10.3%, from 199.5 million barrels as of January 01, 2012, to 220.1 million barrels. Probable reserves increased by 16.6% to 99.7 million barrels, from 85.5 million barrels in 2012 and the prospective resources rose by a substantial 773.4% to 3.2 billion barrels in 2018, up from 368.2 million barrels at the beginning of 2012 (GoRTT, 2022).

In 2022 Shell achieved its first output from its Colibri Project. Peak production rates from the Colibri Project are estimated at 43,000 barrels of oil equivalent per day. More so in 2021, Shell was awarded a Production Sharing Contract regarding the Manatee field development project. It is expected that the field will generate an estimated 300 million standard cubic feet per day of gas with a peak output of 700 million standard cubic feet per day.

In 2022, EOG Resources Trinidad Limited (EOG) in a joint agreement with Heritage Petroleum Company Limited (HPCL), planned to drill three (3) exploratory and three (3) development wells. HPCL however, accounted for the majority of development wells in May 2021 through its Lease

Out/Farmout and Incremental Production Service Contract Operators who drilled nine (9) wells (GoRTT, 2022).

1.9.3.2 Manufacture

The manufacturing sector increased its contribution to GDP from 18% in 2021 to 19.2% in 2022. This growth was primarily due to the significant growth in the second largest sub-industry within Manufacturing, Food, Beverages and Tobacco Products. Specifically, a growth of 215.7% was reported due to the expansion in distilling, rectifying and blending of spirits, manufacture of wines, processing and preservation of fruits and vegetables and manufacture of vegetables and animal oils and fats (GoRTT, 2022).

1.9.4 Agriculture and Forestry

In both 2021 and 2022, the impact of the Covid-19 Pandemic continued to hinder growth and development within the agriculture sector. Challenges experienced within the sector amounted to disruptions in availability of inputs for production, specifically fertilizers, chemicals and feeds. In addition, in 2021, due to the closure and or limited working hours of businesses and markets during the quarantine period demand for agricultural products such as poultry, fruits, root crops and vegetables were negatively impacted.

As of 2022, the Ministry of Agriculture Land and Fisheries (MALF) continued to implement initiatives to mitigate the effects of these challenges faced by farmers through its recurrent expenditure programmes and Public Sector Investment Programme (PSIP). Notwithstanding these challenges, the sectors contribution to GDP remained constant at 0.6% during the periods of 2021 and 2022 (GoRTT, 2022).

According to the CSO, 24,500 persons were reported to be employed in the agriculture, forestry and fishing sector during the first quarter of 2022. This figure accounts for 4.2% of the country's total employment over that period (CSO, Not Dated).

1.9.4.1 Domestic Agriculture

With the advent of the Covid-19 Pandemic, sourcing vegetables due to disruptions in the international food chain supply, local farmers were given the opportunity to cultivate more short-term crops such as lettuce, cabbage, patchoi, sweet pepper, cucumber and ochro. However, farmers were challenged by excessive rainfall, pests and diseases, prandial larceny, high cost of sustenance and battling the extreme effects of climate change. Figure 1-17 depicts the composition of food crop products from October to December 2021.

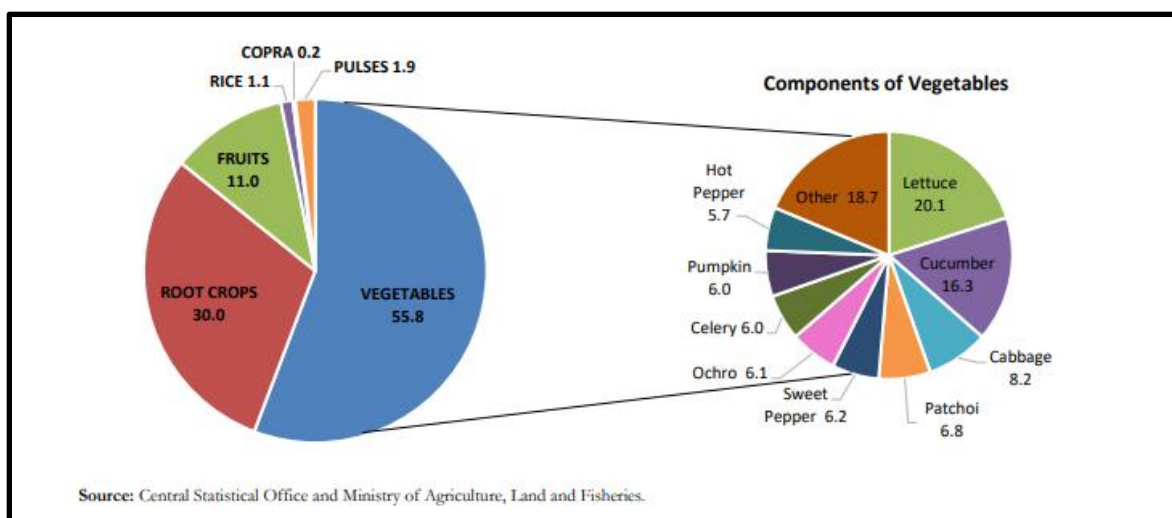


Figure 1-17: Composition of food products from (October to December 2021) (CSO, Not Dated)

1.9.4.2 Forestry

The most recent figure of forest managed by the state is over 192,000 hectares. This is distributed across 36 forests reserves, 11 game sanctuaries and state land. As of 2022, 154,813 cubic feet of teak and 230,040 cubic feet of pine were provided as raw materials for 116 sawmills and 31 registered furniture shops. It was also reported that sale of trees from State leased lands produced 11,241 cubic feet of logs (GoRTT, 2022).

During the period of May 2021 to May 2022, the National Reforestation and Watershed Rehabilitation Programme (NRWRP) produced 102,000 seedlings comprising 80,000 mixed species and 22,700 pine species. The NRWRP also reforested 99.2 hectares of land with new plantations and second rotation teak. However, during this period due to the Covid-19 pandemic restrictions as well as lack of funding, the implementation of reforestation measures was restricted (GoRTT, 2022).

1.9.4.3 Fisheries

During the 2021 to 2022 period, 99 non-artisanal (large-scale) vessels (90 for Trinidad and 9 for Tobago) were registered with 415 fishers and approximately 2,724 commercial small-scale fishing vessels (2,076 for Trinidad and 648 for Tobago) were registered with 5,448 fishers (4,152 for Trinidad and 1,296 for Tobago). In the same period the catch and revenue for the artisanal long line fleet increased by 26.2% and 50.1% respectively (GoRTT, 2022).

Aquaculture currently has 46 registered commercial fish farmers including six (6) hatchery operators with approximately 25% operating at capacity. The low production level was affected mainly due to high costs of inputs, inadequate market opportunities and effects from the Covid-19 pandemic. These effects are such as the suspension of passenger flights which constrained the ability of farmers to import breeding stocks from the United Kingdom. The ornamental aquaculture component is vibrant with 77 consignments (160,223 live fishes) exported at a value of 538,287.57 TTD (GoRTT, 2022).

It is expected that approximately 1.3 million TTD will be expended for upgrading fishing facilities allowing for improved sanitary and phytosanitary conditions and security for fishers. It is estimated

that three hundred (300) fishers would benefit from these improvements done at the facilities (GoRTT, 2022).

1.9.5 Waste

1.9.5.1 Solid Waste

The Solid Waste Management Company Limited (SWMCOL) is the body responsible for the development and management of the three disposal sites (Forres Park, Beetham and Guanapo) within Trinidad while the Tobago House of Assembly (THA) is responsible for the disposal site at Studley Park indicated by Figure 1-18. Solid Waste Management (SWM) is handled by various institutions each with their own priority and agenda. Table 1-8 identifies the institutions with their associated responsibilities.

With increasing development from population growth, urbanization, industrial expansion and increased consumerism, waste per capita is expected to increase. In 2019 waste generated and sent to disposal sites in Trinidad's Forres Park, Beetham and Guanapo accounted for 436,398 tonnes of waste when compared to 733,623 tonnes of waste sent to disposal sites in 2022. Conversely, waste generated and sent to disposal sites in Tobago's Studley Park, was estimated at 26,686 tonnes in 2019 when compared to 16,591 tonnes in 2021 (most recent figure) (EMA, 2023).

Table 1-8: Main Solid Waste Management (SWM) Institutions and their responsibilities (GoRTT, 2021)

Institution	Responsibilities
MPU through SWMCOL	<ul style="list-style-type: none"> Responsible for SWM in Trinidad. SWMCOL manages the Beetham, Guanapo and Forres Park disposal sites in Trinidad. Oversee finalization of the Beverage Containers Deposit Refund Policy.
Ministry of Rural Development (MRD) and Local Government through the Municipal/Regional Corporations.	<ul style="list-style-type: none"> Responsible for collection and transportation of municipal waste and associated monitoring of solid waste contractors. Point Fortin Borough Corporation also manages the Guapo disposal site.
Ministry of Planning and Development (MPD)	<ul style="list-style-type: none"> Manages the Multilateral Environmental Agreements (MEAs) to which Trinidad and Tobago is a signatory. Includes the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Disposal and the Stockholm Convention on Persistent Organic Pollutants.
THA	<ul style="list-style-type: none"> Manages municipal waste collection in Tobago and Studley Park disposal site.
Ministry of Health (MOH)	<ul style="list-style-type: none"> Manages waste at health establishments (public, private, health centers). Responds to public health complaints and concerns. Regional Health Authorities under the MOH are responsible for management of waste from all major hospitals and health centers in their respective regions.

Institution	Responsibilities
Environmental Management Authority (EMA)	<ul style="list-style-type: none"> Responsible for developing and implementing legislation for the management of waste as described in Sections 55 to 58 of the Environmental Management Act, Chap. 35:05. Rules may be prescribed in accordance with Section 26 of the Environmental Management Act. The EMA also coordinates the National Recyclable Solid Waste Collection.
Ministry of Trade and Industry	<ul style="list-style-type: none"> Receives and evaluates applications for scrap metal license under the Old Metal and Marine Stores Act (scrap metal collection) and the Export Negative List (export of scrap metal). The EMA regulates scrap metal dealers through the Certificate of Environmental Clearance (CEC) process.

In 2019, SWMCOL sent 5100.77 tonnes of waste to be recycled with the most popular item being blue and clear polyethylene terephthalate (PET). In 2022 however, this figure dropped to 206.66 tonnes of waste recycled. In 2018, the THA collected over 160 tonnes of material consisting of 575,000 bags of beverage containers (glass, aluminium, tetrapak, plastic) whereas in 2022, 82.6 tonnes of recyclable materials were diverted to be recycled in Tobago (EMA, 2023). Table 1-9 provides estimates of the combined waste collected in Trinidad at (Forres Park, Beetham and Guanapo) and Tobago's Studley Park Landfill.

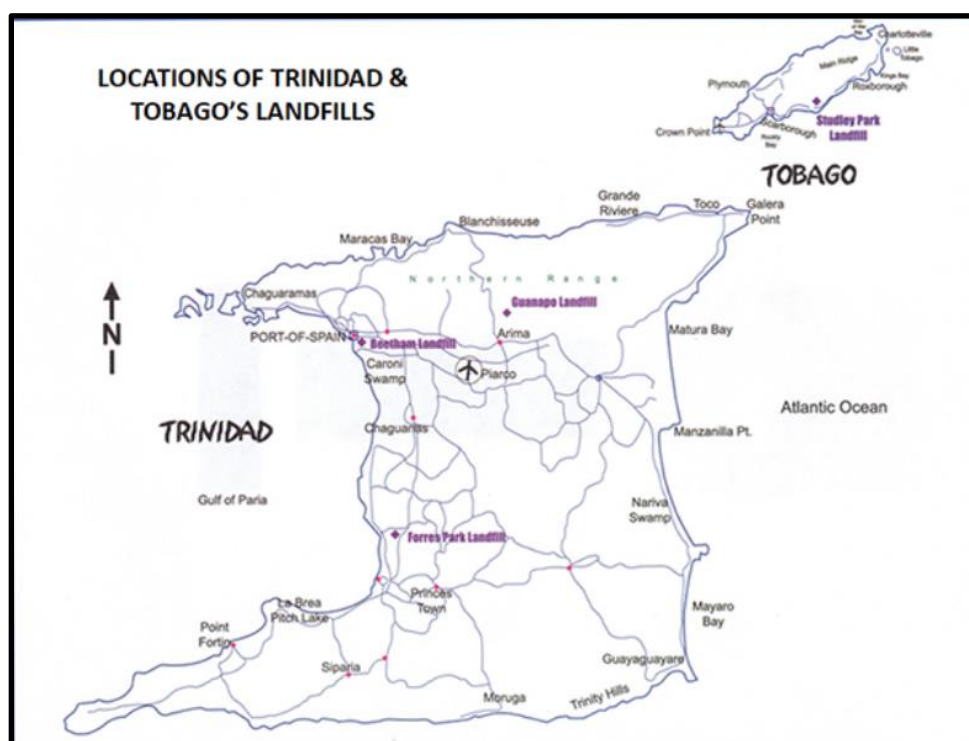


Figure 1-18: Waste Disposal Sites in Trinidad (Forres Park, Beetham and Guanapo managed by SWMCOL) and Tobago (Studley Park managed by the THA) (SWMCOL)

Table 1-9: Estimated combined waste collected in Trinidad (Forres Park, Beetham and Guanapo) and Tobago's Studley Park Landfill (EMA, 2023)

Year	Trinidad (Quantity: tonnes)	Tobago (Quantity: tonnes)
2017	505,926	-
2018	460,696	35,000
2019	441,398	26,686
2020	769,177	21,082
2021	777,999	16,591
2022	733,623	-

1.9.5.2 Waste Water

The main regulatory authority, the Water and Sewerage Authority (WASA) is responsible for all water and wastewater within T&T. WASA has the responsibility to deliver water supply in a manner that is safe, reliable and efficient to all citizens. Production is supplemented with water purchased from two (2) desalination companies, the Desalination Company of T&T Ltd (Desalcott) and Seven Seas Water. WASA functions through the collection, transmission and disposal of wastewater. Approximately 30% of the country's wastewater needs is handled through public sewerage systems in Port-of-Spain, San Fernando, Arima, Point Fortin and Scarborough. WASA also has the responsibility to adopt and refurbish more than 150 wastewater facilities from private developers and other government authorities.

In 2022, WASA invested an estimated 5,048,179 TTD into projects related to water resource management while supplying 88% of the population with pipe borne water. The average volume (m³) of wastewater collected and treated daily increased to 154,771 m³ in 2022. As of 2019, the most recent figures show WASA's customer base was 430,982 while its wastewater customer base was 79,946. According to audits conducted by the RIC over the evaluation period between 2016-2019, it was revealed that WASA's financial performance deteriorated over the period below the internationally accepted levels for a well performing water utility. However, there were some improvements in some of the utilities' operational performance indicators (RIC, 2022).

2 Institutional Arrangements

The institutional arrangements for this report are in accordance with the Modalities, Procedures and Guidelines (MPGs), established under Article 13 of the Paris Agreement (Decision 18.CMA.1 and its Annex). These include the arrangements for inventory planning, preparation and management; tracking progress made in implementing the nationally determined contributions; climate change impacts and adaptation; and Information on financial, technology development and transfer and capacity-building support needed and received. Table 2-1 specifically outlines the relevant reporting requirements which have been addressed.

Table 2-1: Relevant Reporting Requirements for Institutional Arrangements

MPG	Relevant Reporting Requirement
Inventory planning, preparation and management	<ul style="list-style-type: none"> The national entity or national focal point with the overall responsibility for the national inventory. The inventory preparation process, including the division of specific responsibilities among institutions participating in the inventory preparation to ensure that sufficient activity data collection, choice and development of methods, emission factors and other parameters are in accordance with the 2006 Intergovernmental Panel on Climate Change (IPCC) guidelines and the Wetlands Supplement. The archiving of all information for the reported time series, including all disaggregated emission factors and activity data, all documentation on generating and aggregating data, including quality assurance and quality control (QA/QC), review results and planned inventory improvements. The processes in place for the official consideration and approval of the inventory.
Information necessary to track progress made in implementing and achieving the nationally determined contribution	<ul style="list-style-type: none"> The institutional arrangements in place to track progress made in implementing and achieving their NDCs, including those used for tracking internationally transferred mitigation outcomes, if applicable, along with any changes in institutional arrangements since the most recent Biennial Transparency Report (BTR). Legal, institutional, administrative and procedural arrangements for domestic implementation, monitoring, reporting, archiving of information and stakeholder engagement related to the implementation and achievement of the NDC.
Information related to climate change impacts and adaptation	<ul style="list-style-type: none"> Institutional arrangements and governance, including for assessing impacts, addressing climate change at sectoral level, decision-making, planning, coordination, addressing crosscutting issues, adjusting priorities and activities, consultation, participation, implementation, data governance, monitoring and evaluation, and reporting. Legal and policy frameworks and regulations.
Information on financial, technology development and transfer and capacity-building support needed and received	<ul style="list-style-type: none"> A description of the systems and processes used to identify, track and report support needed and received, including a description of the challenges and limitations. Information on country priorities and strategies and on any aspects of the Party's NDC that need support.

2.1 National Measurement, Monitoring, Reporting, Verification and National Transparency System

The GoRTT, through its Ministry with responsibility for the Environment, the MPD, designed and operationalized a comprehensive National Measurement, Monitoring, Reporting and Verification (MRV) System in 2018.

This system is intended to:

- Facilitate the inventorying of GHGs from all emitting/reporting entities for the purpose of international reporting such as the BUR and BTR, National Communications (NCs), domestic tracking of national climate policy, and implementation of the NDC;
- Facilitate tracking of resources deployed in mitigating GHG emissions whether internationally and/or domestically sourced;
- Inform mitigation options for reducing emissions; and
- Determine regulatory interventions as appropriate.

As part of this system, a Knowledge Management System (KMS) was designed, and pilot tested in 2018/2019. The KMS, is the central data repository and, therefore, the backbone of the MRV System and is housed at the EMA, the environmental regulatory agency, as was described in the previous BUR submitted in 2021.

Since then, in 2024, T&T has established a robust National Transparency System (NTS) to monitor, report, and verify progress on its NDCs and climate mitigation actions. The NTS (formerly referred to as the KMS) facilitates collecting, analysing, and reporting data related to GHG emissions, mitigation activities, and support received for NDC implementation. As it encompasses the main reporting areas under the Enhanced Transparency Framework (ETF) of the Paris Agreement, the NTS is a centralised MRV system which in most cases is the best choice as centralisation allows for a consistent overview of the different reporting elements and enables central management of the stakeholders involved in the NTS. It is the intention that for future reporting, the NTS will be the mechanism via which all data will be collected, analysed, archived and stored.

The EMA, in collaboration with the MPD, successfully hosted the Project Results Conference and launched the NTS for the Capacity Building Initiative for Transparency (CBIT) project. This pivotal event on July 30, 2024, marked the culmination of the project titled “Strengthening T&T’s Capacity in Transparency for Climate Change Mitigation and Adaptation (Photograph 2-1).”

Launched in January 2022, the CBIT project, funded by the Global Environment Facility (GEF) under the climate change focal area and implemented by the United Nations Environment Programme (UNEP), has significantly advanced T&T’s capacity to enhance transparency in climate change mitigation and adaptation efforts.

One of the outputs of the project “Strengthening T&T’s capacity in transparency for climate change mitigation and adaptation” involves the development of gender sensitive indicators, templates, protocols and guides to support T&T in tracking progress in implementing its mitigation (NDCs) and adaptation actions. It also consists of a roadmap to integrate them into the existing NTS (see Section 4.2).

The components and functions of the NTS – MRV System of T&T, encompasses all aspects of GHG inventory planning, preparation and management, including: Information necessary to track progress made in implementing and achieving the nationally determined contribution; information

related to climate change impacts and adaptation; and Information on financial, technology development and transfer and capacity-building support needed and received.

The components and functions of the NTS include:

1. Inventory Planning, Preparation and Management:
 - Forms the central repository by which all data/information is collected, stored, archived and managed and used for the compilation of National Inventory Reports, NCs and BTRs.
2. Data Collection and Compilation:
 - The NTS collects data from various sources, including government agencies, research institutions, and other stakeholders involved in implementing mitigation actions and adaptation efforts, as well as those entities that emit GHG emissions and/or collect data/information on GHG emissions.
 - Data collection covers key sectors contributing to GHG emissions, such as power generation, industry, transport, and other relevant sectors which implement mitigation measures.
 - Standardised formats and protocols are used to ensure consistency and comparability of data across different sources and sectors.
3. Data Analysis and Reporting:
 - The collected data undergoes thorough analysis to assess progress towards NDC targets against the defined indicators and identify areas for improvement.
 - Analytical tools and models are utilised to evaluate the effectiveness of mitigation measures and their contribution to emission reduction goals.
 - Regular reports are generated based on the analysed data, providing insights into trends, challenges, and opportunities in T&T's climate mitigation efforts.

Since T&T is a Small Island Developing State with comparably limited resources, internationally transferred mitigation outcomes are not adopted and therefore institutional arrangements for their implementation are not applicable.

3. Verification and Quality Control and Quality Assurance:
 - The NTS includes mechanisms for verifying the accuracy and reliability of reported data, ensuring its integrity and credibility.
 - Independent audits and reviews may be conducted to validate the data and verify compliance with reporting requirements under the Paris Agreement and other international commitments.
 - QA/QC procedures are implemented to maintain high standards of data collection, analysis, and reporting, enhancing the transparency and reliability of information presented through the NTS.

This also provides the avenue for the official consideration and approval of the inventory.

4. Stakeholder Engagement and Capacity Building:
 - The NTS fosters collaboration and engagement with relevant stakeholders, including government agencies, civil society organisations, and the private sector.

- Capacity-building initiatives are undertaken to strengthen the technical expertise and institutional capacity of stakeholders involved in data collection, analysis, and reporting (Photograph 2-2).
- Training programs, workshops, and knowledge-sharing platforms are organised to enhance understanding and awareness of climate-related issues and the role of the NTS in supporting climate action (Photographs 2-3 and 2-4).

5. Continuous Improvement and Adaptation:

- The NTS is designed to evolve and adapt in response to changing needs, priorities, and emerging challenges in T&T's climate mitigation efforts.
- Feedback mechanisms are established to solicit input from stakeholders and users of the NTS, facilitating continuous improvement and optimisation of its functionalities.
- Regular assessments and reviews are conducted to evaluate the effectiveness and efficiency of the NTS, identify areas for enhancement, and ensure its alignment with national and international climate goals.

In summary, the NTS will play a crucial role in T&T's efforts to track progress on its NDC commitments and climate mitigation actions. By providing a centralised platform for data collection, analysis, and reporting, the NTS enhances transparency, accountability, and effectiveness in addressing climate change and achieving sustainable development objectives.

2.2 Overall Coordination of MRV

T&T's MRV System has three components: MRV of emissions, MRV of mitigation actions, and MRV of support/resources utilised.

2.2.1 MRV of Emissions

The institutional framework of the MRV System includes the coordinating entity, host/manager of the NTS (formerly KMS in previous BUR) and data suppliers (emitting/reporting entities) as described below.

1. Coordinating Entity of the MRV System

The designated coordinating entity for the National Climate Mitigation MRV System of T&T is the Ministry with responsibility for the Environment, the MPD, which is responsible for:

- Overall coordination of the National MRV System;
- Receiving reports from the EMA to facilitate international reporting and to inform policy interventions as appropriate.

2. Host/Manager of the NTS

The EMA, as the host/manager of the NTS, is responsible for:

- Conducting QA/QC on submitted data/inventories and information by emitting and/reporting entities;
- Using Confidentiality Agreement templates with the relevant stakeholders to ensure timely data flow and improve on data gaps;
- Review and completion of the relevant QA/QC and data archiving system documents;
- Ensuring optimum NTS functionalities within the MRV System;
- Review and documentation of steps through consistent monitoring to identify barriers and facilitate future improvements;
- Uploading of approved and verified aggregated data into a public registry;
- Maintaining the public registry;
- Ensuring independent verification of emissions as required.

Data and inventories compiled by emitting and/or reporting entities and uploaded to the NTS through a secure portal, are subjected to the necessary QA/QC checks by the EMA. Once approved by the EMA, the information will be uploaded and used to develop reports, including NCs, BURs, and BTRs for submission to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat. The approved information will also be uploaded into a public registry, in an aggregated manner.

3. Emitting entities and entities which coordinate and report on mitigation actions

Emitting entities are those involved in specified activities under the IPCC guidelines which give rise to GHG emissions. They provide all information related to GHG emissions and climate change mitigation activities to the NTS. Among their responsibilities are:

- Utilisation and completion of the recommended MRV System templates;
- Utilisation of the recommended methodology to compile inventories;
- Application of QA/QC checks on inventories prior to submission using the required templates.

2.2.2 MRV of Mitigation Actions

As the host/manager of the NTS the EMA is charged with the following duties with respect to the MRV of mitigation actions at the national level:

- Conducting QC procedures on mitigation actions data;
- Uploading data and information from emitting entities involved in mitigation efforts into the NTS on approval;
- Collating data and information to be used in analyses;
- Establishing procedures for monitoring and evaluating whether mitigation efforts have achieved their targets;
- Submission of results regarding quality control, data analyses, and review of findings, for incorporation into the reporting processes at both the national and international levels.

2.2.3 MRV of International Support and Domestic Resources

As the host/manager of the NTS, the EMA is responsible for coordinating the monitoring, reporting and verification of all international and domestic funding support for national mitigation actions. The main aspects of support and resource allocations to be addressed in this component of the MRV System include:

- Sources of resources provided;
- Type of entity providing resources such as public concessional (official development aid), private capital or investment;
- International and domestic intermediaries involved in channeling resources such as bilateral or multilateral banks and agencies through which finance is transferred, Government Ministries, public-private partnerships.

2.2.4 Archiving

In addition to the NTS, all information for the reported time series, including all disaggregated emission factors and activity data, all documentation about generating and aggregating data, including QA/QC, review results and planned inventory improvements, are archived and stored in accordance with a Document Control and Record Management Guideline, established by the EMA.

2.3 Proposed Legislation

A Technical Policy Guidance Brief was submitted in February 2023, to the Cabinet of the GoRTT, by the MPD, that proposes the promulgation of Climate Change (Greenhouse Gases) Reporting Rules. The Technical Policy Guidance Brief is meant to provide a basis for, and propose specific legislation intended to mitigate the challenges in obtaining the data and information necessary to fulfill the reporting requirements under the UNFCCC, Kyoto Protocol and the Paris Agreement. Implementation of this proposed legislation will make stakeholder reporting of GHG emissions and mitigation efforts mandatory. Currently, emitting and reporting entities submit data for the MRV system on a voluntary basis. However, this has proven challenging. While some stakeholders do comply, some are simply not inclined to submit their data unless it becomes mandatory, and this limits the quantity and quality of data reported. As such, this is the primary challenge and limitation to the NTS.

The intention of the proposed Climate Change (Greenhouse Gases) Reporting Rules, is to:

1. Create legal certainty for the collection of greenhouse gas emissions data and information and reduce uncertainties and gaps in the data considering international reporting obligations of GHG emissions and mitigation efforts and following the required international principles of greenhouse gas inventorying, namely transparency, accuracy, completeness, comparability, and consistency.
2. Allow the EMA, to operate in the role of regulatory authority under an established legal framework, providing a sustainable structure for the Climate Change (Greenhouse Gases) Reporting Rules in the reporting and regulation of GHGs.
3. Advance GoRTT's contributions to the achievement of regional and international reporting obligations and commitments such as the Paris Agreement and Kyoto Protocol, specifically improving greenhouse gases inventorying and management.
4. Facilitate the reporting of mitigation efforts implemented to enhance GHG emissions and removals and to evaluate whether these efforts have achieved their targets. The Proposed Reporting Rules, at the time of this report, is awaiting Cabinet approval.

Additionally, under the CBIT project, the Technical Policy Guidance Brief was amended in 2024. The amendment extends the scope of the proposed Reporting Rules to ensure alignment with the ETF components under the Paris Agreement. The amendments include:

1. Extension of the scope of the proposed Reporting Rules to encompass the collection and management of data required for tracking mitigation, adaptation actions and support received. This expansion ensures alignment with the ETF components under the Paris Agreement, which is essential for meeting international reporting and review obligations.
2. A key component of the changes is the designation of the EMA as the lead coordinating body and the main repository for climate data. The EMA's role includes guiding Reporting Entities to ensure systematic and efficient data management. This structure addresses the conclusions and recommendations of a Mapping exercise, thereby reinforcing the efficacy of the reporting framework.
3. Furthermore, the improvements ensure that the proposed Reporting Rules is consistent with the MPGs of the Paris Agreement. These guidelines govern the reporting and review of information submitted by Parties, requiring them to select relevant indicators for tracking the progress of their NDCs. T&T has developed national indicators for NDC and adaptation tracking, both qualitative and quantitative, which will be expressly incorporated into the revised Technical Policy Guidance Brief for the proposed reporting Rules, ensuring compliance with international standards.

2.4 Country Priorities and Strategies

Aspects of T&T's NDC that need support are described in Chapter 4 and Chapter 6.2.



Photograph 2-1: Launch of the NTS and CBIT Achievement event

(From l to r) The Honourable Penelope Beckles, Minister of Planning and Development (delivering her keynote address), Ms. Nadra Nathai-Gyan – Chair – EMA, Ms. Diana Roopnarine-Lal –Chief Technical Advisor – CBIT Project and Mr. Walter Rique of AI Analytics Care. Photograph courtesy Corporate Communications Unit, EMA), July 30, 2024



Photograph 2-2: Mr. Randyll Pandohie of AI Analytics Care presents to stakeholder participants.

National Transparency System Stakeholder Desktop Manual Training Program at Paria Suites Hotel & Conference Centre on August 27, 2024. Photograph courtesy the CBIT Project, EMA.



Photograph 2-3: Group photo: Delivering opening remarks Mr. Kishan Kumarsingh Head, Multilateral Environmental Agreements Unit (MEAU), MPD at the In-country training session as part of the CBIT project entitled Strengthening T&T's capacity in transparency for climate change mitigation and adaptation. Photo courtesy CBIT Project, EMA), July 23, 2024



Photograph 2-4: Stakeholder Sensitization Session

from (l to r) Mr. Leon Bengsch – Gauss International Consulting and Mr. Kishan Kumarsingh Head, Multilateral Environmental Agreements Unit (MEAU), MPD delivering opening remarks at the In-country training session as part of the CBIT project entitled Strengthening T&T's capacity in transparency for climate change mitigation and adaptation (Photograph courtesy CBIT Project, EMA), July 23, 2024

3 Greenhouse Gas Inventory

3.1 Introduction

This chapter provides an overview of T&T's National GHG emissions and removals levels, and the approaches used to estimate them. The information is reported in accordance with the accounting principles of Transparency, Accuracy, Consistency, Completeness and Comparability (TACCC) as stated in article 4.13 of the Paris Agreement. This process identifies gaps for further action and capacity-building while the level of transparent reporting on the processes and experiences provides learning opportunities.

For this inventory, T&T utilized the IPCC 2006 Guidelines. Since the reporting on indirect GHGs, such as non-metallic volatile organic compounds, is not mandatory, these were not included due to data limitations. Improvements to data collection has been cited as an area for improvement so this is to be considered for improvements in the future once the capacity is available.

The time series reported in this inventory is the period 2006–2022. This fulfills the mandate that the latest inventory year of the time series be no more than four years earlier than the current reporting year. In this case, the latest reporting year (2022) is within four years of the current reporting year 2024.

Flexibility provisions for developing country Parties that need it in the light of their capacities were applied in the preparation of this section and are detailed in Chapter 7 of this BTR.

3.2 National Circumstances and Institutional Arrangements: Overview of Current Inventory Management System

For the compilation of this inventory, a new MRV team, a sub-team of the EMA's existing Air Unit, was established to conduct the national inventory for T&T from 2019-2022, update the time series of the previously reported 2006-2018 inventory and facilitate the compilation and management of the national inventory report, which has been incorporated into this BTR.

For this inventory cycle, the country's MRV/KMS system was developed. This system as described in Chapter 2 is being improved to facilitate the reporting requirements under the ETF. The following are some of the key elements of the process:

- The EMA's Air Unit/MRV Sub-Unit facilitated all communications between stakeholders, prepared the BTR and maintained the completion schedule.
- The EMA was responsible for coordinating and archiving data and documents related to the GHG inventory.
- Members of the Air Unit/MRV Sub-Unit were the technical leads across all four sectors mentioned in the 2006 IPCC Guidelines (Energy, Industrial Processes & Product Use [IPPU], Waste, and Agriculture, Forestry & Other Land Use [AFOLU]). AFOLU sector is also presented disaggregated as Agriculture, and Land Use, Land Use Change and Forestry (LULUCF).
- The EMA's Air Unit/MRV Sub-Unit was responsible for quality control, key category analysis and uncertainty estimations.
- The results, assumptions and expert judgements were shared with international sectoral experts and modified as required, based on feedback.
- GHG Inventory training sessions for capacity-building were conducted for key sectoral stakeholders and regulators. The training objective was to provide technical capacity to stakeholders on what categories and sub-categories are to be reported on based on their

activities, activity data required, emission factors, methodologies for estimations and quality control checks.

- The final draft inventory was subjected to an independent QA/QC analysis by a competent third party.

3.3 Methodologies, Parameters and Data

This is T&T's first BTR, with inventory estimates reported for the time series 2006–2022. This period continues from the last reported inventory year (2018) in the BUR-1. Additional key points to be noted are:

- This chapter was done in conformity with the relevant UNFCCC reporting guidelines to the extent permitted by capacities and national circumstances.
- The inventory estimates were calculated in accordance with the 2006 IPCC Guidelines.
- Estimates were conducted on a gas-by-gas basis for CO₂, CH₄ and N₂O and reported as aggregated GHGs in CO₂ equivalents (CO_{2e}) using the (Global Warming Potentials) GWPs provided by the IPCC in its Fifth Assessment Report (AR5).
- To the extent capacities permit, emissions from international aviation and marine bunker fuels are also reported separately as a memo item in the inventory.
- For fuel combustion activities, sectoral and reference approaches are reported; 2006-2022 for the sectoral approach and the latest reporting year (2022) was used for the reference approach.
- Recalculations or revisions were performed on the time series from base year (2006) to 2018 where updated activity data and country specific emissions factors for the previous data sets and/or information were available.
- An uncertainty analysis was done using all default factors which found a level uncertainty of 1.78% and a trend uncertainty of 1.86% for the reported inventory. The uncertainty (level and trend) is found in the Technical Annex to this BTR (Annex 1A).
- Accordingly, the detailed results for T&T, with all the sector models and comprehensive analyses is found in the Technical Annex to this BTR (Annex 1).
- Time series consistency was ensured by estimating emissions using the same method and data sources for the respective categories and sub-categories for all reporting years. done. A consistent time series was also achieved by conducting recalculations where the available data may have changed/was updated, the previously used method was not in accordance with the 2006 IPCC guidelines or in the correction of errors.

Additionally, the EMA's Air Unit/MRV Sub-Unit also developed a National GHG Inventory System Manual. The National GHG Inventory System Manual was designed based on the Toolkit for Building National GHG Inventory Systems, developed by the US EPA. The National GHG Inventory System Manual provides comprehensive documentation of each critical component for managing the GHG inventory development process. The manual was used by the EMA's Air Unit/MRV Sub-Unit to document the annual GHG inventory process for T&T. The templates in the manual are consistent with the IPCC "good practice," the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, the 2019 Refinement to the 2006 IPCC Guidelines and the latest UNFCCC transparency requirements. The templates were completed by the EMA's Air Unit/MRV Sub-Unit team members during the inventory compilation process. The National GHG Inventory System is a way to organize and structure all the steps and elements needed to estimate, report, review, archive, and improve estimates of GHG emissions and removals. It includes institutional, legal, and procedural arrangements that facilitate management of key inventory tasks during the inventory compilation process like planning, collecting and documenting information about data, documenting steps, reviewing, reporting, archiving, and planning improvements.

3.4 Data Collection Methods

The EMA's Air Unit/MRV Sub-Unit identified the required activity data sets and relevant data providers. The process of identifying requisite data was guided by the methodologies selected, using the decision trees provided in the 2006 IPCC guidelines. Once these data sets were identified the team selected suitable data providers, extracting from their knowledge of stakeholders' previous inventory exercises and related projects and experiences.

Primary data collection commenced via letter requests for specific activity data based on the sectoral guidance as outlined in the 2006 IPCC guidelines. During the primary data collection drive, formal written reminders and clarifications were sent out as necessary. All activity data sets are archived accordingly. Data were submitted either via the KMS or directly to the Air Unit/MRV Sub-Unit of the EMA, which were then archived. The EMA being the custodian and manager of the country's KMS/MRV system. All archived data are available for future GHG Inventory reporting cycles.

3.5 Quality Assurance and Quality Control Practices

QA/QC are integral components of the IPCC 2006 guidelines since QA/QC practices contribute towards credible and reliable GHG inventories.

As part of the MRV system a QC/QA checklist was developed for both data providers and the EMA. For this inventory cycle, the QC/QA checklist used by the data providers when compiling the activity data was requested and where available was provided by data providers. While this has improved since the first BUR, this area is still marked for further improvement in future reporting cycles and is later elaborated upon in the section on improvement plans.

However, in many cases it was possible to verify submitted data from the national database using the MEEI bulletin reports, specifically for Energy and IPPU sub-categories. Notwithstanding this, some discrepancies persist that could not be resolved by the stakeholders. These are either outlined as relevant in the sectoral results sections or in the data gaps and improvement sections, presented at the end of this report.

The Air Unit/MRV sub-unit conducted QC/QA activities via both general and category-specific QC/QA checks.

General QC/QA checks included the following:

- Check that the assumptions and criteria for the selection of activity data, emission factors, and other estimation parameters are documented;
- Check for transcription errors in data input and references;
- Check that emissions/removals are calculated correctly;
- Check that parameter and emission/removal units are correctly recorded and that appropriate conversion factors are used;
- Check the integrity of database files;
- Check for consistency in data between categories;
- Check that the movement of inventory data among processing steps is correct;
- Check that confidential data are appropriately protected;
- Check that uncertainties in emissions and removals are estimated and calculated correctly;
- Check methodological and data changes resulting in recalculations;
- Check time series consistency;

- Check completeness;
- Check trends.

Category specific QC/QA checks included the following:

- Assess the applicability of IPCC default emission factors;
- Review country-specific emission factors;
- Review measurements where equipment was used;
- Review national-level activity data;
- Review site-specific activity data;
- Trend checks of activity data;
- QC uncertainty estimates;
- Verify GHG estimates.

3.6 Overview: Total General Results (Sectoral Analysis)

Figure 3-1 shows the total GHG emissions for T&T for the year 2022. Total emissions for T&T for the year 2022 are 43,715 Gg CO₂e with LULUCF and 45,373 Gg CO₂e without LULUCF. The absolute emissions are presented to illustrate the relative size of each sector as it relates to GHG sources and sinks, the LULUCF sector being the only net sink for T&T. The energy and IPPU sectors contribute the highest quantity of emissions to the National Totals, with energy contributing 58% emissions and IPPU contributing 32%. Agriculture, LULUCF and Waste contributes 1%, 4% and 5% respectively. It should be noted that emissions for international bunkers were excluded from the national totals and included as a memo item in Section 3.8.

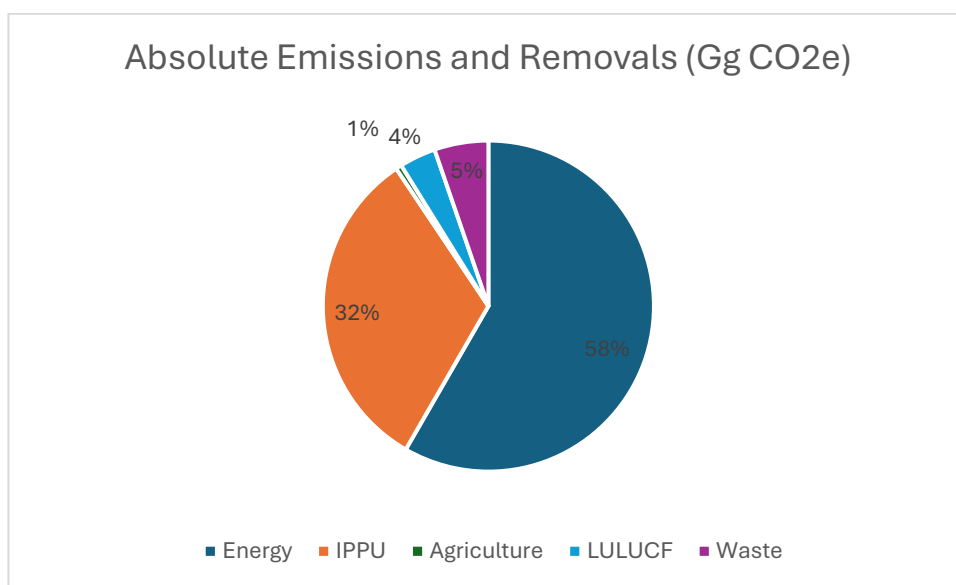


Figure 3-1: Absolute Emissions and Removals for 2022

For this reporting period, Figure 3-2 and Figure 3-3 illustrate the total GHG emissions for T&T (expressed in Gg CO₂e) over the inventory period (2006–2022) for the different sectors. In Figure 3-2, the sectoral results are summarized by sector contribution to total emissions and in Figure 3-3 the same results are summarized via a bar chart.

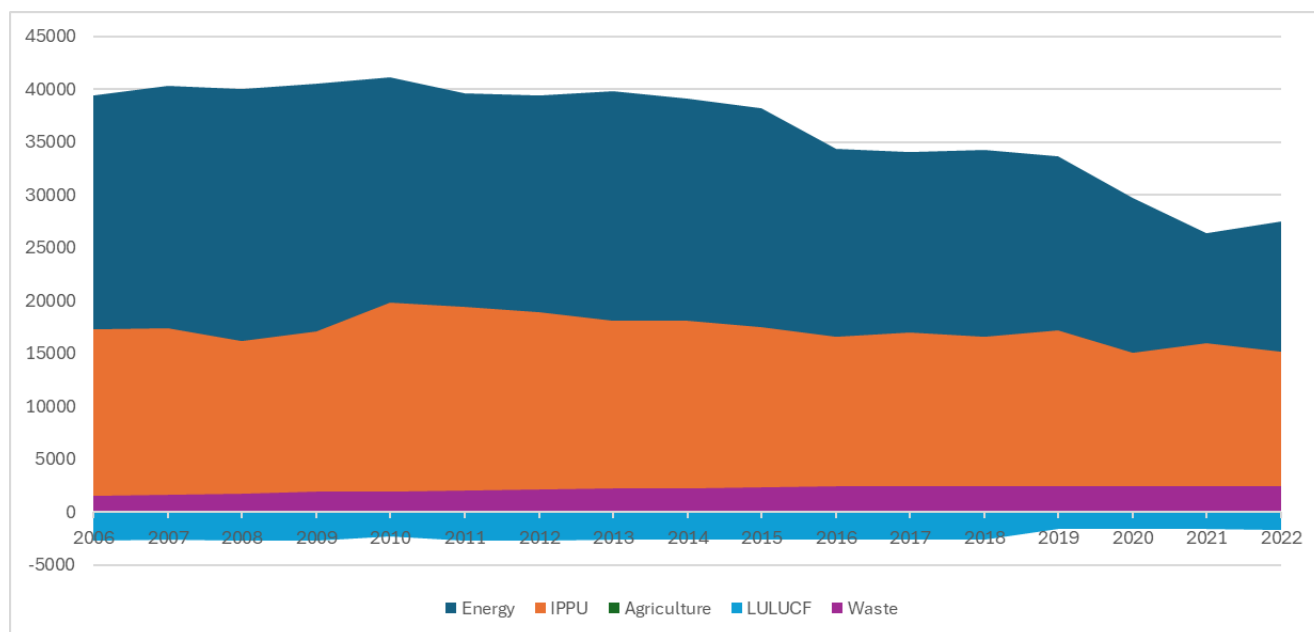


Figure 3-2: Sector Contribution to Total GHG Emissions for T&T for the Reporting Period 2006-2022

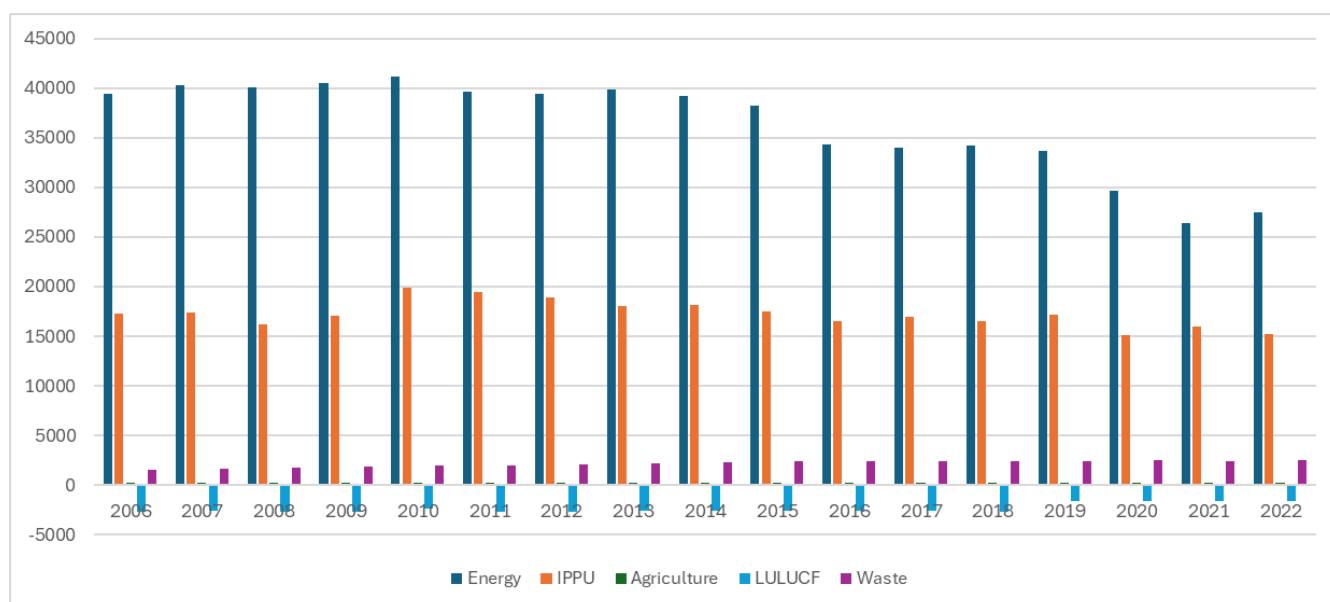


Figure 3-3: Total GHG Emissions for T&T by Sector and Year for the Reporting Period 2006-2022

These figures show that the total emissions in T&T increased over the period 2006–2010, followed by a general decrease from 2010 onwards. The decrease per annum from 2010 to 2022 is 17,092.38 Gg. This general trend and decrease are largely due to a decline in productivity of T&T's dominant IPPU and energy sectors because of lower natural gas supplies, and reduced activity during the Covid 19 Pandemic. Together, these two sectors contribute approximately 92% of total emissions over the time series. The percentage change over the time series is presented in Table 3-1. As previously stated, although there was a general increase followed by a general decrease over 2006–2022, the resulting percentage change over the same period illustrated a 21 percent decrease in total emissions in 2022 when compared with 2006.

Table 3-1: Emissions and Removals for the Reporting Period 2006 to 2022 by Sector

Year	Emissions and Removals (Gg CO ₂ e)					
	Energy	IPPU	Agriculture	LULUCF	Waste	Total
2006	39451.98	17265.10	204.40	-2681.34	1537.24	55777.37
2007	40273.97	17391.93	207.13	-2608.63	1631.61	56896.02
2008	40017.96	16222.61	241.91	-2663.73	1746.41	55565.16
2009	40509.16	17045.25	222.57	-2687.61	1910.41	56999.78
2010	41113.41	19828.75	242.07	-2330.54	1953.45	60807.14
2011	39597.77	19450.35	242.92	-2696.86	2022.10	58616.28
2012	39400.18	18856.07	245.59	-2694.97	2114.89	57921.47
2013	39797.69	18071.91	245.59	-2619.94	2196.04	57691.29
2014	39150.16	18097.28	248.70	-2634.19	2278.40	57140.34
2015	38206.22	17503.82	250.82	-2605.90	2351.14	55706.11
2016	34339.38	16546.51	264.88	-2580.59	2387.99	50958.17
2017	34036.23	16971.45	262.96	-2568.73	2391.56	51093.46
2018	34221.63	16550.77	258.56	-2654.80	2404.59	50780.74
2019	33693.96	17159.18	264.02	-1614.50	2447.62	51950.29
2020	29691.67	15062.18	269.51	-1652.73	2459.64	45830.26
2021	26371.44	15984.91	267.56	-1645.58	2445.60	43423.92
2022	27438.25	15182.77	268.04	-1655.34	2481.03	43714.76
% Change 2006 and 2022	-30.45	-12.06	31.14	-38.26	61.39	-21.63

3.7 Overview: Total General Results (Gas Analysis)

Figure 3-4 illustrates the total GHG emissions for T&T (expressed in Gg CO₂e) over the inventory period for the different GHGs. From this figure, it is observed that the related emissions in T&T over this period are largely dominated by CO₂ of approximately 59 percent, followed by CH₄ of approximately 39 percent and N₂O of approximately 2 percent. Table 3-2 illustrates how the percentage values changed for the reported GHGs over the time horizon, with the biggest percentage change occurring in N₂O, owing to the introduction of Nitric Acid Production in 2010.

Table 3-2: GHG in Gg CO₂e for T&T by Gas (2006–2022)

Year	Emissions and Removals by GHG (Gg CO ₂ e)		
	CO ₂	CH ₄	N ₂ O
2006	31889.88	23745.31	146.98
2007	33209.52	23526.34	164.71
2008	32325.07	23086.49	156.89
2009	33480.58	23367.72	153.73
2010	35663.66	23801.12	1344.84
2011	34652.26	22600.97	1365.91
2012	34550.53	22059.02	1315.15
2013	34396.59	22268.24	1029.97
2014	33843.55	22070.31	1230.24
2015	33223.02	21138.27	1348.70
2016	30820.91	18901.66	1239.01
2017	30759.76	19057.01	1279.87
2018	30101.27	19401.87	1280.67
2019	31328.29	19273.34	1352.27
2020	27407.62	17017.15	1406.92
2021	26452.35	15544.38	1428.35
2022	26571.66	15881.32	1263.95
% Change 2006 and 2022	-16.68	-33.12	759.95

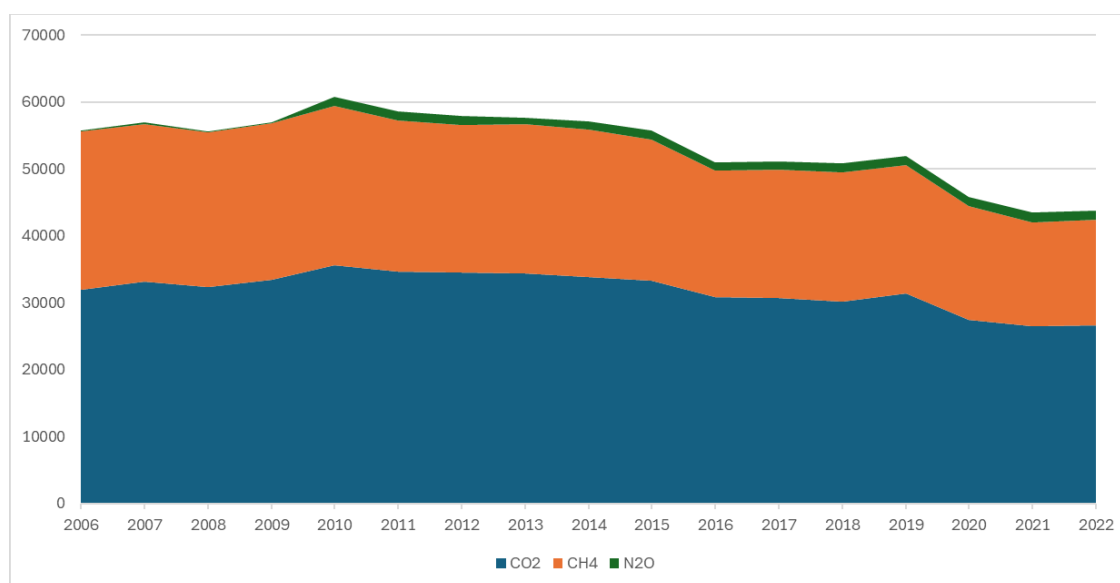


Figure 3-4: Total GHG Emissions for T&T by GHG and Year for the Reporting Period 2006-2022

3.7.1 Key Category Analysis

As 2022 is the latest year in this time series, Approach 1 key category analysis (level) was completed for 2022. Approach 1 trend analysis was also completed with 2006 as the baseline year. The level key category analyses are presented with and without LULUCF (Table 3-3 and Table 3-4, respectively). The key categories are the same with and without LULUCF, the only difference being forest land remaining forest land which is the only net sink for T&T. The detailed level and trend key category analysis with and without LULUCF can be found in the Technical Annex (Annex 1A – KCA and Uncertainty Analysis). The trend key category analysis shows that the key categories are the same as the level key category analysis. While trend analysis was not conducted in BUR-1, the level analysis was conducted, and it can be observed that the key categories in 2022 are the same as 2018.

Table 3-3: Approach 1 Key Category Analysis with LULUCF

A	B	C	D	E	F	G
IPCC Category code	IPCC Category	Greenhouse Gas	2022 Ex,t (Gg CO ₂ e)	Ex,t (Gg CO ₂ e)	Lx,t	Cumulative Total of Column F
1.B.2.b	Natural Gas	METHANE (CH ₄)	9954.94	9954.94	21.16	21.16
2.B.1	Ammonia Production	CARBON DIOXIDE (CO ₂)	9872.11	9872.11	20.98	42.14
1.A.1.a	Energy Industries - Gaseous Fuels - Main Activity Electricity and Heat Production	CARBON DIOXIDE (CO ₂)	5835.92	5835.92	12.40	54.55
1.A.5	Non-Specified - Gaseous Fuels	CARBON DIOXIDE (CO ₂)	3492.75	3492.75	7.42	61.97
1.B.2.a	Oil	METHANE (CH ₄)	2932.96	2932.96	6.23	68.21
2.B.8	Petrochemical and Carbon Black Production	CARBON DIOXIDE (CO ₂)	2730.47	2730.47	5.80	74.01
4.A	Solid Waste Disposal	METHANE (CH ₄)	2274.90	2274.90	4.84	78.85
1.A.3.b	Road Transportation - Liquid Fuels	CARBON DIOXIDE (CO ₂)	2022.50	2022.50	4.30	83.15
1.B.2.b	Natural Gas	CARBON DIOXIDE (CO ₂)	1933.65	1933.65	4.11	87.26
3.B.1.a	Forest land Remaining Forest land	CARBON DIOXIDE (CO ₂)	-1663.97	1663.97	3.54	90.79
2.B.2	Nitric Acid Production	NITROUS OXIDE (N ₂ O)	1101.96	1101.96	2.34	93.13
2.C.1	Iron and Steel Production	CARBON DIOXIDE (CO ₂)	748.76	748.76	1.59	94.73
1.A.1.c	Energy Industries - Manufacture of Solid Fuels and Other Energy Industries - Gaseous Fuels	CARBON DIOXIDE (CO ₂)	543.83	543.83	1.16	95.88

Table 3-4: Approach 1 Key Category Analysis without LULUCF

A	B	C	D	E	F	G
IPCC Category code	IPCC Category	Greenhouse gas	2022 Ex,t (Gg CO ₂ e)	Ex,t (Gg CO ₂ e)	Lx,t	Cumulative Total of Column F
1.B.2.b	Natural Gas	METHANE (CH ₄)	9954.94	9954.94	21.94	21.94
2.B.1	Ammonia Production	CARBON DIOXIDE (CO ₂)	9872.11	9872.11	21.76	43.70
1.A.1.a	Energy Industries - Gaseous Fuels - Main Activity Electricity and Heat Production	CARBON DIOXIDE (CO ₂)	5835.92	5835.92	12.86	56.56
1.A.5	Non-Specified - Gaseous Fuels	CARBON DIOXIDE (CO ₂)	3492.75	3492.75	7.70	64.26

A	B	C	D	E	F	G
IPCC Category code	IPCC Category	Greenhouse gas	2022 Ex,t (Gg CO ₂ e)	Ex,t (Gg CO ₂ e)	Lx,t	Cumulative Total of Column F
1.B.2.a	Oil	METHANE (CH ₄)	2932.96	2932.96	6.46	70.72
2.B.8	Petrochemical and Carbon Black Production	CARBON DIOXIDE (CO ₂)	2730.47	2730.47	6.02	76.74
4.A	Solid Waste Disposal	METHANE (CH ₄)	2274.90	2274.90	5.01	81.75
1.A.3.b	Road Transportation - Liquid Fuels	CARBON DIOXIDE (CO ₂)	2022.50	2022.50	4.46	86.21
1.B.2.b	Natural Gas	CARBON DIOXIDE (CO ₂)	1933.65	1933.65	4.26	90.47
2.B.2	Nitric Acid Production	NITROUS OXIDE (N ₂ O)	1101.96	1101.96	2.43	92.90
2.C.1	Iron and Steel Production	CARBON DIOXIDE (CO ₂)	748.76	748.76	1.65	94.55
1.A.1.c	Energy Industries - Manufacture of Solid Fuels and Other Energy Industries - Gaseous Fuels	CARBON DIOXIDE (CO ₂)	543.83	543.83	1.20	95.75

3.7.2 Time Series Consistency and Recalculations

3.7.2.1 Energy

Several recalculations of the previous inventory of 2006-2018 were conducted, while compiling the inventories of the additional years for 2019-2022. These recalculations were essential to improve the accuracy and transparency of the inventories. The recalculated inventory estimated much higher emissions than the previous 2006-2018 inventory submitted in the 2021 BUR (Table 3-5).

Table 3-5: Reported Emissions in BUR 2021 vs Recalculated Emissions for BTR1 for the Energy Sector

Year	Reported Emissions for BUR 2021 (Gg CO ₂ e)	Recalculated Emissions for BTR (Gg CO ₂ e)
2006	19,817	39,452
2007	21,062	40,274
2008	21,194	40,018
2009	21,590	40,509
2010	22,266	41,113
2011	21,607	39,598
2012	21,860	39,400
2013	22,181	39,798
2014	21,736	39,150
2015	21,741	38,206
2016	19,897	34,339
2017	19,498	34,036
2018	19,285	34,222
2019		33,694
2020		29,692
2021		26,371
2022		27,438

Major differences are observed due to the addition of fugitive emissions in oil production which was not included in previous inventory; the emission factor for methane in fugitive emissions for natural gas production being higher than the previous factor (previous factor could not be verified and the IPCC average default factor was used); the emission factors for CO₂ and CH₄ for fugitive

emissions in the transmission and storage of natural gas, being higher than what was used in previous inventory (IPCC average defaults used in this current inventory but emission factors from previous inventory could not be verified). Table 3-6 summarizes all the recalculations that were made.

Table 3-6: Recalculations

No.	Category sector	Category code and name	Key category in the previous GHG inventory :	Relevant GHG inventory principle	Recalculation
1	Manufacturing Industries and Construction	Non-specified Industry 1.A.2.m	No	Accuracy	In the previous inventory for 2006-2018, this category was included in the category of 1.A.5.a (Non-Specified Stationary). The category is however for light, industry, commercial (LIC) activities. As such it was re-categorized as 1.A.2.m. This altered the emission factor used for CH ₄ (from 5 kg CH ₄ /TJ to 1 kg CH ₄ /TJ). The factor was corrected, and the emission estimations recalculated for the period 2006-2018. This had very little effect in the previously reported emissions. However, the movement in the category would have increased the emissions reported under Energy Industries and Manufacturing Industries and Construction but would not have affected the overall fuel combustion emissions.
2	Civil Aviation	Domestic Aviation 1.A.3.a.ii	No	Accuracy	Aviation Gas is the fuel type used and presented for the previous inventory of 2006-2018. However, in updated data provided by the relevant stakeholder, there is also use of Jet A1 fuel. Jet A1 fuel is included for 2019-2022 as the data was available. This data however was not readily available for 2006-2018. This would not affect the previously reported emissions for 2006-2018, however it means that there is a potential

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory :	Relevant GHG inventory principle	Recalculation
					underestimation of emissions for those years for this category.
3	Other Sectors	Residential 1.A.4.b	No	Accuracy	<p>In converting from kilolitres to metric tonnes, a conversion of 0.00056 is used. The source of this conversion was not identified and could not be found. A factor of 0.000542 which has a source was used and the estimations from the previous inventory of 2006-2018, recalculated.</p> <p>Additionally, in previous inventory the consumption in metric tonne was multiplied by the density of natural gas and then converted to Gg. However, the conversion from MT to Gg is to divide by 1000. It is also noted that the density used previously for Liquefied Petroleum Gas (LPG) was 495 kg/m³. However, density provided by LPG source, is 0.513kg/m³. It is unclear why the density was used in the previous estimations and why specifically the density of natural gas. As such, the conversion from metric tonne to Gg was corrected and a recalculation performed.</p> <p>This affected the final emissions in that the emissions were greater after recalculation.</p>
4	Non-Specified	Stationary 1A5a	Yes	Accuracy	<p>Data provided from stakeholder for the period 2006-2022. These values were used in the inventory as the previous values included the quantity of natural gas processed as well as quantity flared in the activity data. This was corrected in this inventory to now only reflect natural gas used for combustion purposes. As the quantity of natural gas used for combustion was less than previously reported, the</p>

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory :	Relevant GHG inventory principle	Recalculation
					emissions for this category were lower than previously reported.
5	Oil	Oil Production and Upgrading 1.B.2.a.iii.2	No	Completeness	Category wasn't included in previous inventory 2006-2018. Included in this reporting period. It was not stated as to why it was not previously included. This resulted in a large increase to the emissions.
6	Natural Gas	Natural Gas Processing - Flaring 1.B.2.b.iii.2	Yes	Consistency, Transparency, Accuracy	The source of emission factors used in the previous 2006-2018 inventory could not be verified. The factors were changed to the default factors in the IPCC and a recalculation was conducted. This affected the resulting emissions in that they were lower than previously reported.
7	Natural Gas	Natural Gas Production - Fugitive 1.B.2.b.iii.3	Yes	Consistency, Transparency, Accuracy	The source of emission factors used in the previous 2006-2018 inventory could not be verified. The factors were changed to the default factors in the IPCC and a recalculation was conducted. This affected the resulting emissions in that they were much higher than previously reported.
8	Natural Gas	Natural Gas – Transmission and Storage - Fugitive 1.B.2.b.iii.3	Yes	Consistency, Transparency, Accuracy	The source of emission factors used in the previous 2006-2018 inventory could not be verified. The factors were changed to the default factors in the IPCC and a recalculation was conducted. This affected the resulting emissions in that they were higher than previously reported.
9	Natural Gas	Natural Gas Processing - Venting 1.B.2.b.iii.2	Yes	Consistency, Transparency, Accuracy	The source of the emission factors used in the previous inventory of 2006-2018 could not be verified. Table 4.2.5 of the IPCC guidelines does not include factors for venting during gas processing. The factor used previously for CO ₂ and CH ₄ were edited to the factors utilized in the 2006 IPCC software and the emissions for 2006-2018 were recalculated. This affected the

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory :	Relevant GHG inventory principle	Recalculation
					resulting emissions in that they were than previously reported.

3.7.2.2 IPPU

- New sectors were reported which constitutes an improvement on the previous submission. The sectors were 2A2 lime production, 2A4a Other process uses of carbonates – Ceramics (brick production), 2D1 lubricant use, and 2D2 paraffin wax use.
- Recalculations were conducted where necessary mainly due to the use of incorrect emission factors in the previous inventory (2006-2019) and updated activity data. For example, for nitric acid production the previous calculations for 2006 - 2018 were done using the default factor for Atmospheric pressure plants (low pressure) - 5 kg N₂O/tonne nitric acid. A recalculation was done using the default emission factor for high pressure plants 9 kg N₂O/tonne nitric acid (±40%) as this is the process used by the nitric acid production plant in the country. The default emission factor is for 100% pure acid. The facility produces 60 wt%. A calculation was done for 100 wt%. The activity data previously used (2006 – 2018) were for 60 wt% and not 100 wt%. Hence a recalculation was done for 2006 - 2018. For the iron and steel category, the facility provided a facility specific emission factor which was used in the calculation. A recalculation was done for Direct Reduced Iron (DRI) production. Table 3-7 summarizes all the recalculations that were conducted.

Table 3-7: Recalculations

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory :	Relevant GHG inventory principle	Recalculation
1	2B Chemical Industry	2B1 Ammonia Production	Yes	Accuracy	The data provided by the Ammonia Production facilities indicated that the main process type was convention steam reforming – natural gas which has a carbon content of fuel as 15.3 Kg C/GJ. However, in the previous inventory partial oxidation was used as the main process with a carbon content of fuel value of 21 Kg C/GJ. This resulted in a reduction of CO ₂ emissions.

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory :	Relevant GHG inventory principle	Recalculation
2	2B Chemical Industry	2B2 Nitric Acid Production	Yes	Accuracy	Previous calculations for 2006 - 2018 were done using the default factor for Atmospheric pressure plants (low pressure) - 5 kg N ₂ O/tonne nitric acid. A recalculation was done using the default emission factor for high pressure plants 9 kg N ₂ O/tonne nitric acid (±40%) as this is the process used by the nitric acid production plant in the country. The default emission factor is for 100% pure acid. The facility produces 60 wt%. A calculation was done for 100 wt%. The activity data previously used (2010 – 2018) were for 60 wt% and not 100 wt%. Hence a recalculation was done for 2010 - 2018. The plant began operating in 2010.
3	2B Chemical Industry	2B8 Methanol Production	Yes	Accuracy	Previous calculations done for 2006 - 2018 stated the type of process as Lurgi Conventional - Natural Gas. However, an emission factor of 0.67 was used, which is conventional steam reforming without primary reformer. Based on information received from all methanol production facilities, all facilities have a primary reformer. Hence the Emission Factor was adjusted from conventional steam reforming without primary reformer (0.67) to conventional steam reforming with primary reformer (0.497) and recalculations were done.
4	2C Metal Industry	2C1 Iron and Steel Production	Yes	Accuracy	For DRI production the facility provided a facility specific emission factor which was used in the calculation. A recalculation was done for DRI production. The facility that produced wire rods and billets closed in 2015. Hence only DRI production occurred for 2016 to 2022.
5	2G Other Product	2G1 Electrical Equipment	No	Accuracy	Previous calculations done for 2009-2018 calculated SF ₆ emissions by multiplying the SF ₆ gas used by the

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory :	Relevant GHG inventory principle	Recalculation
	Manufacture and Use				GWP. A recalculation was done using the IPCC 2006 guidelines methodology. Extrapolation was done for the years 2006-2007 and 2021-2022 as data was unavailable.
6	2A Mineral Industry	2A2 lime production	No	Completeness	Category was not included in previous inventory 2006-2018. Included in this reporting period. It was not stated as to why it was not previously included. The plant began operations in 2011.
7	2A Mineral Industry	2A4a Other process uses of carbonates – Ceramics (brick production)	No	Completeness	Category was not included in previous inventory 2006-2018. Included in this reporting period. It was not stated as to why it was not previously included. Extrapolation was done for the years 2014-2006 as data was not available from the facility.
8	2D Non Energy Products from Fuels and Solvent Use	2D1 lubricant use	No	Completeness	Category was not included in previous inventory 2006-2018. Included in this reporting period. It was not stated as to why it was not previously included. Import data for each year was used for consumption data. The Ministry of Trade stated that no imports were recorded for lubricating oil base stock, other lubricating oil, lubricating oils and lubricating greases for 2006 - 2022. There was no data on the use of lubricants in 2 stroke engines. Hence all imported lubricants were assumed to be consumed as motor oil/industrial oils.
9	2D Non Energy Products from Fuels and Solvent Use	2D2 paraffin wax use	No	Completeness	Category was not included in previous inventory 2006-2018. Included in this reporting period. It was not stated as to why it was not previously included.

Several recalculations of the previous inventory (2006-2018) for IPPU were conducted, while compiling the inventories of the additional years for 2019-2022. These recalculations were essential to improve the accuracy and transparency of the inventories. The recalculated inventory

estimated lower emissions than the previous 2006-2018 inventory submitted in the 2021 BUR (Table 3-8).

Table 3-8: Reported Emissions in BUR 2021 vs Recalculated Emissions for BTR1

Year	Reported Emissions for the IPPU Sector in BUR 2021 (Gg CO ₂ e)	Recalculated Emissions for BTR1 (Gg CO ₂ e)
2006	23020.14	17266.09
2007	23174.96	17392.72
2008	21721.89	16223.20
2009	22885.54	17045.63
2010	26145.28	19829.76
2011	25517.89	19451.27
2012	24646.09	18857.72
2013	23812.88	18075.45
2014	23788.01	18099.77
2015	23119.13	17506.52
2016	22077.59	16549.08
2017	22641.14	16974.11
2018	22043.79	16553.37
2019		17161.82
2020		15063.81
2021		15987.74
2022		15185.65

3.7.2.3 AFOLU

Recalculations were conducted where necessary due to the following reasons:

- Activity data being updated since last reported inventory (enteric fermentation, manure management, biomass burning in grassland remaining grassland, urea, Indirect N₂O emissions from manure management);
- Errors in previous estimations due to incorrect global warming potential being used (biomass burning in grassland remaining grassland, biomass burning in forest land remaining forest land, Indirect N₂O emissions from manure management);
- Incorrect emission factor being used (Indirect N₂O emissions from manure management);
- Updated methodology now being used (2006 IPCC guidelines now used for rice cultivation).

Table 3-9 summarizes all the recalculations that were conducted.

Table 3-9: Recalculations

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory	Relevant GHG inventory principle	Recalculation
1	Livestock	3A1 and 3A2 Enteric Fermentation	No for national inventory but key category in AFOLU sector based on	Accuracy	In the previous inventory it was stated emissions from enteric fermentation were quantified largely from activity data

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory	Relevant GHG inventory principle	Recalculation
			previous inventory		gathered from Food and Agriculture Organisation Statistics (FAOSTAT), however in comparing the FAOSTAT datasets to the data reported in the previous inventory, the activity data differs for some years and some species. As such, a recalculation for the previous years of 2006-2018 was conducted utilizing the updated data set. There was very little differences to the resulting emissions.
2	Livestock	3A2 Manure Management	No for national inventory but key category in AFOLU sector based on previous inventory	Accuracy	In the previous inventory it was stated emissions from manure management were quantified largely from activity data gathered from FAOSTAT, however in comparing the FAOSTAT datasets to the data reported in the previous inventory, the activity data differs for some years and some species. As such, a recalculation for the previous years of 2006-2018 was conducted utilizing the updated data set. Manure Management was not included as a sperate category in the previous inventories. As such, there is an increase in the resulting emissions.
3	Aggregate sources and non-CO ₂ emissions sources on land	3C1a Biomass Burning – Forest Land remaining Forest Land	No	Accuracy	The GWP used in previous inventory of 2006-2018 for N ₂ O is 268. This value was corrected to 265 (AR5) and a recalculation conducted. There was very little differences to the resulting emissions.
4	Aggregate sources and	3C1c	No	Accuracy	The GWP used in previous inventory of

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory	Relevant GHG inventory principle	Recalculation
	non-CO ₂ emissions sources on land	Biomass Burning – Grassland remaining Grassland			2006-2018 for N ₂ O is 268. This value was corrected to 265 (AR5) and a recalculation was conducted. As such, there is a slight increase in the resulting emissions.
5	Aggregate sources and non-CO ₂ emissions sources on land	3C1c Biomass Burning – Grassland remaining Grassland	No	Accuracy, Transparency	The data source for the previous inventory is unknown. As such, FAOSTAT estimated data was used. The activity data for past inventory of 2006-2018 was updated and a recalculation was conducted. As such, there is a slight increase in the resulting emissions.
6	Urea Application	3C3 Urea Fertilization	No	Accuracy	The quantity of urea fertilizer for the years 2008 and 2010 were updated by FAOSTAT. These were updated in the inventory and a recalculation of these years conducted. There was very little differences to the resulting emissions.
7	Indirect N ₂ O Emissions from Manure Management	3C6 Indirect N ₂ O from Manure Management	No for national inventory but key category in AFOLU sector based on previous inventory	Accuracy	In the previous inventory it was stated emissions from indirect N ₂ O were quantified largely from activity data gathered from FAOSTAT, however in comparing the FAOSTAT datasets to the data reported in the previous inventory, the activity data differs for some years and some species. As such, a recalculation for the previous years of 2006-2018 was conducted utilizing the updated data set. This resulted in the emissions being much lower than previously reported.
8	Indirect N ₂ O Emissions	3C6	No for national inventory but key category in	Accuracy	The GWP used in previous inventory of 2006-2018 for N ₂ O is 268.

No.	Category sector	Category code and name	Key category in the previous GHG inventory	Relevant GHG inventory principle	Recalculation
	from Manure Management	Indirect N ₂ O from Manure Management	AFOLU sector based on previous inventory		This value was corrected to 265 (AR5) and a recalculation was conducted. This resulted in the emissions being much lower than previously reported.
9	Indirect N ₂ O Emissions from Manure Management	3C6 Indirect N ₂ O from Manure Management	No for national inventory but key category in AFOLU sector based on previous inventory	Accuracy	The emission factor used in previous BUR for volatilization (0.03) could not be verified as this emission factor is not found in the referenced Table 11.3 for volatilization but represents the emission factor for leaching. The emission factor for leaching is 0.01. This was amended in the inventory and a recalculation conducted. This resulted in the emissions being much lower than previously reported.
10	Rice Cultivation	3C7 Rice Cultivation	No	Accuracy	Activity data updated for the year 2018. Estimations in 2006-2018 inventory did not take into consideration the cultivation period of rice. This information was obtained via expert judgement by speaking to a rice farmer. A recalculation was then conducted for the period 2006-2018. This resulted in the emissions being greater than previously reported.

The recalculated inventory estimated that the sink in this sector was greater than the estimates in the previous 2006-2018 inventory submitted in the 2021 BUR (Table 3-10).

Table 3-10: Reported Emissions in BUR 2021 vs Recalculated Emissions for BTR1 for AFOLU Sector

Year	Reported Emissions for BUR 2021 (Gg CO ₂ e)	Recalculated Emissions for BTR1 (Gg CO ₂ e)
2006	-2300.12	-2476.95
2007	-2233.47	-2401.49
2008	-2247.56	-2421.82
2009	-2268.58	-2465.04
2010	-1889.22	-2088.47
2011	-2248.48	-2453.94
2012	-2241.00	-2449.67
2013	-2163.78	-2374.35
2014	-2183.87	-2385.49
2015	-2147.32	-2355.08
2016	-2089.93	-2315.70
2017	-2068.06	-2305.77
2018	-2154.35	-2396.23
2019		-1350.48
2020		-1383.23
2021		-1378.02
2022		-1387.30

3.7.2.4 Waste

- A new sector, 4C1 Waste Incineration, was reported which constitutes an improvement on the previous submission. However, data was only available for 2019-2022.
- Recalculations were conducted due to updated activity data and changes in emission factors. These changes were necessary to improve the accuracy of the inventory. Table 3-11 summarizes all the recalculations that were conducted.

Table 3-11: Recalculations

No.	Category sector	Category code and name	Key category in the previous GHG inventory:	Relevant GHG inventory principle	Recalculation
1	4A Solid Waste Disposal	4A1 Managed Waste Disposal Sites	Yes	Accuracy	The waste management facility for T&T stated that the waste in the country was 100% managed. The Waste Characterization and Centroid Study Report, 2022 was used to determine country specific Municipal Solid Waste (MSW) waste composition data (Food – 24%, Garden- 14%, Paper- 18%, Wood 0%, Textile-14%, Nappies-0% and Plastics, other inert- 30%). Hence a recalculation was done using

No.	Category sector	Category code and name	Key category in the <u>previous</u> GHG inventory:	Relevant GHG inventory principle	Recalculation
					the First Order Decay (FOD) model.
2	4D Wastewater Treatment and Discharge	4D1 Domestic Wastewater Treatment and Discharge	No	Accuracy	<p>The previous inventory (2006-2018) calculated emissions based on a centralized aerobic treatment plant (not well managed. Overloaded). However, the World Health Organisation Sustainable Development Goals (WHO SDG) 2020 Country Estimate on T&T wastewater stated that 73.3% of the population uses septic tanks, hence this type of treatment was assumed for the country and recalculations done.</p> <p>The previous inventory (2006-2018) estimated the nitrogen in the effluent. However, direct emissions need to be estimated only for countries that have predominantly advanced centralized wastewater treatment plants with nitrification and denitrification steps. T&T predominantly uses septic tanks. Hence these emissions were omitted from the inventory.</p>
3	4D Wastewater Treatment and Discharge	4D2 Industrial Wastewater Treatment and Discharge	No	Accuracy	<p>Country specific activity data was used to calculate emissions from pulp and paper industry and alcohol, beer, and starch production. This sector is incomplete as T&T also has meat and poultry processing, organic chemicals production and other food and drink processing. However, activity data for these sectors were not received. Discussions with these facilities are on-going and will be flagged as an area for improvement for the next reporting cycle.</p>

The recalculated inventory estimated lower emissions in this sector compared to the estimates in the previous 2006-2018 inventory submitted in the 2021 BUR (Table 3-12).

Table 3-12: Reported Emissions in BUR 2021 vs Recalculated Emissions for BTR1 for Waste Sector

Year	Reported Emissions for BUR 2021 (Gg CO ₂ e)	Recalculated Emissions for BTR1 (Gg CO ₂ e)
2006	1648.93	1537.24
2007	1737.77	1631.61
2008	1835.60	1746.41
2009	2005.81	1910.41
2010	2041.17	1953.45
2011	2105.83	2022.10
2012	2176.55	2114.89
2013	2263.66	2196.04
2014	2347.38	2278.40
2015	2427.03	2351.14
2016	2433.08	2387.99
2017	2448.82	2391.56
2018	2467.62	2404.59
2019		2447.62
2020		2459.64
2021		2445.60
2022		2481.03

3.7.3 Uncertainty Assessment

Level and trend uncertainty analysis were conducted. This was done using all default factors from the 2006 IPCC Inventory Software (version 2.93) which found a level uncertainty of 1.78 percent and a trend uncertainty of 1.86 percent for the reported inventory. The detailed uncertainty (level and trend) is found in the Technical Annex to this BTR (Annex 1A – KCA and Uncertainty Analysis).

The level and trend uncertainty analysis across the sectors was also conducted for 2022 and is presented in Table 3-13) and Annex 1A. The greatest uncertainty is the IPPU sector, followed by the Energy sector, for both level and trend. This is because of these two sectors being the most predominant sectors in T&T.

3.7.4 Assessment of Completeness

The GHG Inventory was prepared accounting for the key concept of completeness. All mandatory reporting elements and party category in the context of the GHG inventory were included. Additionally, the complete geographic coverage within the scope of the national GHG inventory was accounted for.

Table 3-13: Sectoral Uncertainty Analysis (Level and Trend)

Sector	Base Year emissions or removals (Gg CO ₂ equivalent)	2022 Emissions or Removals (Gg CO ₂ equivalent)	Contribution to Variance by Category in Year T	Percentage Uncertainty in total inventory: Year T (2022)	Uncertainty introduced into the trend in total national emissions (%)	Trend uncertainty
Energy	38792.08	27683.23	0.98	0.99	0.72	0.85
IPPU	16595.87	15185.65	2.20	1.48	2.75	1.66
Agriculture	200.49	268.02	0.00	0.00	0.00	0.00
LULUCF	2756.82	1672.61	0.00	0.00	0.00	0.00
Waste	1537.25	2481.03	0.00	0.00	0.00	0.00
National Total	59882.51	47290.54	3.18	1.78	3.46	1.86

3.8 Energy Sector

The sectoral summary results for energy are presented in Table 3-14. In addition, the general emission trend, based on the sectoral approach can be seen in Figure 3-5. This figure illustrates a gradual increase in energy sector emissions from 40,061 Gg CO₂e in 2006, to 41,819 Gg CO₂e in 2010, followed by a general decrease from 2010 onwards to 27,438 Gg CO₂e in 2022. The emission estimates for the period 2006-2022 can also be seen in Table 3-5. This mirrors the same trend presented earlier for total emissions. This emission trend in energy sector emissions can be mirrored with natural gas usage in the country (Figure 3-6). As such, natural gas usage can be identified as the main driver of emissions within T&T's energy sector.

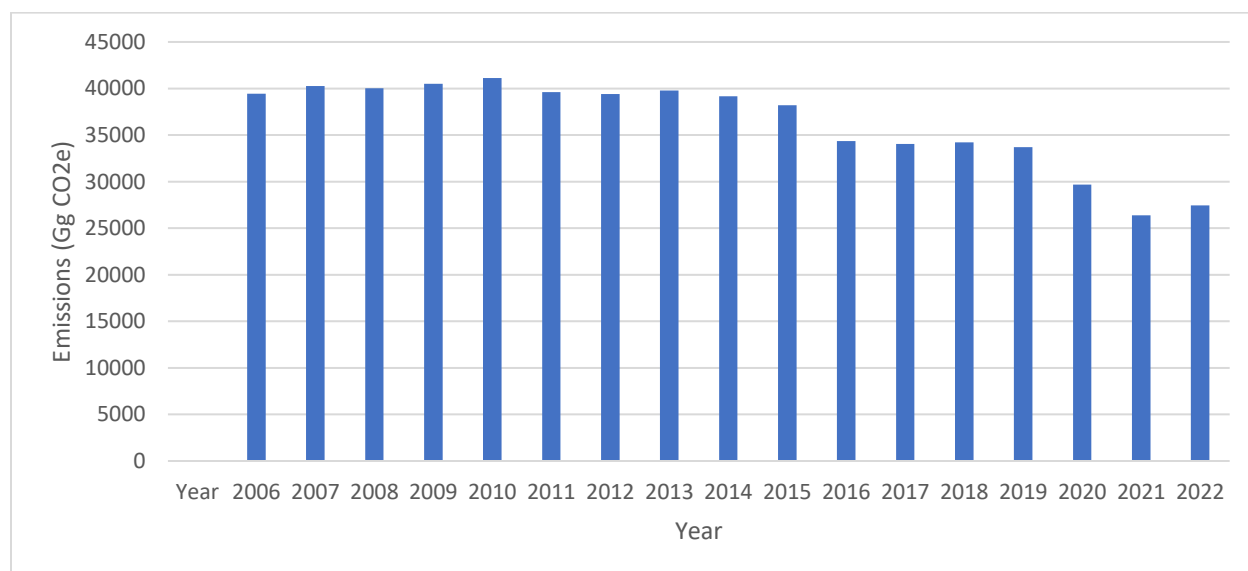


Figure 3-5: Total CO₂e Emissions in T&T's Energy Sector in Gg (2006–2022)

Table 3-14: 2022 Sectoral Summary

Category Code	Sub-Categories	Emissions (Gg)			Emissions (Gg)							Emissions (Gg)
		Net CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NO _x	CO	NMVOCs	SO ₂	CO ₂ e
1	Energy	14,493.07	461.15	0.13				0.00	0.00	0.00	0.00	27438.25
1A	Fuel Combustion Activities	12,387.28	0.87	0.12				0.00	0.00	0.00	0.00	12443.66
1A1	Energy Industries	6,401.88	0.11	0.01				0.00	0.00	0.00	0.00	6,407.89
1A1a	Main Activity Electricity and Heat Production	5,835.92	0.10	0.01				NE	NE	NE	NE	5,841.59
1A1b	Petroleum Refining	NO	NO	NO				NO	NO	NO	NO	NO
1A1c	Manufacture of Solid Fuels and Other Energy Industries	565.96	0.01	0.00115				NE	NE	NE	NE	566.30
1A1cii	Manufacture of Solid Fuels and Other Energy Industries - Gaseous Fuels	543.83	0.01	0.00097				NE	NE	NE	NE	544.10
1A1cii	Manufacture of Solid Fuels and Other Energy Industries - Liquid Fuels	22.13	0.0009	0.00018				NE	NE	NE	NE	22.20
1A2	Manufacturing Industries and Construction	210.76	0.003757	0.000376				NE	NE	NE	NE	210.96
1A3	Transport	2,281.71	0.69	0.10				0.00	0.00	0.00	0.00	2328.48
1A3a	Civil Aviation	17.07	0.00	0.00				NE	NE	NE	NE	17.20
1A3b	Road Transportation	2,022.50	0.66	0.10				NE	NE	NE	NE	2066.76
1A3c	Railways	NO	NO	NO				NO	NO	NO	NO	NO
1A3d	Water-borne Navigation	242.15	0.02	0.01				NE	NE	NE	NE	244.52
1A3e	Other Transportation	IE	IE	IE				NE	NE	NE	NE	IE
1A4	Other Sectors	0.18	0.00	0.00				NE	NE	NE	NE	0.18
1A5	Non-Specified	3,492.75	0.06	0.01				NE	NE	NE	NE	3496.15
1B	Fugitive Emissions from Fuels	2,105.79	460.28	0.00				0.00	0.00	0.00	0.00	14994.59
1B1	Solid Fuels	NO	NO	NO				NO	NO	NO	NO	NO
1B2	Oil and Natural Gas	2,105.79	460.28	0.00				0.00	0.00	0.00	0.00	14994.59
1B2a	Oil	172.14	104.75	0.00				0.00	0.00	0.00	0.00	3105.78
1B2ai	Venting	0.38	2.90	0.00				NE	NE	NE	NE	81.56
1B2aii	Flaring	164.47	0.10	0.00				NE	NE	NE	NE	167.95
1B2aiii	All Other (Fugitive)	7.29	101.75	0.00				NE	NE	NE	NE	2856.27
1B2b	Natural Gas	1,933.65	355.53	0.00				0.00	0.00	0.00	0.00	11888.80
1B2bi	Venting	1,871.32	0.00	0.00				NE	NE	NE	NE	1871.32
1B2bii	Flaring	59.60	0.04	0.00				NE	NE	NE	NE	60.91
1B2biii	All Other (Fugitive)	2.73	355.49	0.00				NE	NE	NE	NE	9956.58
1B3	Other Emissions from Energy Production	NO	NO	NO				NO	NO	NO	NO	NO
1C	Carbon Dioxide Transport and Storage	NO	NO	NO				NO	NO	NO	NO	NO
Memo Items												
International Bunkers												
1.A.3.a.1	International Aviation	214.94	0.00	0.01				NE	NE	NE	NE	216.57
1.A.3.d.1	International Water-Borne Navigation	27.92	0.00	0.00				NE	NE	NE	NE	28.20
1.A.5.c	Multilateral Operations	NE	NE	NE				NE	NE	NE	NE	NE
Information Items												
CO ₂ from Biomass Combustion		NE	NE	NE				NE	NE	NE	NE	NE
CO ₂ from Biomass Combustion Captured		NO	NO	NO				NO	NO	NO	NO	NO
Notation Keys												
NE	Not Estimated											
NO	Not Occurring											
NA	Not Applicable											
IE	Included Elsewhere											
C	Confidential											

Notes:

- Category 1A3e reported as IE as the activity data for the activity is not collected to the level of disaggregation required. The emissions within this category were accounted for under the categories of 1A3b and 1A3d.
- Activities reported as NE occurs within the Party, however data is not available for the quantification of the estimations, as such emissions could not be included for these categories.

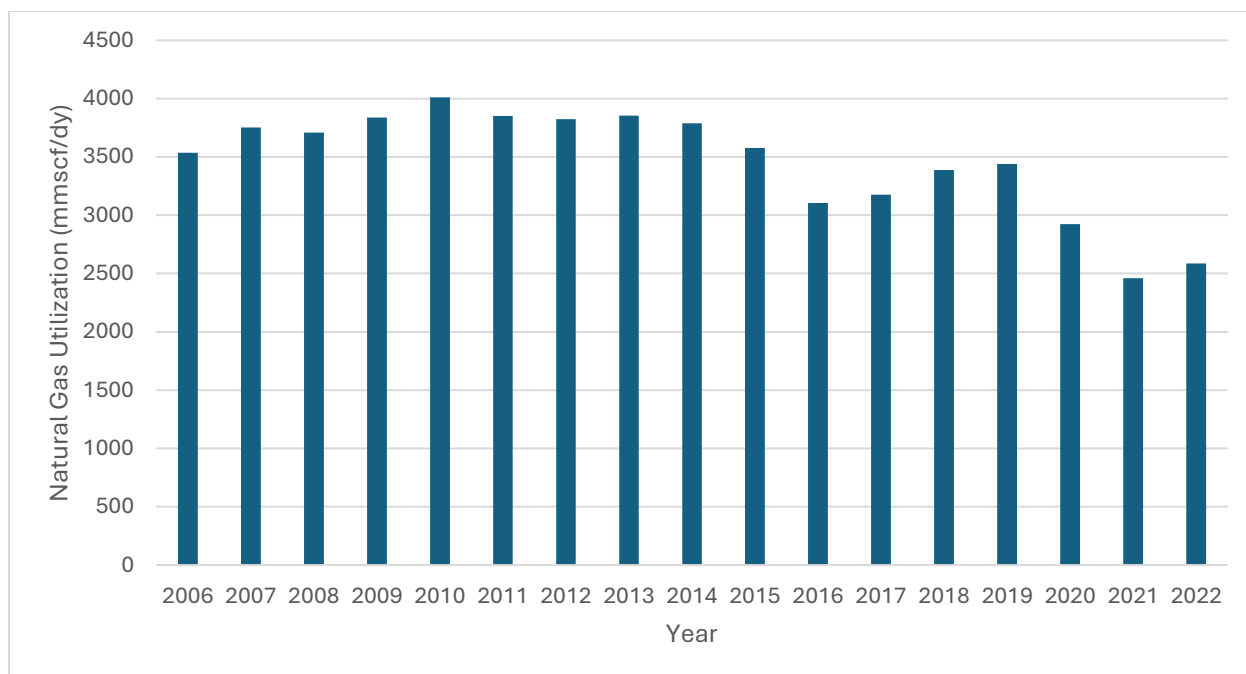


Figure 3-6: Natural Gas Utilization in MMSCF/DY (2006–2022)

For the latest inventory year in this time series (2022), the energy sector sub-categories are shown in Figure 3-7 and a key category analysis is illustrated in Table 3-15. Table 3-15 shows that the key categories are fugitive emissions from natural gas, electricity production, gas processing and fugitive emissions from oil activities. This is comparable to the findings of the key category analysis that was conducted for the inventory year 2018 and submitted in previous BUR (BUR, 2021).

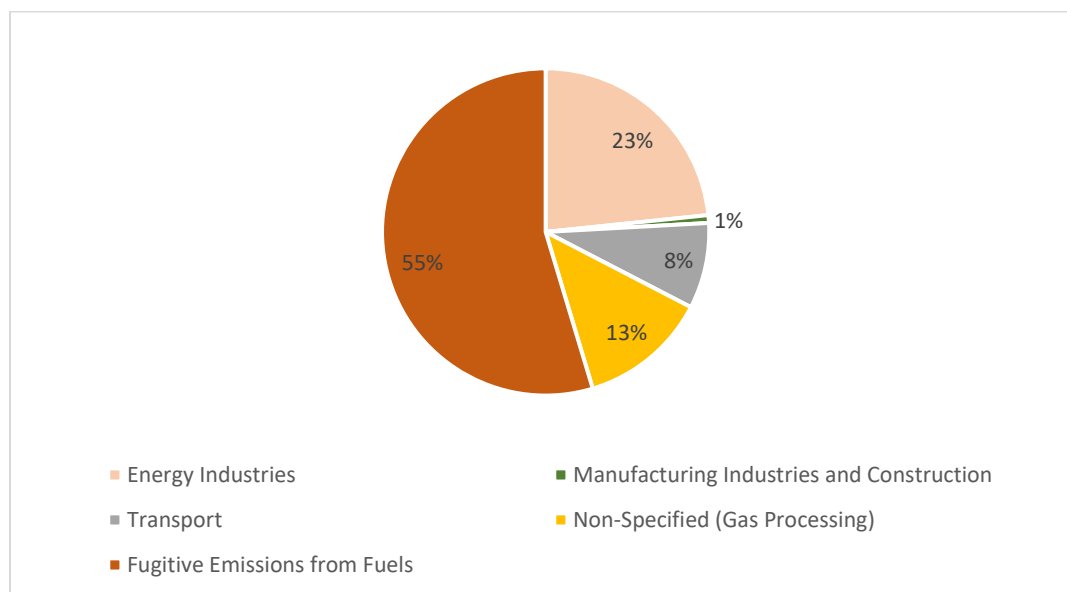


Figure 3-7: Sub-Sectoral Breakdown of T&T's Energy Sector Emissions in Percentage for 2022

Overall, when compared with 2006, the associated emissions in 2022 decreased by 30.45%. International bunkers are reported separately as a memo item.

Table 3-15: Key Category Analysis by Gas (2022)

Category Code	Category	Gas	Emissions (Gg CO ₂ e)	Percentage	Cumulative Percentage
1B2b	Natural Gas	CH ₄	9,954.94	36.2809	36.2809
1A1a	Main Activity Electricity and Heat Production	CO ₂	5,835.92	21.2691	57.5500
1A5	Non-Specified (Gas Processing)	CO ₂	3,492.75	12.7294	70.2794
1B2a	Oil	CH ₄	2,932.96	10.6892	80.9686
1A3b	Road Transportation	CO ₂	2,022.50	7.3710	88.3396
1B2b	Natural Gas	CO ₂	1,933.65	7.0472	95.3868
1A1c	Manufacture of Solid Fuels and Other Energy Industries - Gaseous Fuels	CO ₂	543.83	1.9820	97.3688
1A3d	Water-borne Navigation	CO ₂	242.15	0.8825	98.2513
1A2	Manufacturing Industries and Construction	CO ₂	210.76	0.7681	99.0194
1B2a	Oil	CO ₂	172.14	0.6274	99.6468
1A3b	Road Transportation	N ₂ O	25.68	0.0936	99.7404
1A1c	Manufacture of Solid Fuels and Other Energy Industries - Liquid Fuels	CO ₂	22.13	0.0807	99.8210
1A3b	Road Transportation	CH ₄	18.58	0.0677	99.8888
1A3a	Civil Aviation	CO ₂	17.07	0.0622	99.9510
1A1a	Main Activity Electricity and Heat Production	CH ₄	2.91	0.0106	99.9616
1A1a	Main Activity Electricity and Heat Production	N ₂ O	2.76	0.0100	99.9716
1A5	Non-Specified (Gas Processing)	CH ₄	1.74	0.0064	99.9780
1A3d	Water-borne Navigation	N ₂ O	1.73	0.0063	99.9843
1A5	Non-Specified (Gas Processing)	N ₂ O	1.65	0.0060	99.9903
1B2a	Oil	N ₂ O	0.68	0.0025	99.9928
1A3d	Water-borne Navigation	CH ₄	0.64	0.0023	99.9951
1A1c	Manufacture of Solid Fuels and Other Energy Industries - Gaseous Fuels	CH ₄	0.27	0.0010	99.9961

Category Code	Category	Gas	Emissions (Gg CO ₂ e)	Percentage	Cumulative Percentage
1A1c	Manufacture of Solid Fuels and Other Energy Industries - Gaseous Fuels	N ₂ O	0.26	0.0009	99.9971
1B2b	Natural Gas	N ₂ O	0.22	0.0008	99.9979
1A4	Other Sectors	CO ₂	0.18	0.0007	99.9985
1A3a	Civil Aviation	N ₂ O	0.13	0.0005	99.9990
1A2	Manufacturing Industries and Construction	CH ₄	0.11	0.0004	99.9994
1A2	Manufacturing Industries and Construction	N ₂ O	0.10	0.0004	99.9997
1A1c	Manufacture of Solid Fuels and Other Energy Industries - Liquid Fuels	N ₂ O	0.05	0.0002	99.9999
1A1c	Manufacture of Solid Fuels and Other Energy Industries - Liquid Fuels	CH ₄	0.03	0.0001	100.0000
1A3a	Civil Aviation	CH ₄	0.00	0.0000	100.0000
1A4	Other Sectors	CH ₄	0.00	0.0000	100.0000
1A4	Other Sectors	N ₂ O	0.00	0.0000	100.0000
Total			27,438.50	100	1.000E+02

Comparison of Sectoral Approach and Reference Approach

For this inventory period, a comparison of the emissions data from the Reference Approach and Sectoral Approach, was conducted, for the year 2022. However, the margin of error was very large. The CO₂ emissions via the sectoral approach were 12,387 Gg while that of the reference approach was 3,254 Gg, a difference of 9,134 Gg. While data on the energy balances for the period 2019-2022 was provided by the relevant Ministry, the datasets were incomplete. There are large differences between the energy supply and the energy consumption in the basic energy data. Additionally, there is missing information on stock changes. The entity with the responsibility of compiling the national energy balances has indicated that information on the opening and closing inventories have not been provided for the additional years included in this reporting. errors were observed especially for natural gas and liquefied petroleum gas. The quantity of natural gas consumed for energy and non-energy uses (excluded) was greater than the natural gas available from production after export. This resulted in a large discrepancy. The lack of data for stock changes would also affect other fuels in the reference approach.

As a result, there are accuracy concerns as the estimated emissions derived from the sectoral and reference approaches are not similar, which can compromise not only the accuracy of the energy inventory but the national inventory. Improvement of data collection for the national energy

balance is needed. This is further detailed in Chapter 8. The estimation utilizing the reference approach is included in the Technical Annex (Annex 1B).

Key Assumptions and Guiding Statements (Energy Sector)

The following guiding statements and assumptions were applied in estimating the results for the energy sector. The detailed estimation spreadsheet for the energy sector, which includes all activity data, emission factors, tier 1 methodology of the 2006 IPCC guidelines, estimations and data sources, can be found in the Technical Annex (Annex1B) to this report.

1. For the reference approach, data from the energy balance of T&T, prepared by the relevant Ministry, was utilized. The only fuel type for which excluded carbon had to be estimated, was for natural gas (dry) and in estimating this, the natural gas quantity used as feedstock and non-energy use would have been accounted for in the energy inventory.
2. Since fuel densities can vary based on compositions, temperatures and pressures, the fuel density values used were based on average values at normal room temperature and pressure.
3. For associated emissions with respect to stationary combustion, the following applied:
 - Since country-specific emission factors were not available, the associated default factors were applied using the Tier 1 approach (whether key category or not). The resources and timeframe needed to develop the country-specific emission factors for the key categories have not been evaluated at this time due to a lack of capacity.
 - Auto-generation was included in the inventory.
 - Since data were not disaggregated for the sub-categories under manufacturing and construction (1A2a to 1A2i), these related emissions were “Included Elsewhere (IE)” as applicable. Available data reported under this sub-category was included in “non-specified industry” (1A2m).
 - Activity data were acquired through primary data collection in units of volume either through national statistics and where available stakeholder data (other energy industries - auto generation).
 - As there is no designated category for gas processing, the data was included under non-specified stationary.
4. For associated emissions with respect to mobile combustion, the following applied:
 - Since country-specific emission factors were not available, associated default factors were applied using the Tier 1 approach (whether key category or not). The resources and timeframe needed to develop the country-specific emission factors for the key categories have not been evaluated at this time due to a lack of capacity.
 - Only fuel sales activity data were available, and these were acquired through primary data collection in units of volume.
 - Since fuel sales data were not disaggregated within categories, the reported values under road transportation all include off-road, agriculture and military as part of transport emissions.
 - Fuel blending (diesel oil with kerosene) was integrated into these estimations. The emissions were conducted assuming the activity data as kerosene and with the 2006 IPCC guidelines emission factor for kerosene fuel.
 - Gasoline vehicles were assumed to be low mileage and light duty, as categorization data were not readily available for motor gasoline.
 - Diesel road vehicles were assumed to be heavy duty diesel trucks as categorization data were not readily available for diesel.
5. Data for residential (LPG Cooking Gas) was included in the inventory and the following were applied:

- Since country-specific emission factors were not available, associated default factors were applied using the Tier 1 approach. A tier 1 approach was considered suitable as this is not a key category.
 - Activity data were acquired through primary data collection in units of volume through national statistics.
 - Data gap for the year 2021, were filled through interpolation, as no activity data was available. The average of the activity data for 2020 and 2022, was used for the activity data for 2021. There was no steady trend in the activity data over the years (Section 3.12).
6. For associated emissions with respect to fugitive emissions, the following were applied:
- Since country-specific emission factors were not known, IPCC defaults (average limits for developing countries) were used. The resources and timeframe needed to develop the country-specific emission factors for the key categories have not been evaluated at this time due to a lack of capacity.
 - Activity data was acquired through primary data collection in units of volume through national statistics.
 - It was stated in the previous BUR that the lowest limit of the emission factors was used. This was observed to be the case for natural gas activities. However, IPCC guidance is that the averages be used. As such the emission factors were corrected to the averages and the estimates recalculated for natural gas activities.
 - For oil related activities, while venting and flaring emissions were estimated for oil production, fugitives were not estimated in the previous inventory period of 2006-2018. As such, fugitive emissions during oil production were estimated and included in this inventory for 2006-2022. These are transport (1.B.2.a.iii.3) and production (1.B.2.a.iii.2). These were estimated utilizing national statistics on quantity of crude oil and condensate produced. The estimations are included in the Technical Annex (Annex 1B) to this report.

3.9 IPPU Sector

The sectoral summary for T&T's IPPU sector is presented in Table 3-16 while Figure 3-8 illustrates the associated emissions and trends for this sector over the inventory period. The emission estimates for the period 2006-2022 can also be seen in Table 3-8. As with total emissions and energy sector emissions, this sector also appears to be driven by natural gas consumption, owing to the intensities of the ammonia and methanol-related emissions which, together, account for over 85 percent of sectoral emissions. Figure 3-8 illustrates a gradual increase in the IPPU sector emissions from 17,266.09 Gg CO₂e in 2006, to 19,829.76 Gg CO₂e in 2010, followed by a general decrease from 2010 onwards to 15,185.65 Gg CO₂e in 2022. To further exemplify this, a detailed breakdown of this sector is presented in Figure 3-9, followed by a key sub-category analysis in Table 3-17 with the key sub-categories, all natural gas-based, shown in red.

Table 3-16: Sectoral Summary (2022)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	HFCs ⁽¹⁾	PFCs ⁽¹⁾	Unspecified mix of HFCs and PFCs ⁽¹⁾	SF ₆	NF ₃	NO _x	CO	NM VOC	SO _x	Total GHG emissions ⁽²⁾
	(kt)	(kt)	(kt)	CO ₂ -equivalent (kt) ⁽³⁾						(kt)			CO ₂ equivalents (kt) ⁽³⁾
2. Total industrial processes	13683.26	14.10	4.16	2.64	NO,NE	NO,NE,IE	0.00	NO,NE	NO,NE	NO,NE	NO,NE	NO,NE	13704.17
2.A. Mineral industry	331.72								NE	NE	NE	NE	331.72
2.A.1. Cement production	308.91											NE	308.91
2.A.2. Lime production	5.40												5.40
2.A.3. Glass production	10.54												10.54
2.A.4. Other process uses of carbonates	6.87								NE	NE	NE	NE	6.87
2.B. Chemical industry	12602.57	12.64	4.16	0.00	0.00	0.00	0.00	0.00	NO,NE	NO,NE	NO,NE	NO,NE	14058.34
2.B.1. Ammonia production	9872.11	NE	NE						NE	NE	NE	NE	9872.11
2.B.2. Nitric acid production			4.16						NE				1101.96
2.B.3. Adipic acid production	NO		NO						NO	NO	NO		NO
2.B.4. Caprolactam, glycol and glyoxylic acid production	NO		NO								NO	NO	NO
2.B.5. Carbide production	NO	NO							NO	NO	NO	NO	NO
2.B.6. Titanium dioxide production	NO												NO
2.B.7. Soda ash production	NO												NO
2.B.8. Petrochemical and carbon black production	2730.47	12.64							NE	NE	NE	NE	3084.27
2.B.9. Fluorochemical production				NO	NO	NO	NO	NO					NO
2.B.10. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2.C. Metal industry	748.76	1.47	0.00	NO	NO	NO	NO	0.00	NO,NE	NO,NE	NO,NE	NO,NE	789.87
2.C.1. Iron and steel production	748.76	1.47							NE	NE	NE	NE	789.87
2.C.2. Ferroalloys production	NO	NO							NO	NO	NO	NO	NO
2.C.3. Aluminium production	NO				NO		NO		NO	NO	NO	NO	NO
2.C.4. Magnesium production	NO			NO	NO	NO	NO		NO	NO	NO	NO	NO
2.C.5. Lead production	NO								NO	NO	NO	NO	NO
2.C.6. Zinc production	NO								NO	NO	NO	NO	NO
2.C.7. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2.D. Non-energy products from fuels and solvent use⁽⁴⁾	0.22	0.00	0.00						NE,NO	NE,NO	NE,NO	NE,NO	0.22
2.D.1. Lubricant use	0.05	NE	NE						NE	NE	NE	NE	0.05
2.D.2. Paraffin wax use	0.17	NE	NE						NE	NE	NE	NE	0.17
2.D.3. Other	NO	NO	NO						NO	NO	NO	NO	NO
2.E. Electronics industry			0.00	NO	NO	NO	NO	NO					NO
2.E.1. Integrated circuit or semiconductor			NO	NO	NO	NO	NO	NO					NO
2.E.2. TFT flat panel display			NO	NO	NO	NO	NO	NO					NO
2.E.3. Photovoltaics				NO	NO	NO	NO	NO					NO
2.E.4. Heat transfer fluid				NO	NO	NO	NO	NO					NO
2.E.5. Other			NO	NO	NO	NO	NO	NO					NO
2.F. Product uses as substitutes for ODS				2.64	NE	NE	NE	NE					2.64
2.F.1. Refrigeration and air conditioning				2.64	NE	IE	NE	NE					2.64
2.F.2. Foam blowing agents				IE	NE	NE	NE	NE					IE
2.F.3. Fire protection				IE	NE	NE	NE	NE					IE
2.F.4. Aerosols				IE	NE	NE	NE	NE					IE
2.F.5. Solvents				IE	NE	NE	NE	NE					IE
2.F.6. Other applications				IE	NE	NE	NE	NE					IE
2.G. Other product manufacture and use	0.00	0.00	0.00	NE	NE	NE	0.00	NE	0.00	0.00	0.00	0.00	2.87
2.G.1. Electrical equipment				NE	NE	NE	0.00	NE					2.87
2.G.2. SF ₆ and PFCs from other product use					NE		NE						NE
2.G.3. N ₂ O from product uses			NE										NE
2.G.4. Other													
2.H. Other (please specify)⁽⁵⁾													

Notation Keys
NE - Not Estimated
NO - Not Occurring
IE - Included Elsewhere

Notes:

1. Category 2.F.2 to 2.F.6 reported as IE as the activity data for these sub-categories is not available to the level of disaggregation required. The emissions within this category were accounted for under the category 2.F.1.
2. Activities reported as NE occurs within the Party, however data is not available for the quantification of the estimations, as such emissions could not be included for these categories.

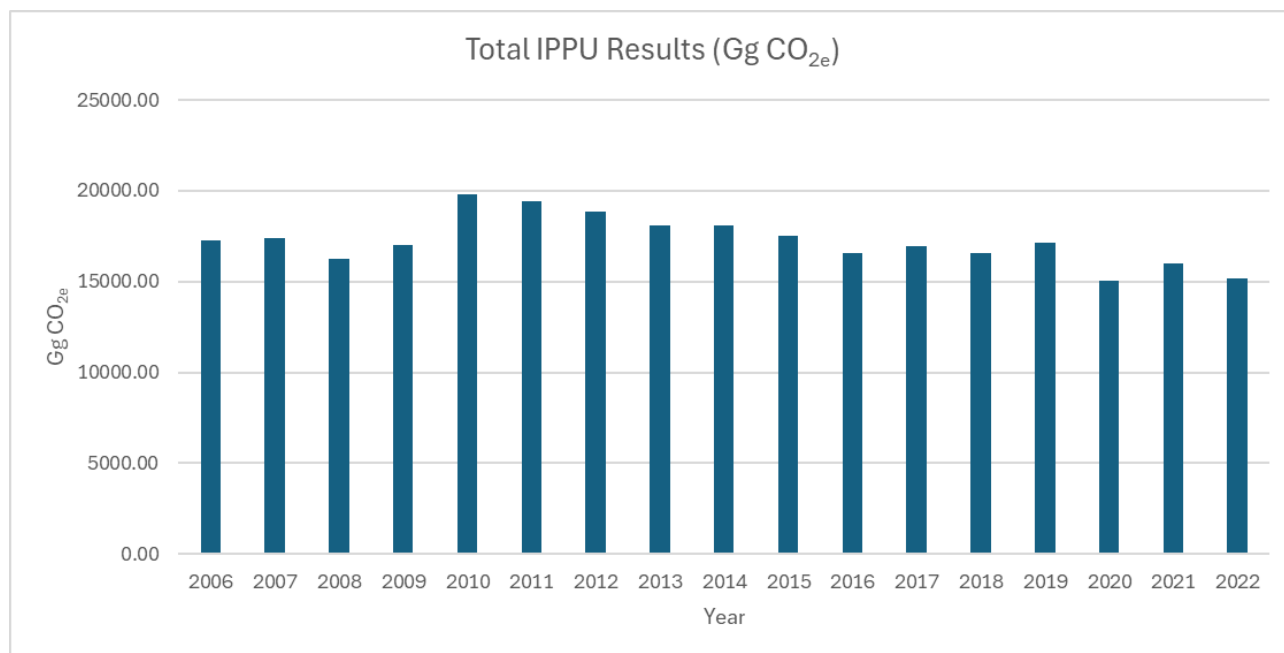


Figure 3-8: Total Gg CO_{2e} Emissions in T&T's IPPU Sector (2006-2022)

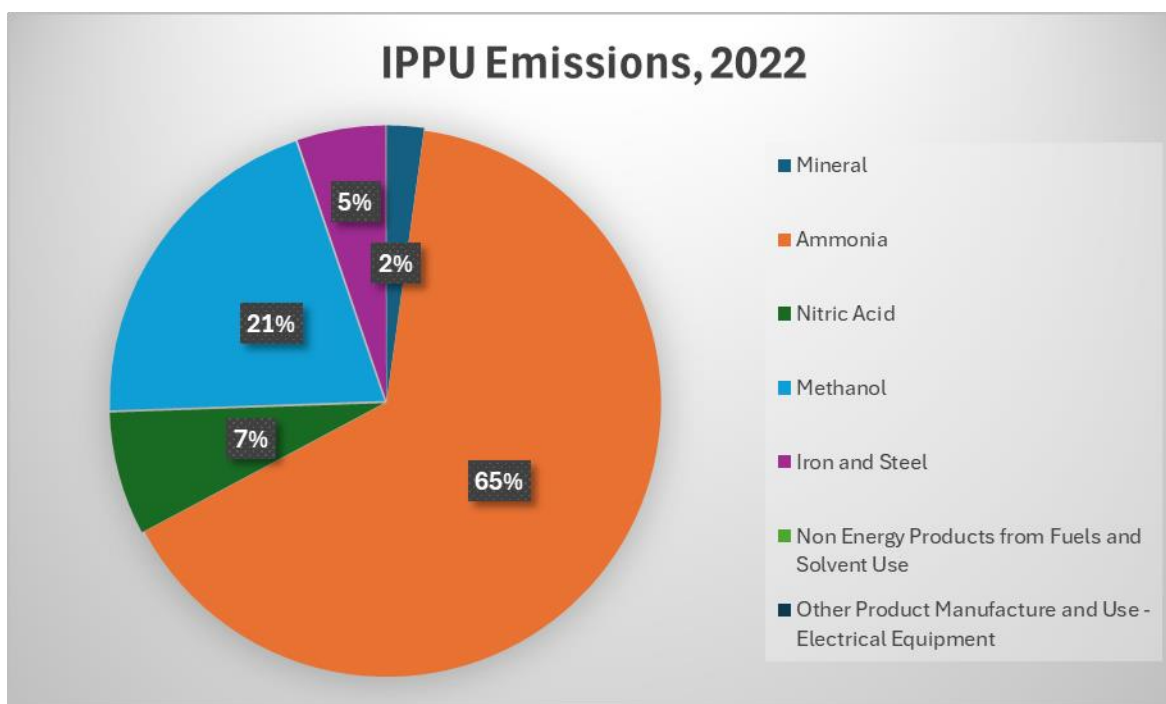


Figure 3-9: Sub-sectoral Breakdown of T&T's IPPU Sector Emissions (%), 2022

Table 3-17: Key Category Analysis for IPPU Sector by Gas (2022)

IPCC Category	Gas	Emissions (Gg CO ₂ e)	Percentage	Cumulative Percentage
2B1 Ammonia Production	CO ₂	9872.11	65.022	65.022
2B8 Petrochemical and Carbon Black Production (Methanol)	CO ₂	2730.47	17.984	83.006
2B2 Nitric Acid Production	N ₂ O	1101.96	7.258	90.264
2C1 Iron and Steel Production	CO ₂	748.76	4.932	95.195
2B8 Petrochemical and Carbon Black Production (Methanol)	CH ₄	353.81	2.330	97.526
2A1 Cement Production	CO ₂	308.909	2.035	99.560
2C1 Iron and Steel Production	CH ₄	41.11	0.271	99.831
2A3 Glass Production	CO ₂	10.538	0.069	99.900
2A4 Other Process Uses of Carbonates (ceramics - bricks)	CO ₂	6.871	0.045	99.946
2A2 Lime Production	CO ₂	5.400	0.036	99.981
2F Product Uses as Substitutes for Ozone	HFCs	2.62	0.017	99.998
2D2 Paraffin Wax Use	CO ₂	0.17	0.001	100.000
2D1 Lubricant Use	CO ₂	0.05	0.000	100.000
2G Other Product Manufacture and Use	SF ₆	0.02	0.000	100.000
Total		15182.78	100.000	

3.9.1 Key Assumptions and Guiding Statements

The following guiding statements and assumptions were applied in estimating the results for the IPPU sector. The detailed estimation spreadsheet for the IPPU, which includes all activity data, emission factors, methodologies of the 2006 IPCC guidelines, estimations and data sources, can be found in the Technical Annex (Annex1C) to this report. Where data was not available, extrapolation was used to fill the data gaps. The details of the application of this technique and the categories to which it was applied are discussed in Section 3.12.

- Cement production: Cement production data and clinker production data was provided by the facility (only one facility produces cement in T&T). A Tier 2 level of estimation was applied, using clinker production data and a default emission factor.
- Lime production: Lime production data was provided by the facility that produces lime in T&T. The facility began operations in 2011. A Tier 1 level of estimation was applied.
- Glass production: There is only one glass processing facility in T&T, who provided total glass production for the years 2011-2022. A Tier 1 level of estimation was applied.

- Other process uses and product use – Ceramics (production of clay bricks): There is only one facility that manufactures clay bricks in T&T. Data was provided for the period 2015-2022. A Tier 1 level of estimation was applied.
- Ammonia production: Data was collected from ammonia production facilities. A Tier 2 level of estimation was used with a country-specific emission factor. The emission factor was calculated based on the natural gas utilization data provided by the MEEI for ammonia production. Ammonia production data was also provided by facilities and compared to the data provided by MEEI.
- Nitric acid production: Nitric acid production data was provided by the production facility. A Tier 1 level of estimation was applied. The facility began operations in 2010. Hence data for 2010- 2022 was provided.
- Methanol production: Data was provided by all methanol producing facilities in T&T and compared to national statistics from the MEEI. A Tier 1 level of estimation was used with default emission factors. As this is a key category, improvements to developing emission factors has been discussed in the improvement plan (Chapter 8), allowing for a Tier 2 approach.
- Iron and steel production: During the period 2006 -2015 there were two manufacturing facilities in T&T. However, one manufacturing facility ceased operations in 2015. Data for this inventory cycle was provided by the existing facility. A Tier 1 level of estimation was done using a facility specific emission factor. As this is a key category, improvements to data collection has been discussed in the improvement plan (Chapter 8), allowing for a Tier 2 approach.
- Non-energy products from fuel and solvent use: Import data was obtained from the Ministry of Trade. A Tier 1 level of estimation was done.
- Products uses as substitutes for Ozone Depleting Substances (ODS): Import data was obtained from the MPD's Ozone Unit. A Tier 1 level of estimation was done.
- Other product manufacture and use: Data was obtained from the T&TEC. A Tier 1 level of estimation was done.

3.10 AFOLU Sector

The AFOLU sector is discussed under the following three sections:

- Agriculture Only
- LULUCF Only
- Combined - Agriculture with LULUCF

3.10.1 Agriculture

The 2022 sectoral summary is presented in Table 3-18 and the trends in emissions for T&T's Agriculture sector by category over the time horizon are presented in Figure 3-10. From this, we can see that enteric fermentation and manure management are the larger contributors to emissions in this sector. Figure 3-11 shows that there is a steady subtle increase in the emissions from the agriculture sector. Leveling off at certain periods, over the reporting period, with a peak in 2008. The emissions over the period ranges from 204.40 to 269.51 Gg CO₂e. A related key category analysis (by sub-category and gas) is presented in Table 3-19 with the key categories shown in red. The detailed estimation spreadsheet for the agriculture sector, which includes all activity data, emission factors, tier 1 methodology of the 2006 IPCC guidelines, estimations and data sources, can be found in the Technical Annex (Annex1D) to this report.

Table 3-18: Agriculture Sectoral Summary (2022)

Sub-Categories	Emissions (Gg)			Emissions (Gg)							Emissions (Gg)
	Net CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NOx	CO	NMVOCs	SO ₂	CO ₂ e
Agriculture, Forestry and Other Land Use - AGRICULTURE ONLY	33.90	3.90	0.47	NE	NE	NE	NE	NE	NE	NE	268.04
Livestock		3.86	0.40								212.95
Methane Emissions from Enteric Fermentation and Manure Management		3.86					NE	NE	NE	NE	108.03
Manure Management - Direct N ₂ O Emissions from Manure Management Systems			0.40				NE	NE	NE	NE	104.92
Liming	NE	NE	NE				NE	NE	NE	NE	NE
Urea Application	33.90						NE	NE	NE	NE	33.90
Direct N ₂ O Emissions from Managed Soils	NE	NE	NE				NE	NE	NE	NE	NE
Indirect N ₂ O Emissions from Managed Soils	NE	NE	NE				NE	NE	NE	NE	NE
Indirect N ₂ O Emissions from Manure Management			0.076				NE	NE	NE	NE	20.07
Rice Cultivation		0.04					NE	NE	NE	NE	1.12
Not Estimated											
Not Occurring											
Not Applicable											
Included Elsewhere											
Confidential											

Notes:

- Activities reported as NE occurs within the Party, however data is not available for the quantification of the estimations, as such emissions could not be included for these categories.

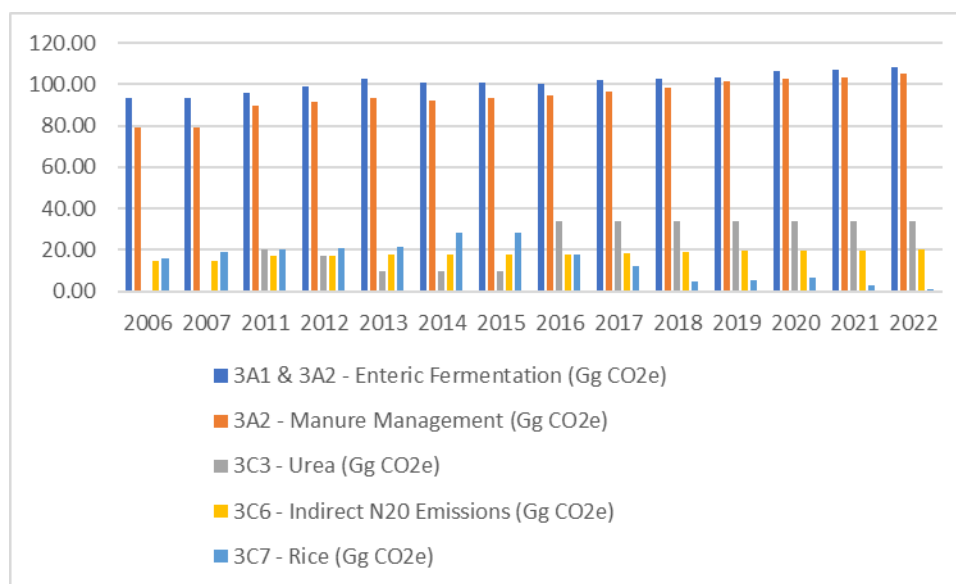


Figure 3-10: Total Gg CO₂e Emissions in T&T's Agriculture Sector by Category (2006-2022)

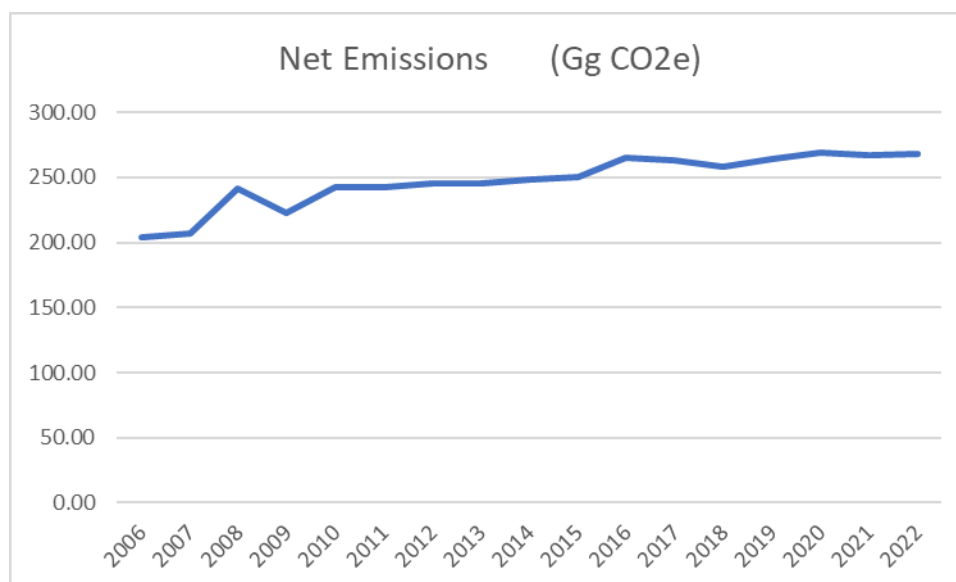


Figure 3-11: Total Gg CO₂e Emissions in T&T's Agriculture Sector (2006-2022)

Table 3-19: Key Category Analysis for Agriculture Sector (2022)

Category Code	Sub-categories	Gas	TOTAL (Gg CO ₂ e)	Percentage (%)	Cumulative %
3A2	Manure Management	N ₂ O	104.92	39.14	39.14
3A1	Enteric Emissions	CH ₄	81.54	30.42	69.56
3C3	Urea Fertilization	CO ₂	33.90	12.65	82.21
3A2	Manure Management	CH ₄	26.49	9.88	92.09
3C6	Indirect N ₂ O Emissions	N ₂ O	20.07	7.49	99.58
3C7	Rice	CH ₄	1.12	0.42	100.00
TOTAL			268.04	100.00	100.00

3.10.2 LULUCF

The 2022 sectoral summary is presented in Table 3-20 and the trends in emissions for T&T's LULUCF sector by category over the time horizon are presented in Figure 3-12. From this, we can see that this sector is a net sink owing to the large contribution of the forestland biomass sub-category. Figure 3-13 shows that between 2018 and 2019, there was a drastic decrease in this sector with respect to net emissions (removals) from -2654.80 (2018) to -1614.50 (2019) Gg CO₂e, then maintaining a steady level to 2022 with -1655.34 Gg CO₂e. 2018 and the years prior shows a fairly consistent quantity of net emissions (removals) with a peak in 2010. It may be feasible to assume that the drastic change from 2019 onwards, is due to the different activity data source for the forestland remaining forestland category and the level of disaggregation of the sub-category of forest types. Data was not available from the Forestry Division and as such, data from FAO was used to fill the data gaps for the period. While the forest area activity data appeared comparable, the FAO dataset was not disaggregated as the previous datasets from the Forestry Division. In applying the methodologies for the estimates, the average annual above-ground biomass growth applied for 2018-2022 would have assumed plantation or natural conserved whereas the previous years also included natural private which has a larger average annual above-ground biomass growth. This resulted in emission changes from a trend outlook. Data

collection needs to be prioritized as an area for improvement as utilizing a different datasource for the 2019-2022 period can potentially influence the accuracy of the sectoral emissions as well as the national totals, due to an underestimation. Improvement to data collection has been discussed in Chapter 8.

A related key category analysis (by sub-category and gas) is presented in Table 3-21 with the key categories shown in red. The detailed estimation spreadsheet for the LULUCF sector, which includes all activity data, emission factors, tier 1 methodology of the 2006 IPCC guidelines, estimations and data sources, can be found in the Technical Annex (Annex1E) to this report.

Table 3-20: LULUCF Sectoral Summary (2022)

Category Code	Sub-Categories	Emissions (Gg)			Emissions (Gg)							Emissions (Gg)
		Net CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NO _x	CO	NMVOCs	SO ₂	CO ₂ e
3	Agriculture, Forestry and Other Land Use - LULUCF Only	-1663.97	0.24	0.01	NE	NE	NE	NE	NE	NE	NE	-1655.34
3B	Land											
3B1	Forest Land											
3B1a	Forest Land remaining Forest Land	-1663.97						NE	NE	NE	NE	-1663.97
3B1b	Land Converted to Forest Land	NE	NE	NE				NE	NE	NE	NE	NE
3B2	Cropland											
3B2a	Cropland Remaining Cropland	NE	NE	NE				NE	NE	NE	NE	NE
3B2b	Land Converted to Cropland	NE	NE	NE				NE	NE	NE	NE	NE
3B3	Grassland											
3B3a	Grassland Remaining Grassland	NE	NE	NE				NE	NE	NE	NE	NE
3B3b	Land Converted to Grassland	NE	NE	NE				NE	NE	NE	NE	NE
3B4	Wetlands											
3B4a	Wetlands Remaining Wetlands	NO	NO	NO				NE	NE	NE	NE	NE
3B4b	Land Converted to Wetlands	NO	NO	NO				NE	NE	NE	NE	NE
3B5	Settlements											
3B5a	Settlements Remaining Settlements	NE	NE	NE				NE	NE	NE	NE	NE
3B5b	Land Converted to Settlements	NE	NE	NE				NE	NE	NE	NE	NE
3B6	Other Land											
3B6a	Other Land Remaining Other Land	NE	NE	NE				NE	NE	NE	NE	NE
3B6b	Land Converted to Other Land	NE	NE	NE				NE	NE	NE	NE	NE
3C	Aggregate sources and non-CO₂ emissions sources on land											
3C1a	Emissions from Biomass Burning in Forest Land		0.24	0.007				NE	NE	NE	NE	8.64
3C1b	Emissions from Biomass Burning in Cropland	NE	NE	NE				NE	NE	NE	NE	NE
3C1c	Emissions from Biomass Burning in Grassland		0.00	0.00				NE	NE	NE	NE	0.00
3C1d	Emissions from Biomass Burning in Other Land	NE	NE	NE				NE	NE	NE	NE	NE
Notation Keys												
NE	Not Estimated											
NO	Not Occurring											
NA	Not Applicable											
IE	Included Elsewhere											
C	Confidential											

Notes:

- Activities reported as NE occurs within the Party, however data is not available for the quantification of the estimations, as such emissions could not be included for these categories.

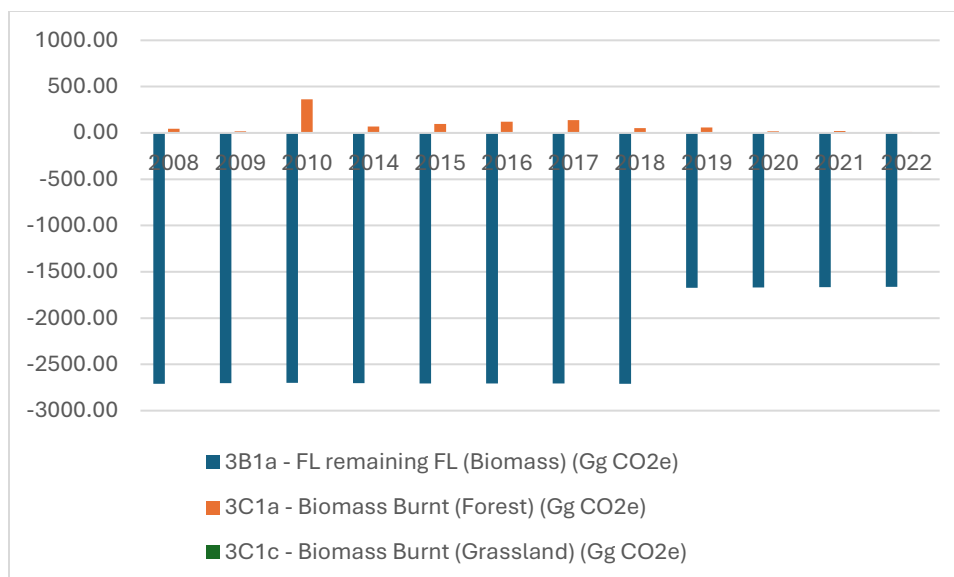


Figure 3-12: Total Gg CO₂e Emissions in T&T's LULUCF Sector by Category (2006-2022)

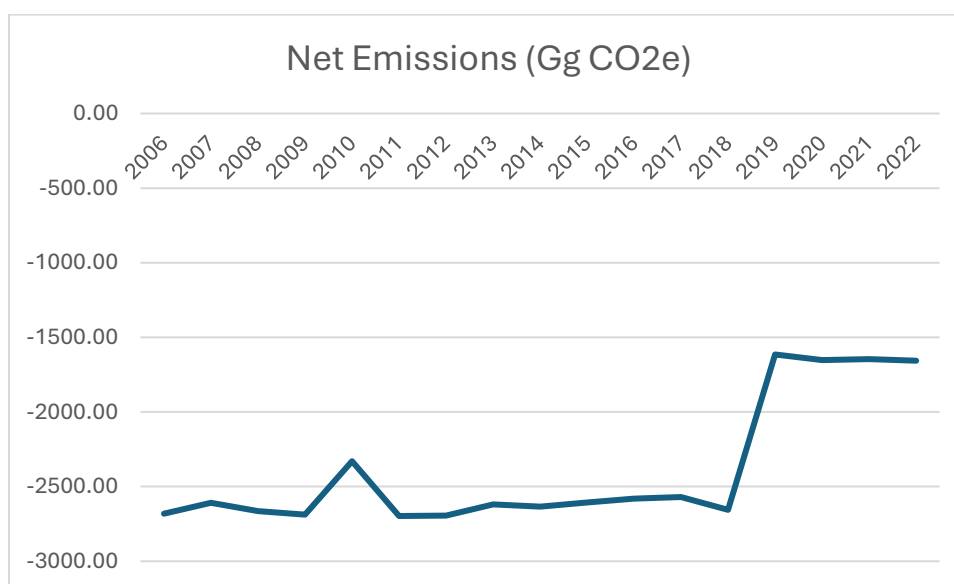


Figure 3-13: Total Gg CO₂e Emissions in T&T's LULUCF Sector (2006-2022)

Table 3-21: Key Category Analysis for LULUCF Sector (2022)

Category Code	Sub-categories	Gas	TOTAL (Gg CO ₂ e)	Percentage (%)	Cumulative %
3B1a	FL remaining FL (Biomass)	CO₂	1663.97	99.48	99.48
3C1a	Biomass Burnt (Forest)	CH ₄	6.76	0.40	0.40
3C1a	Biomass Burnt (Forest)	N ₂ O	1.88	0.11	0.11
3C1c	Biomass Burnt (Grassland)	CH ₄	0.00	0.00	0.00
3C1c	Biomass Burnt (Grassland)	N ₂ O	0.00	0.00	0.00
	TOTAL		1672.61	100.00	0.00

3.10.3 Combined Agriculture and LULUCF - AFOLU

The 2022 sectoral summary is presented in Table 3-22 and the trends in emissions for T&T's AFOLU sector over the time horizon are presented in Figure 3-14. From this, this sector is a net sink owing to the large contribution of the forestland biomass sub-category. A related key category analysis (by sub-category and gas) is presented in Table 3-23 with the key categories shown in red. Other key categories include enteric fermentation and manure management. The emission estimates for the AFOLU sector for the period 2006-2022 can also be seen in Table 3-10. The detailed estimation spreadsheet for the AFOLU sector, which includes all activity data, emission factors, tier 1 methodology of the 2006 IPCC guidelines, estimations and data sources, can be found in the Technical Annex (Annex1F) to this report.

Figure 3-15 shows a similar trend to LULUCF (Figure 3-13), which is expected due to the explanation provided for LULUCF. Data collection needs to be prioritized as an area for improvement and is discussed in Chapter 8.

Table 3-22: AFOLU Sectoral Summary (2022)

Category Code	Sub-Categories	Emissions (Gg)			Emissions (Gg)							Emissions (Gg)
		Net CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NO _x	CO	NMVOCs	SO ₂	CO _{2e}
3	Agriculture, Forestry and Other Land Use	-1630.07	4.14	0.48	NE	NE	NE	NE	NE	NE	NE	-1387.30
3A	Livestock											
3A1	Methane Emissions from Enteric Fermentation and Manure Management		3.86					NE	NE	NE	NE	108.03
3A2	Manure Management - Direct N ₂ O Emissions from Manure Management Systems			0.40				NE	NE	NE	NE	104.92
3B	Land											
3B1	Forest Land											
3B1a	Forest Land remaining Forest Land	-1663.97						NE	NE	NE	NE	-1663.97
3B1b	Land Converted to Forest Land	NE	NE	NE				NE	NE	NE	NE	NE
3B2	Cropland											
3B2a	Cropland Remaining Cropland	NE	NE	NE				NE	NE	NE	NE	NE
3B2b	Land Converted to Cropland	NE	NE	NE				NE	NE	NE	NE	NE
3B3	Grassland											
3B3a	Grassland Remaining Grassland	NE	NE	NE				NE	NE	NE	NE	NE
3B3b	Land Converted to Grassland	NE	NE	NE				NE	NE	NE	NE	NE
3B4	Wetlands											
3B4a	Wetlands Remaining Wetlands	NO	NO	NO				NE	NE	NE	NE	NE
3B4b	Land Converted to Wetlands	NO	NO	NO				NE	NE	NE	NE	NE
3B5	Settlements											
3B5a	Settlements Remaining Settlements	NE	NE	NE				NE	NE	NE	NE	NE
3B5b	Land Converted to Settlements	NE	NE	NE				NE	NE	NE	NE	NE
3B6	Other Land											
3B6a	Other Land Remaining Other Land	NE	NE	NE				NE	NE	NE	NE	NE
3B6b	Land Converted to Other Land	NE	NE	NE				NE	NE	NE	NE	NE
3C	Aggregate sources and non-CO₂ emissions sources on land											
3C1a	Emissions from Biomass Burning in Forest Land		0.24	0.007				NE	NE	NE	NE	8.64
3C1b	Emissions from Biomass Burning in Cropland	NE	NE	NE				NE	NE	NE	NE	NE
3C1c	Emissions from Biomass Burning in Grassland		0.00	0.00				NE	NE	NE	NE	0.00
3C1d	Emissions from Biomass Burning in Other Land	NE	NE	NE				NE	NE	NE	NE	NE
3C2	Liming	NE	NE	NE				NE	NE	NE	NE	NE
3C3	Urea Application	33.90						NE	NE	NE	NE	33.90
3C4	Direct N ₂ O Emissions from Managed Soils	NE	NE	NE				NE	NE	NE	NE	NE
3C5	Indirect N ₂ O Emissions from Managed Soils	NE	NE	NE				NE	NE	NE	NE	NE
3C6	Indirect N ₂ O Emissions from Manure Management			0.076				NE	NE	NE	NE	20.07
3C7	Rice Cultivation		0.04					NE	NE	NE	NE	1.12
Notation Keys												
NE	Not Estimated											
NO	Not Occurring											
NA	Not Applicable											
IE	Included Elsewhere											
C	Confidential											

Notes:

- Activities reported as NE occurs within the Party, however data is not available for the quantification of the estimations, as such emissions could not be included for these categories.

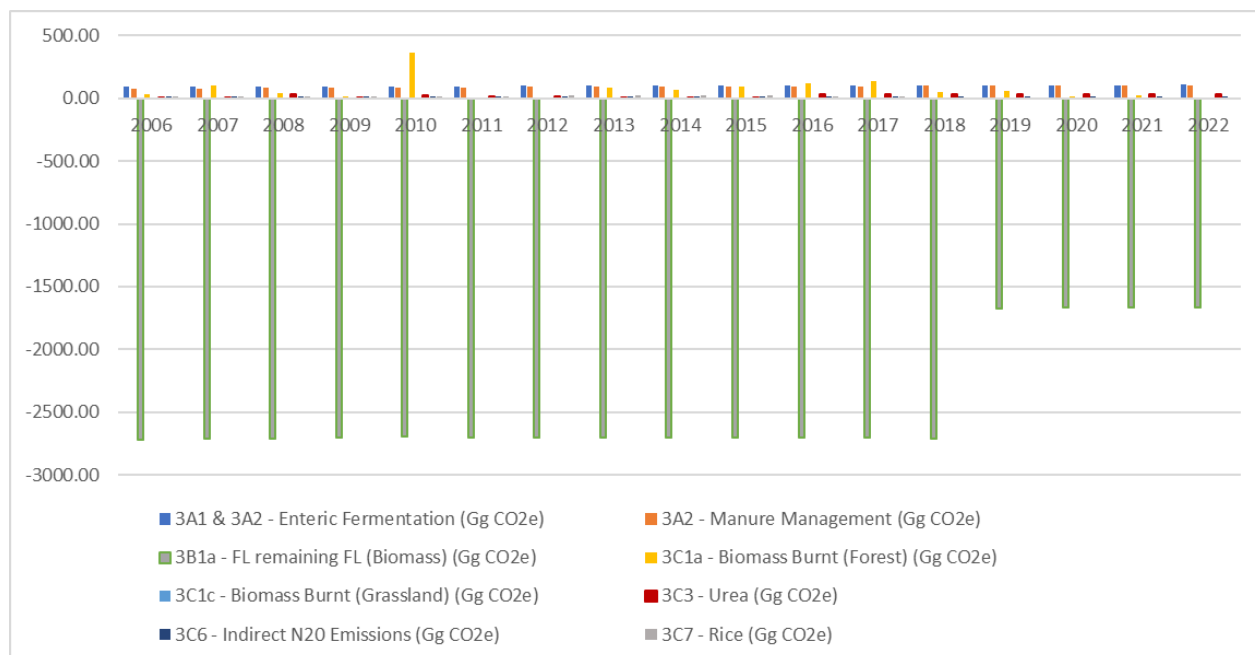


Figure 3-14: Total Gg CO₂e Emissions in T&T's AFOLU Sector by Category (2006-2022)

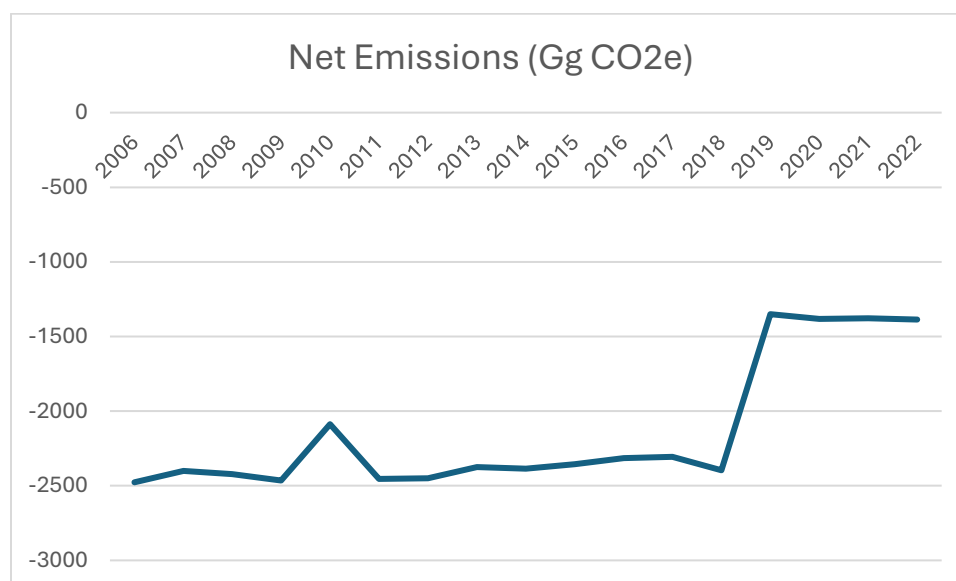


Figure 3-15: Total Gg CO₂e Emissions in T&T's AFOLU Sector (2006-2022)

Table 3-23: Key Category Analysis for AFOLU Sector (2022)

Category Code	Sub-categories	Gas	TOTAL (Gg CO ₂ e)	Percentage (%)	Cumulative %
3B1a	FL remaining FL (Biomass)	CO ₂	1663.97	85.74	85.74
3A1 & 3A2	Enteric Emissions	CH ₄	108.03	5.57	91.31
3A2	Manure Management	N ₂ O	104.92	5.41	96.72
3C3	Urea Fertilization	CO ₂	33.90	1.75	98.46
3C6	Indirect N ₂ O Emissions	N ₂ O	20.07	1.03	99.50
3C1a	Biomass Burnt (Forest)	CH ₄	6.76	0.35	99.85
3C1a	Biomass Burnt (Forest)	N ₂ O	1.88	0.10	99.94
3C7	Rice	CH ₄	1.12	0.06	100.00
3C1c	Biomass Burnt (Grassland)	CH ₄	0.00	0.00	100.00
3C1c	Biomass Burnt (Grassland)	N ₂ O	0.00	0.00	100.00
	TOTAL		1940.65	100.00	100.00

3.4.1 Key Assumptions and Guiding Statements

Estimation of T&T's emissions from the AFOLU sector was very challenging owing to large data gaps over the reported time series. As such, this is one area identified for data collection and data archiving capacity-building. To compute associated emissions, a fair number of assumptions, expert judgement and omissions had to be adopted. An outline of these assumptions, judgements and some useful guiding statements are provided below and were necessary where country-specific data was not available. These assumptions are consistent with those prescribed in the IPCC 2006 methodology.

1. Emissions from enteric fermentation and manure management were quantified from activity data gathered from FAOSTAT and default emission factors from the IPCC 2006 methodology.
2. Since the data for cattle were not obtained in a disaggregated manner, a 50:50 split was assumed with respect to dairy cows and other cattle. Data collection has been identified as an area for improvement in the agriculture sector (Chapter 8).
3. To acquire default factors for livestock as needed, the Latin America Region was assumed to apply to T&T.
4. With respect to manure management (3.A.2 and 3.C.6), the manure management system was assumed to be pasture/range or paddock, for all species/livestock categories.
5. With respect to forest land remaining forest land, though some data were acquired from the Forestry Division of the MALF, data sets from the FAOSTAT were more complete and were consequently used for the years 2019-2021. It is noted however, that the datasets from FAOSTAT are not disaggregated in the manner presented for the estimations in the inventory and may potentially affect the accuracy and time series consistency as the same source was not utilized for all years in this category. Activity data for 2022 was not available from FAOSTAT or the Forestry Division and was acquired by extrapolation.

6. For forest land remaining forest land, no data was available to estimate loss in biomass due to wood removals, fuel wood or disturbances (FAO and otherwise) and as such, this was not estimated and recorded as such in the CRTs.
7. For forest land remaining forest land, no data were available to estimate annual carbon loss from drained organic soils (FAOSTAT and otherwise) and as such, this was not estimated and recorded as such in the CRTs.
8. Data on the nature of conversion between land categories and biomass burnt in land converted categories was not available. As such, these were not estimated and recorded as such in the CRTs.
9. The definitions of each land type were taken as outlined in the IPCC 2006 methodology as country-specific formal definitions were not yet formulated.
10. The Tropical Rain Forest Ecological zone was applied for all land categories. This was applied as T&T has a tropical rainforest ecosystem like that of Guyana and Venezuela on the South American mainland (Section 1.4).
11. No national data was available for cropland remaining cropland. Data sets available from FAOSTAT land use information showed that the input area of croplands was a constant 47000ha over the period 2006-2021. The level of cropland land use, tillage and inputs are not available. Also, the land area of cultivated organic soil was not available. As such annual change in carbon stocks in organic soils and annual changes in carbon stocks in mineral soils, were not estimated and recorded in the CRTs as such.
12. No national data was available for grassland remaining grassland. Data sets available from FAOSTAT land use information showed that the inputted area of permanent meadows and pastures (considered as grassland) was a constant 7000ha over the period 2006-2021. The level of grassland management and inputs are not available. Also, the land area of cultivated organic soil was not available. As such annual carbon loss from cultivated organic soils and annual changes in carbon stocks in mineral soils, were estimated and recorded in the CRTs as such.
13. Since liming data (type of lime applied and whether limestone or dolomite) were not available, this was not estimated and recorded in the CRTs as such.
14. Emissions from rice cultivation were estimated. Area of land cultivated for rice was available from FAOSTAT and the number of days cultivated annually while not available in any document research or collected data, was determined via information provided by a rice farmer and was considered as expert judgement, based on the farmer's experience is cultivating paddy rice.
15. Biomass burning for forest land remaining forest land was included in the estimations. Data on area burnt was available from the MALF Forestry Division. Biomass burning for grassland remaining grassland was included in the estimation. Data on area burnt was available from FAOSTAT. There was no data available for biomass burning associated with cropland remaining cropland and as such was not estimated and recorded in the CRTs as such.
16. No data is available for settlements, as such, this was not estimated and recorded as such in the CRTs.
17. Urea activity data was available from FAO for the years 2008-2010. These were updated in this inventory based on updates from FAO. The assumption for the years 2019-2022, is that the quantity of urea used was same as previous years of 2016-2018, as no data was available and 2016-2018, based on the FAO activity data, the same quantity of urea was utilized (Section 3.12).
18. Data on direct and indirect N₂O from managed soils was not available. As such, these were not integrated into the estimations.
19. Wetlands are not managed as peatlands, and as such wetland remaining wetland was excluded from the national inventory.

3.11 Waste Sector

The waste sectoral analysis summary is presented in Table 3-24 and the trends in emissions for this sector over the time horizon is presented in Figure 3-16. The emission estimates for the period 2006-2022 can also be seen in Table 3-12. Figure 3-17 shows a sub-sectoral breakdown of T&T's waste sector emissions (%) for 2022, and Table 3-25 shows a key sub-category analysis by gas. These all illustrate that the main sub-categories for T&T's waste sector are the municipal solid waste, which follows the FOD model, and domestic wastewater. The industrial wastewater sector dataset is incomplete and only includes pulp and paper and alcohol, beer and starch production. In T&T there is also meat and poultry processing, organic chemicals production and other food and drink processing. However, activity data for these sectors were not received. Discussions with these facilities are on-going and will be flagged as an area for improvement for the next reporting cycle.

It can be seen that the emissions in this sector gradually increased from 2006 to 2016, followed by a slight steady increase to 2022 (Figure 3-16).

Table 3-24: Waste Sectoral Summary (2022)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NM VOC	SO _x	Total GHG emissions ⁽¹⁾ CO ₂ equivalents (kt) ⁽²⁾
	(kt)							
5. Total waste	22.76	87.79	0.00	NE,NO	NE,NO	NE,NO	NE,NO	2,480.98
5.A. Solid waste disposal		81.25		NE	NE	NE		2,275.00
5.A.1. Managed waste disposal sites		NO		NO	NO	NO		NO
5.A.2. Unmanaged waste disposal sites		81.25		NE	NE	NE		2,275.00
5.A.3. Uncategorized waste disposal sites		NO		NO	NO	NO		NO
5.B. Biological treatment of solid waste		NO	NO	NO	NO	NO		NO
5.B.1. Composting		NO	NO	NO	NO	NO		NO
5.B.2. Anaerobic digestion at biogas facilities		NO	NO	NO	NO	NO		NO
5.C. Incineration and open burning of waste	22.76	0.00	0.00	NE	NE	NE	NE	22.86
5.C.1. Waste incineration	22.76	0.00	0.00	NE	NE	NE	NE	22.86
5.C.2. Open burning of waste	NE	NE	NE	NE	NE	NE	NE	NE
5.D. Wastewater treatment and discharge		6.54	NE	NE	NE	NE		183.12
5.D.1. Domestic wastewater		4.77	NE	NE	NE	NE		133.56
5.D.2. Industrial wastewater		1.77	NE	NE	NE	NE		49.56
5.D.3. Other		NO	NO	NO	NO	NO	NO	NO
5.E. Other (please specify)								
Memo item: ⁽³⁾								
5.F.1. Long-term storage of C in waste disposal sites	169.00							169.00
5.F.1.a. Annual change in total long-term C storage	21.00							21.00
5.F.1.b. Annual change in total long-term C storage in HWP waste ⁽⁴⁾	0.00							0.00
Notation Key								
NO- Not Occurring								
NE- Not Estimated								

Notes:

- Activities reported as NE occurs within the Party, however data is not available for the quantification of the estimations, as such emissions could not be included for these categories.

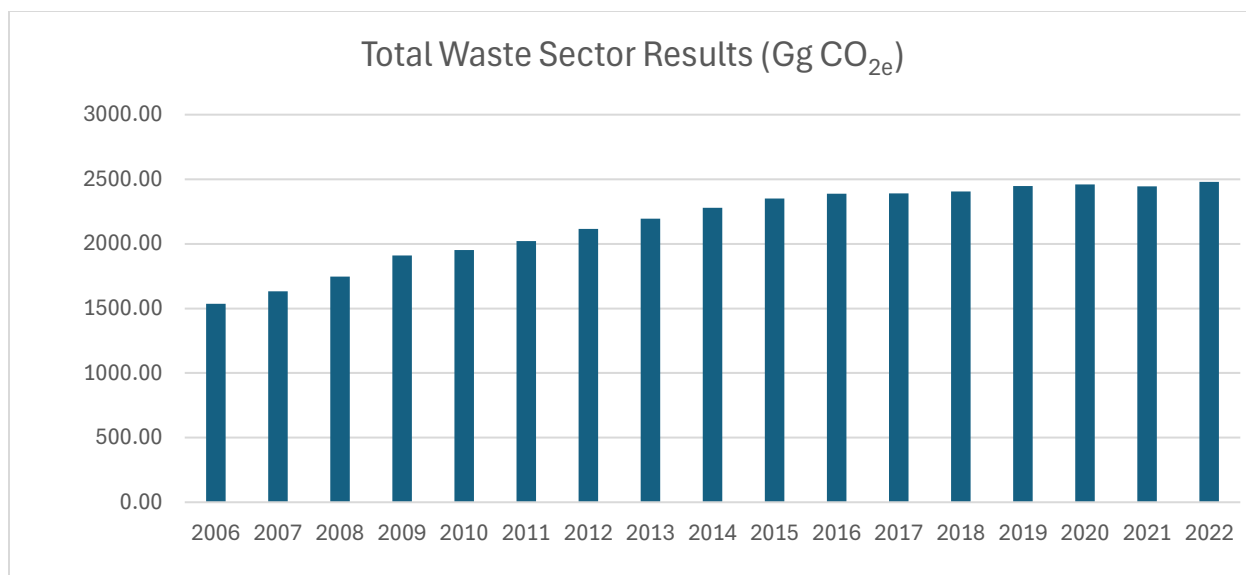


Figure 3-16: Total Gg CO_{2e} Emissions in T&T's Waste Sector (2006-2022)



Figure 3-17: Sub-sectoral Breakdown of T&T's Waste Sector Emissions (%), 2022

Table 3-25: Key Category Analysis for Waste Sector by Gas (2022)

IPCC Category	Gas	Emissions (Gg CO ₂ e)	Percentage	Cumulative Percentage
Solid Waste Disposal (4A)	CH₄	2274.90	91.69	91.69
Domestic Wastewater (4D1)	CH₄	133.58	5.38	97.08
Industrial Wastewater (4D2)	CH ₄	49.69	2.00	99.08
Waste Incineration (4C1)	CO ₂	22.76	0.92	100.00
Waste Incineration (4C1)	N ₂ O	0.08	0.00	100.00
Waste Incineration (4C1)	CH ₄	0.02	0.00	100.00
TOTAL		2481.03	100	

3.4.2 Key Assumptions and Guiding Statements

The following guiding statements and assumptions were applied in estimating the results for the Waste sector and were necessary where country-specific data were not available. These assumptions are consistent with that prescribed in the IPCC 2006 methodology. The detailed estimation spreadsheets for the waste sector, which include all activity data, emission factors, methodologies of the 2006 IPCC guidelines, estimations and data sources, can be found in the Technical Annex (Annex1G) to this report. Where data was not available (industrial wastewater 4D2), extrapolation was used to fill the data gap. The details of the application of this technique and the category to which it was applied are discussed in Section 3.12.

- For associated emissions with respect to solid waste, the following were applied. All country activity data, default parameters and model results for the entire time series is included in the Technical Annex (Annex 1Gb).
 - The FOD model (Tier 1) was used for the Waste sector.
 - Activity data was received from the waste management facility for T&T, who stated that the waste in the country was 100% managed. The Waste Characterization and Centroid Study Report, 2022 was used to determine country specific MSW waste composition data (Food – 24%, Garden- 14%, Paper-18%, Wood 0%, Textile-14%, Nappies-0% and Plastics, other inert- 30%).
 - Country-specific values were used for waste generation rate, and percentage of industrial waste going to the Solid Waste Disposal Sites (SWDS) with the intention that these would be validated by the next reporting cycle.
 - Activity data were generated over a 50-year time horizon using waste generation rates and population size.
- The IPCC waste model was used. All country activity data, default parameters and model results for the entire time series is included in the Technical Annex (Annex 1Gb)
 - A delay time of six months was assumed as stated in the FOD Model.
 - IPCC default values from the model were applied for Degradable Organic Content Factor (DOCf), Methane Correction Factor (MCF), methane fractions, and methane generation rates.
 - Country-specific data were used to define the distribution of waste-by-waste management type.
 - Based on guidance and expert judgement from the national solid waste facility, it was assumed that one percent of industrial solid waste entered the landfills.
 - No methane recovery was applied as it does not occur.
- For associated emissions with respect to domestic wastewater, the following applied:
 - Default Biological Oxygen Demand (BOD) values were used (kgBOD/ cap/year).
 - Default Correction factor for industrial BOD discharged in sewers (1.00 for uncollected) was used.

- WHO SDG 2020 Country Estimate on T&T wastewater stated that 73.3% of the population uses septic tanks, hence this type of treatment was assumed for the country.
 - Default value for septic system (MCF 0.5) was used.
 - Three income groups were used (rural, urban high and urban low), for the entire time series and follows the IPCC 2006 guidelines.
 - Fraction of population income group default values from Table 6.5 Latin America and Caribbean (LAC) – Mexico, 2006 IPCC guidelines, was used. A national appropriate figure will be considered in future plans as part of inventory improvements
 - Assumptions made for degree of utilization - rural 100%, and the WHO SDG 2020 Estimate on T&T's Wastewater report of 73% for urban. These were used for the estimation of methane emission factor for domestic wastewater (Annex 1Gd).
4. For associated emissions with respect to industrial wastewater the following applied:
- Due to limited activity data, only two sub-categories (pulp and paper and alcohol, beer and starch production) were estimated.
 - Sludge removed from each industry sector was provided by the facilities.
 - Since country-specific factors were not available, the IPCC defaults were applied for wastewater generated and chemical oxygen demand.
 - The type of treatment system was provided by the facilities and the IPCC 2006 default methane correction factor values for industrial wastewater (Table 6.8), was applied.

3.12 Data/Information Gaps

In the preparation of the national inventory, there were categories where the data may have been unavailable or not collected. Where possible, the applicable techniques were utilized to determine these values for use in the inventory for completeness. Table 3-26 provides information on the categories and data gaps.

Table 3-26: Data/Information Gaps

Item	Category Sector	Category and Category Code	Key Category	Description of Data/Information Gaps
1	Energy Civil Aviation	1.A.3.a.ii Domestic Aviation	No	Aviation Gas is the fuel type used and presented for the previous inventory of 2006-2018. However, in updated data provided there is also the use of Jet A1 fuel. Jet A1 fuel is included for 2019-2022 as the data was available. This data, however, was not readily available for 2006-2018. Data to be included in the next inventory.
2	Energy Other Sectors	1A4b Residential	No	Data for the year 2021 was not available. Based on the trends observed in the available years, interpolation was applied to determine the activity data for this year.
3	AFOLU Land-Forest Land	3B1a Forest Land Remaining Forest Land	Yes	Data for 2019-2022 is not provided by national data sources, as such data from a different source (FAOSTAT) used for this period. The FAOSTAT data, however, is not to the level of disaggregation provided in inventory 2006-2018.
4	AFOLU Urea Application	3C3 Urea Fertilization	No	Activity data for the years 2019–2022 were not available. As such, extrapolation was applied and

Item	Category Sector	Category and Category Code	Key Category	Description of Data/Information Gaps
				based on the consistent trends observed for the years 2016-2018.
5	IPPU Mineral Industry	2A3 Glass production	No	Data was only available for 2011-2022. Hence extrapolation was applied for the years 2010-2006.
6	IPPU Mineral Industry	2A4a Other process uses of carbonates – Ceramics (brick production)	No	Activity data was only available from 2015 to 2022; hence the activity data was extrapolated for 2014 to 2006.
7	IPPU Other Product Manufacture and Use	2G1 Electrical Equipment	No	Extrapolation was used for 2006-2007 and 2021-2022 as data was unavailable.
8	Waste Industrial Wastewater	4D2 Industrial wastewater	No	Extrapolation was applied for the activity data for the years 2006-2018. This was necessary as the data provided by the facilities were for 2019-2022 only.

4 Tracking progress of Implementation and Achievement of Nationally Determined Contribution

4.1 National Circumstances

T&T's national circumstances relevant to progress made in implementing and achieving its NDC under Article 4 of the Paris Agreement, including but not limited to, government structure (Section 1.6), population profile (Section 1.7), geographical profile (Section 1.1), economic profile (Section 1.8), climate profile (Section 1.3) and sector details (Section 1.9) are described in Chapter 1.

T&T's national circumstances effect on GHG emissions and removals over time is elaborated in Chapter 3 (GHG Inventory), which shows the trends in the emissions over the reporting period of 2006-2022. It is observed that the sectoral profile of the country and the changes in sectoral activities over time have affected GHG emissions and removals. Section 3.6 further discusses the emissions and removals by sectors over the years and shows that the total emissions in T&T increased over the period 2006–2010, followed by a general decrease from 2010 onwards. The decrease per annum from 2010 to 2022 is 17,092.38 Gg. This general trend and decrease are largely due to a decline in productivity of T&T's dominant IPPU and energy sectors because of lower natural gas supplies, and reduced activity during the Covid 19 Pandemic. Together, these two sectors contribute approximately 92% of total emissions over the time series.

4.2 Institutional Arrangements

T&T developed an implementation plan for achieving the NDC in 2019, which reveals the country's commitment to the Paris Agreement and low-carbon development (GoRTT, 2019). The NDC Implementation Plan 1 (NDC-IP) is considered one of the pillars to achieve the commitments expressed in T&T's NDC. It inter alia combines existing policy foundations, with the MRV system, mitigation actions (such as the Nationally Appropriate Mitigation Actions) and the creation of enabling conditions. The NDC-IP formulation pursued the following objectives (GoRTT, 2017):

- a) Define the necessary institutional arrangements required to support the implementation of the NDC;
- b) Identify activities, actions and projects to achieve the implementation of the NDC, which include mitigation actions and enabling actions to meet the goals outlined in the NDC;
- c) Develop a coordinated implementation framework for the NDC in the power generation, transport and industry sectors that includes sectoral plans;
- d) Identify possible sources of funding and MRV for the implementation of the NDC in the three sectors, with a view to develop a financial investment plan.

The plan will be further refined and updated periodically to reflect national circumstances, new inputs from climate science as well as from international climate change negotiations, and with a view to developing economy-wide commitments consistent with the Paris Agreement.

The country has turned the plan into concrete actions such as, developing and launching the MRV system to track progress towards NDC implementation and assess financial investment options for sectoral mitigation.

The legal, institutional, administrative and procedural arrangements for domestic implementation, monitoring, reporting, archiving of information and stakeholder engagement related to the implementation and achievement of its NDC under Article 4 was discussed in Chapter 2. Additionally, the NDC-IP (GoRTT, 2017) identifies the activities, actions and projects to be implemented until 2030. It sets out sectoral plans for the power generation, transport and industry sectors in Trinidad and Tobago that outline how each sector will contribute to achieving the NDC and can be used to track the progress of NDC implementation in T&T. Each contains several mitigation areas and related activities (Figure 4-1).

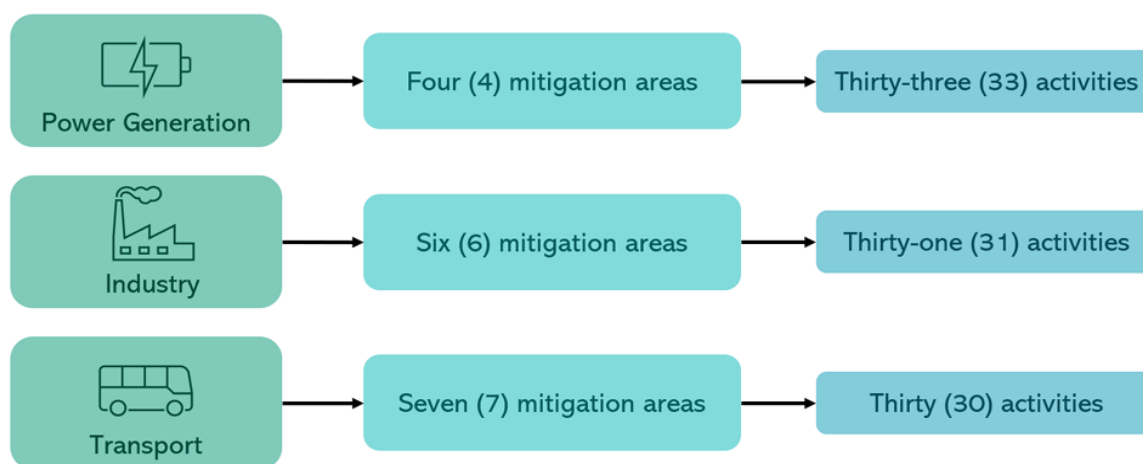


Figure 4-1: NDC sectoral plans for the power generation, industry, and transport sectors

T&T is committed to regularly reporting on the progress in the implementation and achievement of the mitigation actions under its NDC, including on the support received for attaining the NDC mitigation goals. Tracking progress is critical to determine whether the country is on track to meet its NDC and for evaluating the extent and impact of existing climate change mitigation measures being implemented.

Furthermore, it ensures the country complies with its international reporting obligations under the ETF of the Paris Agreement, which requires Parties to provide the necessary information to track progress made in implementing and achieving its NDC.

According to the MPGs, which define the set of rules for reporting and reviewing information submitted by Parties under the ETF of the Paris Agreement, all Parties are required to select relevant indicator(s) for tracking progress of their NDC. Countries can also opt to report indicators related to policies and actions or other elements of their NDC. In this context, indicators are developed for T&T to track progress of the NDC-IP and the incorporated list of actions.

One of the outputs of the project “Strengthening T&T’s capacity in transparency for climate change mitigation and adaptation” conducted over the period October 2021 to September 2024, is the development of gender sensitive indicators, templates, protocols and guides to support T&T in tracking progress in implementing its mitigation (NDCs) and adaptation actions. It also consists of a roadmap to integrate them into the existing National Transparency System (NTS) (see Section 2.1).

The indicator development for NDC progress tracking was conducted through a two-pronged approach using key stakeholder feedback obtained from a consultation workshop organised in T&T in October 2022 with key stakeholders from the power generation, industry, and transport sectors, and expert knowledge on international reporting obligations under the Paris Agreement. Considering that the NDC Implementation Plan includes a total of ninety-four (94) activities within the mitigation areas across the three NDC sectors, these were aggregated to obtain a condensed list of indicators that still address all the relevant activities in the NDC Implementation Plan while ensuring the feasibility of reporting the indicators under the Paris Agreement. As such, relevant indicators are developed that:

- Consider and are based on the main conclusions obtained from the in-country consultation workshop on the design of indicators for NDC progress tracking.
- Cover all the activities within the mitigation areas of each sector outlined in the NDC-IP of T&T.
- Ensure the monitoring of the main objective(s) of the mitigation area within the relevant sector.
- Allow for the reporting of the information necessary to track the progress of the NDC implementation plan and the list of actions.

This resulted in the development of twenty (20) indicators related to the total of ninety-four (94) activities within the mitigation areas across the three NDC sectors.

For each of the indicators, an indicator reference sheet is developed which includes all the relevant information to successfully and timely monitor the progress such as data needs, responsibilities, and indicator management. The template acts as the main reference sheet for stakeholders to monitor progress on the indicator. As indicators can be expressed in a qualitative (e.g., information on implementation status of policies and measures) or quantitative (e.g., percentage reduction compared to base year) way, two different reference sheet templates are developed reflecting the nature of the indicator as either quantitative or qualitative. Each indicator reference sheet incorporates general information on the related sector of the NDC, the name of the mitigation area, the name of the indicator, and the progress of the indicator. Table 4-1 shows the indicators that have been developed for tracking progress towards achieving the NDCs. The full list of indicators, including the sector, indicator name, mitigation area, type of indicator, unit of measure, gender responsiveness, data requirements, data sources, entity which will collect data on the respective indicators, frequency of collection, lead institutions and potential limitations, are included in the Technical Annex to this BTR (Annex 2A - NDC Indicators). The annex also includes the methodologies and assumptions of estimation for each indicator.

These indicators will be utilized for tracking progress of the NDCs for future submissions. Relevant reporting entities will be trained in the use of the indicators and how these are reported via the NTS (Figure 4-2). As such for this first BTR, information related to the developed indicators are not completed in CTF Tables 2, 3 and 4 and these will be populated in the next reporting period (BTR2).

Table 4-1: Indicators developed by NDC sector and mitigation area

Sector	General Indicator	Mitigation Area	Specific Indicator
Power Generation	Percentage (%) decrease in GHG emissions from the power generation sector compared to the BAU scenario	Review Energy Pricing	Percentage (%) reduction in electricity consumption
		Promote Energy Conservation and Efficiency	The amount of energy used to generate a unit of GDP (GJ/TTD Millions), also called energy intensity of the economy
		Promote Renewable Energy and Alternative Energy	Share (%) of renewable energy in the overall national energy production
		Promote Knowledge and Awareness	Number of public awareness and educational campaigns and programmes conducted on energy efficiency, energy conservation and renewable energy
Industry	Percentage (%) decrease in GHG emissions from the industry sector compared to the BAU scenario	Promote Energy Conservation and Energy Efficiency	The amount of energy used to generate a unit of industrial GDP (GJ/TTD thousand) also called energy intensity of the component of industry
		Promote Renewable Energy and Alternative Energy	Number of feasibility studies and pilot projects conducted for renewable and alternative energy processes in the industrial sector
		Establish Pilot Market Mechanism Project	Extent (%) of implementation of a national emissions trading schemes (ETS) model and the related policy and legislative framework
		Promote Fuel Conservation	Extent (%) of formalisation of the National Energy Policy and National Gas Master Plan
			Share (%) of companies in the oil and gas subsector implementing best practices and technologies to reduce venting and flaring and reduce fuel consumption
		Knowledge Management and Awareness	Extent (%) of implementation of online repository of energy efficiency and conservation actions, best practices, case studies, success stories and challenges for the industry sector
			Number (#) of public awareness, training, and capacity building programmes implemented related to energy efficiency, energy conservation, and GHG emissions reporting concerning the industry sector
		Establish National MRV System	Extent (%) of establishment of national MRV system for the GHG inventory of the power generation, transport, and industry sectors

Sector	General Indicator	Mitigation Area	Specific Indicator
Transport	Percentage (%) decrease in GHG emissions from the transport sector compared to the BAU scenario	Create Enabling Environment (Policy, Legislative)	Extent (%) of development of National Transport Plan and accompanying legislative acts, guidelines, and enforcement mechanisms
		Improve National Public Transport System	Extent (%) of implementation of the national public transport system and corresponding Nationally Appropriate Mitigation Actions
		Promote Vehicle Energy Efficiency and Fuel Switching	Percentage (%) of the national vehicle fleet (both private and public vehicles of organisations and individuals) running on CNG
			Share (%) of EVs and hybrid vehicles of the national vehicle fleet (both private and public vehicles)
		Promote Alternative Fuels	Number (#) of feasibility studies and pilot projects conducted for the use of alternative fuels including biofuels in land and sea transport
		Reduce Private Vehicle Use	Number (#) of private vehicles per person per 1,000 inhabitants
		Promote Fuel (and Energy) Efficiency	Percentage (%) of air and sea transport fleet incorporating best practices and technologies for fuel and energy efficiency in the sector
		Improve Data Collection and Information Sharing Systems	Extent (%) of establishment of online platform for monitoring and reporting of GHG emissions from the transport sector, including templates and data collection protocols

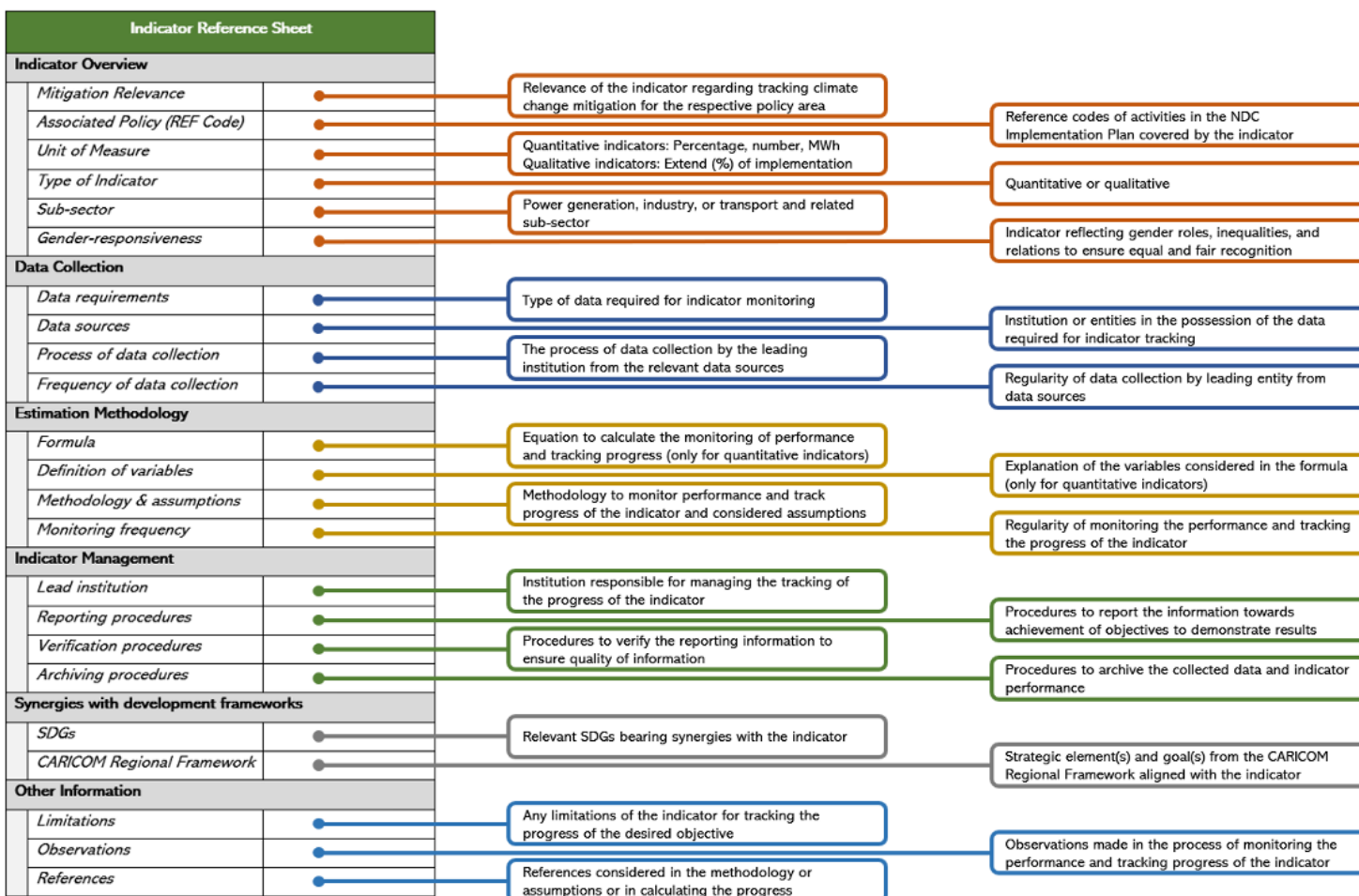


Figure 4-2: Incorporated information in the indicator reference sheets

4.3 NDC Description

The following information describes T&T's NDC, against which progress will be tracked (Table 4-2). T&T's NDC recognizes the energy sector as a key sector for its unconditional and conditional commitments, together with the industry sector. The NDC presented here is the same as the information presented in the previous BUR (BUR, 2021). T&T is in the process of updating its NDCs for submission in 2025. The information presented in Table 4-2 is also included in the CTF 1.4 (NDC) in the ETF Tool and Annex 2B of this Report (CTF Table 5).

Table 4-2:: Description of T&T's NDC under Article 4 of the Paris Agreement

Description	Unconditional	Conditional
Target Description	Reduce its public transportation emissions by 30% or one million, seven hundred thousand tonnes (1,700,000) CO ₂ e compared to 2013 levels by December 31, 2030.	Reduce cumulative emissions by 15% from BAU, from the three sectors (power generation, industry and transport) between 2013 and 2030, by 31 December 2030 (which in absolute terms is an equivalent of one hundred and three million tonnes (103,000,000) of CO ₂ e)
Target Type(s) (e.g. economy-wide absolute emissions reduction, emissions intensity reduction, emissions reductions below a projected baseline, mitigation co-benefits of adaptation actions or economic diversification plans, policies and measures, and other)	Business as usual (BAU) scenario (reference year 2013)	BAU scenario (reference year 2013)
Target Year(s)/Period(s)	December 31, 2030 (single-year target)	December 31, 2030 (single-year target)
Reference Point(s)	2013	2013
Level(s)	National	National
Baseline(s)	Business as Usual	Business as Usual
Base Year(s)	2013	2013
Starting Point(s), Time frame(s) and/or periods for implementation	2015	2015
Scope and coverage	Public transportation sector	Sectors: Transportation, power generation and industry. Emissions from the other sectors are considered relatively negligible. Gases: Carbon dioxide, methane, nitrous oxide
Intention to use cooperative approaches that involve the use of internationally transferred mitigation outcomes	No	No
Updates or clarifications of previously reported information (e.g., recalculation of previously reported inventory data, or greater	No	No

Description	Unconditional	Conditional
detail on methodologies or use of cooperative approaches).		

4.4 Information necessary to track progress made in implementing and achieving its nationally determined contribution under Article 4 of the Paris Agreement

For this reporting period, the information necessary to track progress made in implementing and achieving its NDCs was not available. The indicators developed in 2024 and discussed above will be utilized for tracking the progress of the NDCs for future submissions (BTR2). Relevant reporting entities will be trained in the use of the indicators and how these are reported via the NTS. As indicated above, for this first BTR, information related to the developed indicators are not completed in CTF Tables 2, 3 and 4 and these will be populated in the next reporting period (BTR2).

4.5 Mitigation policies and measures, actions and plans, including those with mitigation co-benefits resulting from adaptation actions and economic diversification plans, related to implementing and achieving a nationally determined contribution under Article 4 of the Paris Agreement

This chapter covers the climate change mitigation actions and measures being implemented and planned by T&T. In the power generation, transport, waste and AFOLU sectors, the following mitigation actions, measures and policies were identified and are detailed in the following tables. No information was available for IPPU and as such no mitigation measures have been presented in the BTR. Information was obtained from entities operating within the relevant sectors. The information on the measures and actions being implemented and planned have also been included in the CTF of the ETF Tool (2.1) and the CTF table (Table 5) has been included in Annex 2C (CTF Table 5). T&T have applied the necessary flexibility (Paragraph 85 decision 18/CMA.1). All flexibilities applied for this BTR is discussed in Chapter 7 (Information on Flexibility).

For each action, policy or measure the following are provided:

- Name;
- Description – cost information, information on non-GHG benefits, interaction with other mitigation actions, influences emissions from international transport, information on how this measure modifies longer-term trends in GHG emissions and removals;
- Objectives;
- Type of instrument (regulatory, economic or other);
- Status (planned, adopted or implemented);
- Sector(s) affected (energy, transport, IPPU, LULUCF, waste management or other);
- Gases affected;
- Start year of implementation;
- Implementing entity or entities;
- Estimates of the GHG emission reductions expected and achieved.

4.5.1 Power Generation

4.5.1.1 92.2 MW Utility Scale Solar PV Project located in Brechin Castle, Couva

This measure is a 92.2 MW Utility Scale Solar PV Project located in Brechin Castle, Couva. The objective is the reduction of GHGs in line with the NDCs. The type of instrument is other, however the financing instrument is Lightsource Renewable Global Development Limited, Shell T&T Limited, BP Alternative Energy T&T project finance. No information on cost is provided by the implementing entities. The implementing entities are The Consortium (Lightsource Renewable Global Development Limited, Shell T&T Limited, BP Alternative Energy T&T), MEEI, T&TEC.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. It was estimated that the expected GHG emission reductions is 160.93 kt CO₂e. The implementing entities derived this reduction using the following:

- Carbon intensity for electricity generation using natural gas is 0.532 kg CO₂/ kWh.
- Projected annual electricity production from the 92.2 MW utility scale solar PV project is 302,500 MWh.
- The projected carbon dioxide emission reduction is 160,930 tCO₂.

Sufficient details are not provided by the implementing entity to determine if the methodology is in accordance with the 2006 IPCC Guidelines and to determine the accuracy of the estimation. Further information is needed from the implementing entity on the estimations which is not available at the time of the report.

The project commenced in 2022 is planned and on-going. As such, no achieved emission reductions are available at this time. Shipments for the construction of the project began arriving in 2023 and is on-going. Installation is expected in 2024 - 2025.

Energy efficiency measures to reduce the overall power generation demand results in non-GHG benefits and interactions with other mitigation actions.

4.5.1.2 Rural Solar Electrification

This measure is a government-assisted electrification programme designed for households located far from the national grid, with a combined income below a defined ceiling and for whom it may not be economically feasible for the T&TEC to extend the power grid. The objective is to gain expertise in managing distributed RE resources and distribution level integration. The measure is seen as effective and appropriate as offsetting the power required from fossil fuel generation with solar power would directly reduce GHG emissions from power production, as well as minimize environmental impacts through the creation of utility corridors.

The type of instrument is other, however the financing instrument is European Union Global Climate Change Alliance Plus (EU GCCA+). No information on cost is provided by the implementing entities. The implementing entities are MPU, T&TEC, MEEI.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. It is estimated that the expected GHG emission reductions would be 0.02 kt CO₂e. No information on the methodologies utilized to derive this reduction is available from the implementing entities. The project commenced in 2022 and was completed in 2024. As such, no achieved emission reductions are available at this time.

Rural areas are generally inhabited by low-income households and currently, a few areas experience an intermittent power supply while others have no power supply.

Distributed renewable energy can increase the resilience of the energy system, such as in post-disaster circumstances. Storage capacity can also contribute additional functionality to the rural RE systems.

4.5.1.3 Large Scale PE Installation

This measure is the implementation of up to 130MW of electricity generation from RE sources. The measure is seen as effective and appropriate as RE generation would directly reduce the GHG emissions from fossil fuel generation. Additionally, this project will bring experience in integrating a significant portion of RE into the existing grid.

The type of instrument is other, however the financing instrument is T&TEC purchase power from Brechin Castle Solar Limited (BCSL). (payment for every kWh delivered, during contracted term). The cost of the measure is 1246837.5 TTD (Currency Exchange Rate at the time of funding/use is not available, as such cost in USD could not be provided). The implementing entities are T&TEC and MEEI.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. No information on the expected GHG emission reductions and the methodologies to derive this reduction is available from the implementing entities.

The project commenced in 2020 and is planned and on-going. Installation is expected in 2025. As such, no achieved emission reductions are available at this time.

Solar plant enhances the energy resilience of the grid in the event of power outages, customers can retain functionality.

Trade-offs with other developmental aspects include:

1. System reliability to be maintained, subsequent to introduction/ installation of solar plant. It may be necessary to analyse spinning reserve methodology.
2. Developing a solar park requires the clearing of vegetation and affecting local ecosystems. Mitigation measures will be needed to minimize adverse effects on biodiversity (Tradeoff-off)

4.5.1.4 Light Bulb Replacement Programme

An estimated 1.6 million LEDs could boost the country's energy efficiency by replacing conventional bulbs. The objective of the measure is to offset up to 10% of the fossil fuel generation and gain experience with large-scale RE integration. The measure is seen as effective and appropriate as 1.6 million LEDs will replace incandescent bulbs. This is expected to reduce GHG in the residential sector and also increase the number of residential households receiving the electricity rebate. This can contribute to an overall reduction of 1% of natural gas usage in the electricity sector.

The type of instrument is other, however the financing instrument is the GoRTT. The cost of the measure is 8.8M TTD (Currency Exchange Rate at the time of funding/use not available, as such cost in USD could not be provided). The implementing entities are MPU, T&TEC and MEEI.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. No information on the expected GHG emission reductions and the methodologies to derive this reduction is available from the implementing entities.

The project commenced in 2020 and was completed in 2023, as such the measure is being implemented. However, no achieved emission reductions are available at this time.

4.5.1.5 Piarco Solar Park

This measure is the construction of a solar park at the Piarco International Airport. The objective is to gain experience in managing solar installations in high reliability contexts to offset 5–7% of airport electrical load. The measure is seen as effective and appropriate as offsetting the power required from fossil fuel generation with solar power would directly reduce GHG emissions from power production. The Piarco International Airport is T&T's primary air transport hub and demands a very high level of reliability. Therefore, the percentage of renewable energy at Piarco for the airport's own use must be carefully analysed. The facility also has sufficient land space that can be utilised for the project. As the first point of entry for tourists, the implementation of the facility would also signal the country's efforts at sustainability to the tourism sector.

The type of instrument is other, however the financing instrument is European Union/International Civil Aviation Organization (EU/ICAO). The cost of the measure is 1,499,880.79 USD (Currency Exchange Rate at the time of funding/use not available so TTD could not be provided). The implementing entities are MPU, T&TEC and MEEI.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. Expected GHG emission reductions were estimated at 0.18kt CO₂e, however no information on the methodologies to derive this reduction was available from the implementing entities.

The project commenced in 2020 and was completed in 2024, as such the measure is being implemented. However, no achieved emission reductions are available at this time.

Distributed renewable energy can increase the resilience of the energy system, such as in post-disaster circumstances.

As the first point of entry for tourists, the implementation of the facility would also signal the country's efforts at sustainability to the tourism sector.

4.5.1.6 Feed-in-Tariff (FIT) Policy for the Integration of RE into the National Grid

This measure is the revision of the draft FIT Policy (2015), to support the uptake of grid-tied RE electricity generation. The objective is to incentivize distribution level RE installations by allowing customers to sell power to the utility. The measure is seen as effective and appropriate as Feed-in tariffs are a critical part of making RE installations attractive to domestic and commercial customers. Increased RE installations would in turn offset fossil fuel generation and reduce GHG production.

The type of instrument is policy, however no information on the cost and the financing instrument is provided by the implementing entities. The implementing entities are MPU, RIC, T&TEC and MEEI.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. No expected GHG emission reductions were estimated by the implementing entities as well as no information on the methodologies to derive the reduction was available from the implementing entities.

No updated information on this measure was available from the implementing entities.

4.5.1.7 New Single Cycle Units in Tobago

This measure is the acquisition of new single cycle generator in Tobago. The objective is to meet growing electrical load.

The type of instrument is other, however no information on the financing instrument is provided by the implementing entities. The cost of the measure is 137.4M TTD (Currency Exchange Rate at the time of funding/use not available as such the cost in USD could not be provided). The implementing entities are MPU, RIC, T&TEC and MEEI.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. No expected GHG emission reductions were estimated by the implementing entities as well as no information on the methodologies to derive the reduction was available from the implementing entities.

The project was completed in 2018, as such the measure is being implemented. However, no achieved emission reductions are available at this time.

4.5.1.8 Installation of a European Union funded Solar Park at the Piarco International Airport

This measure is the installation of ground-mounted solar panels over an area of approximately 1.54 hectares to produce a minimum annual generation capacity of 767,034 kilowatt hours with an expected reduction of 500 metric tonnes of CO₂ emissions annually. The measure is seen as effective and appropriate as the solar park allows Airports Authority of T&T to reduce its demand from T&TEC, which in turn reduces the amount of carbon emissions generated and a reduced electricity bill. It also contributes to the NDC by reducing emissions in the public transportation sector by 30% by 2030.

The type of instrument is other, however the financing instrument is GCCA+ Programme of the EU. The cost of the measure is 11,097,300.00 TTD or 1,644,214.96 USD. The implementing entities are MPD, GEI, T&TEC and MEEI.

The sector affected is the energy sector along with the GHG gases CO₂, CH₄ and N₂O. Expected GHG emission reductions were estimated at 0.5kt CO₂e. The methodologies to derive this reduction is as follows:

- Measure amount of electricity generation by Solar Park
- Multiply amount of electricity generated by Solar Park by carbon emissions factor (1 kWh = 0.549 kg of CO₂ emissions)
- Ensure reported results are accurate

Sufficient details were not provided by the implementing entity to determine if the methodology is in accordance with the 2006 IPCC Guidelines and to determine the accuracy of the estimation. Further information is needed from the implementing entity on the estimations which is not available at the time of the report.

The project commenced in 2020 and was completed in 2024, as such the measure is being implemented. However, no achieved emission reductions are available at this time.

The Solar Park provides a renewable source of electricity for the Piarco International Airport. This solar park is one of many other renewable sources of energy and decarbonization initiatives the Airports Authority of T&T is currently pursuing,

4.5.1.9 Update to Measures reported in the last BUR

1. T&TEC Domestic Bill Rebate - The rebate was implemented in December 2016 and is an ongoing process.
2. RE Pilot Installations at T&TEC and the University of T&T (UTT) - The T&TEC installation was completed in 2014 and the UTT Solar PV project was handed over to UTT.
3. Orange Grove Solar Park - Orange Grove Solar Limited was advised by the GoRTT, that it intends to utilize the land at Orange Grove originally allocated to the solar project for an alternative purpose of national interest. As such, the first commercial scale solar project will now progress with construction of a solar PV Utility Scale facility at the Brechin Castle site only (Measure 1 above).

4.5.2 Transport

4.5.2.1 Upgrade and Replacement of Aircraft

This measure is the upgrade and replacement of aircraft. The objective is to Improve the fuel efficiency and upgrade the aircraft fleet of T&T.

The type of instrument is other, however the financing instrument is Ministry of Finance and Caribbean Airlines (who are also the implementing entities). No information on the cost of the measure was available from the implementing entities.

The sector affected is the energy and transport sector along with the GHG gases CO₂, CH₄ and N₂O. No expected GHG emission reductions were estimated by the implementing entities as well as no information on the methodologies to derive the reduction was available from the implementing entities.

The project commenced in 2022 and was completed in 2024, as such the measure is being implemented. However, no achieved emission reductions are available at this time.

The implementation of this measure also influences emissions from international transport, as the airline does not only operate domestically but internationally as well.

4.5.2.2 Efficiency in Water Transport

This measure is the promotion of energy efficiency in water transport. The objective is to promote energy efficiency practices in water-borne transport in T&T to reduce the fuel consumption of the sector.

The type of instrument is other, however no information on the cost of the measure or the financial instrument was available from the implementing entities. The implementing entities are Ministry of Works and Transport (MOWT), MEEI.

The sector affected is the energy and transport sector along with the GHG gases CO₂, CH₄ and N₂O. No expected GHG emission reductions were estimated by the implementing entities as well as no information on the methodologies to derive the reduction was available from the implementing entities.

No updated information on this measure was available from the implementing entities, with respect to status of the measure.

4.5.2.3 Alternative Fuels in Marine Navigation

This measure is the introduction of alternative fuels to water-borne navigation. The objective is to introduce the use of LNG or biofuels in the water-borne transport sector of T&T.

The type of instrument is other, however no information on the cost of the measure or the financial instrument was available from the implementing entities. The implementing entities are MOWT, MEEI.

The sector affected is the energy and transport sector along with the GHG gases CO₂, CH₄ and N₂O. No expected GHG emission reductions were estimated by the implementing entities as well as no information on the methodologies to derive the reduction was available from the implementing entities.

No updated information on this measure was available from the implementing entities, with respect to status of the measure.

4.5.2.4 Fuel Switching to Compressed Natural Gas Alternative Fuels in Water-borne Navigation

This measure is increasing the energy efficiency of vehicles and promoting fuel-switching to CNG. The measure was implemented from 2013 as an initiative to switch from diesel to CNG, a more environmentally friendly and sustainable fuel. The Corporation purchased:

- Thirty-five (35) new CNG buses in 2014,
- Twenty-five (25) new CNG buses in 2018, and
- Twelve (12) new CNG buses in 2020.

In 2014, the Corporation, in partnership with the National Petroleum Company of T&T (NP), had commenced a temporary CNG storage and dispensing system at the Corporation's Port of Spain Depot to fuel its CNG buses. On 27th April, 2022, in partnership with NP and the National Gas Company (NGC) CNG Company Limited, a permanent CNG fueling station was commissioned at the Corporation's Port of Spain Depot and serves to fuel the Corporation's CNG buses.

The objectives of the measures are:

- Promotion of cleaner fossil fuels in the transport sector through conversion to CNG-fuelled engines.
- To increase the Corporation's use of a more environmentally friendly and sustainable fuel.
- To increase the Corporation's CNG fleet of buses.

The type of instrument is other, however the financing instrument is the Public Sector Investment Programme. The cost of the measure is 94,341,749.19TTD or 13,901,247.31 (exchange rate of USD 1 to TTD 6.79). The implementing entities are Public Transport Service Corporation, The NGC Green Company Limited, MOWT.

The sector affected is the energy and transport sectors along with the GHG gases CO₂, CH₄ and N₂O. No expected GHG emission reductions were estimated by the implementing entities as well as no information on the methodologies to derive the reduction was available from the implementing entities.

The project commenced in 2019 and is on-going with the purchase and operationalization of additional 30 new CNG buses by 2025 and the commissioning of an additional fuelling station at Tarouba for the Corporation by 2026. As such, no achieved emission reductions are available at this time.

4.5.3 Waste and Wastewater

4.5.3.1 Landfill Management - Reduction of the volume of waste entering the landfill

This measure is the reduction of the volume of waste entering the landfill. The objective is to incrementally reduce the volume of waste that is disposed via landfilling by 20 – 50% over the period 2022-2025. The measure is seen as effective and appropriate as transfer stations would allow recyclables to be recovered and thus not enter the landfill site where they can decompose to produce methane or pollute the groundwater.

The type of instrument is other, however the financing instrument is general taxation, loans from development banks. No information on the cost of the measure is available from the implementing entities. The implementing entities are SWMCOL, MPU, MoH, MEEI.

The sector affected is the waste sector along with the GHG gases CO₂, CH₄ and N₂O. Expected GHG emission reductions and methodologies to derive this reduction are not available

The project commenced in 2019 and is on-going. As such, no achieved emission reductions are available at this time.

Proper waste disposal would have a positive health benefit as it would ensure that leachate is managed and that hazardous wastes do not enter the environment and affect the health of the population

Currently the MEEI is evaluating proposals for renewable energy including waste to energy. Based on this, there may need to be changes to these plans, e.g., more transfer stations may be needed.

4.5.3.2 Landfill Management - Establishing a sustainable disposal infrastructure and security of these sites

This measure is the establishment of a sustainable disposal infrastructure and security of these sites. The objective is to promote the preservation of the environment and mitigate adverse health and socio-economic impacts of inadequate landfill security systems. This includes the reduction of the number of landfill fires. The measure is seen as effective and appropriate as improvement of infrastructure and security systems would ensure that there is a reduction in pollution and landfill fires.

The type of instrument is other, however the financing instrument is not available. No information on the cost of the measure is available from the implementing entities. The implementing entity is SWMCOL.

The sector affected is the waste sector along with the GHG gas, CH₄. Expected GHG emission reductions and the methodologies to derive this reduction are not available

The project commenced in 2019 and is on-going. As such, no achieved emission reductions are available at this time.

Landfill fires severely affect the health of the surrounding communities and commuters. Implementation of these measures would bring great relief to these persons and improve the air quality of the areas where these sites are located. Landfill Management - Waste Recycling This measure is the establishment of a national waste recycling programme. The objective is to incrementally increase the quantity of recyclable waste diverted from the landfills by 50% over a period of ten (10) years, in correlation with the waste landfilling reduction targets consistent with the National Integrated Solid Waste Resource Management Policy (NISWRMP).

The type of instrument is other, however the financing instrument is not available. No information on the cost of the measure is available from the implementing entities. The implementing entities are SWMCOL, MPU, Ministry of Local Government, THA.

The sector affected is the waste sector along with the GHG gas, CH₄. Expected GHG emission reductions and the methodologies to derive this reduction are not available

The project commenced in 2019 and is on-going. As such, no achieved emission reductions are available at this time.

Landfill fires severely affect the health of the surrounding communities and commuters. Implementation of these measures would bring great relief to these persons and also improve the air quality of the areas where these sites are located.

4.5.4 Agriculture, Forestry and Other Land Use

4.5.4.1 Sustainable Management of Forest Resources

The fire season, as defined by the Agricultural Fires Act (Chapter 63:02), spans from December 1st of one year to June 30th of the following year. This measure (implementing the fire programme) is an on-going measure, and the tasks are performed each year. The Forestry Division is mandated to ensure that the forest biodiversity is sustainably managed.

The type of instrument is other, however the financing instrument is not available. No information on the cost of the measure is available from the implementing entity (MALF, Forestry Division). The sector affected is the LULUCF sector along with the GHG gas, CO₂. Expected GHG emission reductions and the methodologies to derive this reduction are not available.

The project is continuous and includes the following:

- Regular patrols and use of fire towers which are located at St. Benedicts plantations, Kernaham, Matura, Cumberland hill and St. Micheal plantations.
- Fire traces are made ten metres in width to prevent the spread of wildfires.
- Fire Risk and Biodiversity Assessments.

No achieved emission reductions are available at this time.

4.5.4.2 Wetland Management

This measure is the management of wetlands which includes the following:

- An evidence-based approach which will include knowledge-based procedures for conducting patrols using maps and GIS technology and technical processes as “fire size up” to guide decision making for fire suppression.
- A networking effort to implement the Fire Action Plan by engaging other stakeholders in and out of the Division, e.g. Mt. Harris Range of the Northeast Conservancy and Fire Services respectively.
- Educational/awareness will also be adopted as a necessary complimentary approach to law enforcement. This will facilitate interaction with the resource users on the conditions associated with the use of fires in and around the swamp.
- The site is more than 11 000 hectares with over twenty (20) satellite communities and demands a field-oriented perspective to implementing the Fire Action Plan.

This measure is an on-going measure, and the tasks are performed each year. The objectives are:

- To suppress fires prioritized that are assessed to be manageable after size-up and given limited existing resources;
- To continue capacity building for annual re-training to respond to forest grass fire in the swamp;
- To increase community awareness on impact of fires on livelihoods; and
- To network with relevant stakeholder on fire management.

The type of instrument is other, however the financing instrument is not available. No information on the cost of the measure is available from the implementing entity (MALF, Forestry Division). The sector affected is the LULUCF sector along with the GHG gas, CO₂. Expected GHG emission reductions and the methodologies to derive this reduction are not available.

No achieved emission reductions are available at this time.

4.5.4.3 National Forest Policy

Forest management in T&T dates to 1765 with the designation of the Main Ridge of Tobago as the first Forest Reserve in the Western Hemisphere. Despite the formulation of the first official forest policy in 1942 during British colonial rule and subsequent revisions in 1981 and 1998, none of these policies were formally adopted. This has left the country's forest resources governed by the outdated 1942 Forest Policy. Recognizing the need for an updated policy to reflect changes in the policy environment, legal framework, and forest management strategies, a National Forest Policy was formulated through a rigorous process involving a Technical Advisory Committee and consultations with stakeholders. The goal of this policy is to contribute to sustainable development through the effective conservation and management of forests and forest resources in T&T. It complements other public policies and plans related to the environment and biodiversity and aims to address the complex relationships between forests and other sectors while ensuring the maintenance of forest ecosystems amidst competing demands for land.

The objectives are:

- To optimise the contribution of forest resources to livelihoods; cultural and spiritual/religious use, while ensuring sustainable use of forests, including extraction of timber and wildlife
- To protect native genetic, species and ecosystem diversity
- To maintain and enhance the natural productivity of forest ecosystems and ecological processes (watershed functions, etc.) to provide important ecosystem services

This measure is an on-going measure, and the tasks are performed each year.

The type of instrument is other, however the financing instrument is not available. No information on the cost of the measure is available from the implementing entity (MALF, Forestry Division). The sector affected is the LULUCF sector along with the GHG gas, CO₂. Expected GHG emission reductions and the methodologies to derive this reduction are not available.

No achieved emission reductions are available at this time.

4.6 Summary of GHG emissions and removals

As the national GHG inventory is included in this BTR and not as a stand-alone report, a summary of the GHG emissions and removals has not been included in this chapter. A description of the national GHG inventory is included in Chapter 3.

4.7 Projections of GHG emissions and removals

Section 4.3 of the BUR submitted in 2021 described GHG emissions projections for T&T. GHG emissions in T&T for the industry, power generation, transport, waste and wastewater, and AFOLU sectors are projected to the year 2050. For this reporting period, no additional projections have been conducted. This is because of the unavailability of the required capacity at the time. It is anticipated that once funding is received for BTR1 and BTR2, projections will be conducted and submitted in the next BTR. As such, T&T have applied the necessary flexibility (Paragraph 92 decision 18/CMA.1). All flexibilities applied for this BTR is discussed in Chapter 7 (Information on Flexibility). As the flexibility was applied, no CTF was completed for this.

5 Information related to climate change impacts and adaptation under Article 7 of the Paris Agreement

Information related to climate change impacts and adaptation under Article 7 of the Paris Agreement is not included in this BTR. T&T has elected to not report on this non-mandatory requirement (MPGs 104-117). T&T submitted its National Adaption Plan (NAP) in 2024, in accordance with the provisions of Article 7 of the Paris Agreement which calls for countries to prepare NAPs and to communicate adaptation actions to the UNFCCC. This NAP also serves as Trinidad and Tobago's first Adaptation Communication. The NAP elaborates on the following:

- Legal and Institutional frameworks
- National circumstances
- Rational for climate change adaptation (climate change analysis and projected changes; hazard profile; sovereign risk; sectoral vulnerability, risks and impacts)
- T&T's approaches to adaptation and delivering climate resilience
- Adaptation priorities
- Adaptation strategies
- NAP Implementation and Support Needs
- NAP Communication
- NAP alignment with existing strategic, legal and regulatory frameworks
- NAP Review and assessment including monitoring and evaluation

The NAP can be accessed at the following link: <https://unfccc.int/documents/638496>

6 Finance, Technology and Capacity Building Needs and Support Received

Chapter 6 provides relevant information on finance, technology and capacity building needs and support received for T&T between 2019 and 2022.

6.1 National Circumstances and Institutional Arrangements

T&T has pledged to conditionally reduce 103 MtCO₂e of GHG emissions by 2030. According to T&T's Financial Investment Plan for NDC Implementation from 2020, costs of around 2 billion USD are estimated in order to meet T&T's conditional targets, distributed across sectors as follows: power generation with 945 million USD, transport with 735 million USD and industry at 320 million USD. Note that these costs do not reflect reductions congruently across sectors per dollar spent, thus different sectors and mitigation actions may require more investment than others. In this plan, an economic backdrop of strong fluctuations in energy product prices, vulnerabilities to high sovereign concentration and exclusion from the official development assistance (ODA) list are described. According to the document, this creates certain challenges regarding the attainment of international climate finance and puts pressure on the national budget.

As part of the group of developing countries and SIDS, T&T is entitled to harness international finance, as stipulated in article 4.3 of the UNFCCC, in addition to their own budget and private market finance. However, due to the high gross national income (GNI) and GDP per capita, several international funding streams are not readily available to the country. These include, for instance, most types of ODA, and World Bank and other multilateral Direct Foreign Investments (DFIs). Thus, the international climate finance landscape in T&T is characterized by, on the one hand multilateral financing and donor organizations such as UN programmes, the GEF and GCF, some American development banks such as the Inter-American Development Bank (IDB) or the Development Bank of Latin America (CAF), and on the other hand bilateral funding streams organized between mostly developed countries' development banks or funds and recipient countries.

For the recipient side, the MPD is placed as the National Designated Authority (NDA) organizing climate finance initiatives across sectors. Furthermore, the country disperses national budgets toward climate change activity and counts with numerous private investments. T&T harnesses international, national, and private finance to fund its climate change mitigation activities. Hence, to structure the climate finance landscape, T&T requires a more sophisticated tracking system of financing.

6.1.1 Sources of Climate Finance

Finance for climate action in T&T is provided through i) private funding channels, ii) domestic budgets, domestic funds, and incentive mechanisms, and iii) international bilateral and multilateral cooperation and investments dedicated to climate change efforts. National and municipal governments and international development financial institutions are currently the major financial source for climate action in T&T and are likely to remain so in the future.

6.1.1.1 International Climate Finance

As the level of economic development of T&T is more advanced than that of most developing countries, the country is labelled as a high-income developing country according to the Organisation for Economic Co-operation and Development (OECD), and, as a result, ODA and

other multilateral DFIs cannot be consistently accessed by the country. The following sources of international climate finance are available:

- **Multilateral Climate Funds:** T&T obtains UNFCCC finance for climate change mitigation initiatives from public multilateral sources mostly through the GEF and the Green Climate Fund (GCF). Funding from these institutions is employed across various sectors for climate change action. The GEF has pledged some 16.4 million USD under a co-financing mechanism for 14 projects and the GCF about 16.7 million USD for one multi country project for climate change action in T&T. The GCF has furthermore provided readiness support grants to the country, totalling 1.7 million USD.
- **International Financial Institutions:** The most important international financial institutions and multilateral development banks actively funding climate change projects in T&T include the IDB, CAF, and the Caribbean Development Bank (CDB), all of which cover most dominantly mitigation actions relating to power generation and waste and wastewater, and to a much smaller extent, mitigation actions within the industry and product use sector. The primary finance mechanism of these international finance institutions are debt-based loans, which by far exceed the grants accessed by T&T from its diverse fund providers. Among these are the IDB, approving for instance an 80 million USD loan in 2011 to integrate climate change into national development plans and further pledging 39 million USD to the 2020 budget for T&T. The CAF also committed a loan of 200 million USD to transport and infrastructure, yielding large potential for climate change mitigation.
- **Bilateral Funding:** Bilateral funding of climate change mitigation actions is principally limited to non-ODA bilateral grants, such as specialized funding programmes from the EU Commission. In collaboration with the UNEP, a total of about 1.4 million USD is available to T&T in grants from the EU Commission, in addition to a EU-GCCA grant of 4.8 million USD. Among these grants, most are already disbursed.

T&T is not currently tapping into funding from the United Nations Collaborative Initiative on Reducing Emissions from Deforestation and Forest Degradation (UN REDD) programme, the UN knowledge and advisory partnership currently the largest international provider of funding for reducing emissions from deforestation and forest degradation (REDD+ activities).

6.1.1.2 National Climate Finance

Public Sector Investments

The PSIP 2021 and 2022, reporting on the previous spending year respectively, list an array of actions under “Placing the environment at the center of social and economic development”, split among the two pillars environment and renewable energy. A few of these actions are targeted toward climate change mitigation. For instance, in 2021, T&T allocated 9.3 million USD to the development of renewable energy in the pursuit of reaching a renewable demand coverage of 30% by 2030 and for 2022 another 3.8 million USD were disbursed toward that goal. Furthermore, in the PSIP 2022, the budget allocated 7.1 million USD to SWMCOL financing a range of projects to reduce emissions and increase efficiency in the waste sector and 5.8 million USD to the forestry department for reforestation and forest management. Moreover, in the timeframe from 2010-2020, approximately 72 million USD were disbursed from national budgets for ongoing decarbonization of the transport sector. Related to this, in the 2021 budget 11 million USD were devoted to electric vehicle charging stations. The PSIP 2022 details planned activities by subnational actors as well, listing some environmental actions per municipality or region. In total however, the contribution

specifically to environmental projects of the PSIP 2022 is merely at 0.5% or 20 million USD of the 4.200 million USD budget. However, it is noted that climate change mitigation actions are distributed over several sectors of the budget, for instance infrastructure.

Figure 6-1 shows the budget expenditure in T&T for the year 2022.

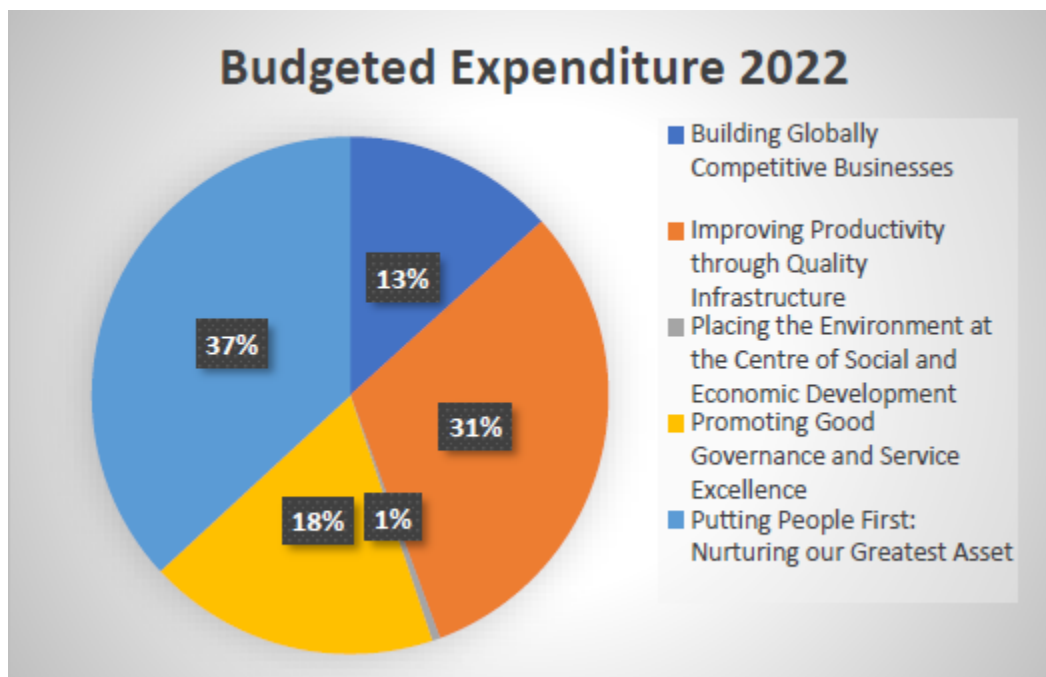


Figure 6-1: Budget Expenditure in T&T for the year 2022 (PSIP, 2022; MPD, 2021)

Green Fund

Another source for national climate finance is the national environmental fund known as the Green Fund. Established in the year 2000, it is financed by a 0.3% tax levy on gross sales or receipts of for-profit companies carrying on business in T&T. The Green Fund is managed and administered by the Minister of Planning and Development, through its implementing arm of the Green Fund Advisory Committee (GFAC) and the Green Fund Executing Unit (GFEU), with the aim of providing financial support to eligible community groups, Non-Government Organisations (NGOs) and organizations for projects related to remediation, reforestation, environmental education and awareness of environmental issues and environmental conservation. The fund finances both adaptation and mitigation programmes/projects in T&T. By 2020, 42.1 million USD was disbursed and many reforestation programmes/projects contributing to climate change mitigation were financed through the Green Fund. Examples of projects financed included:

- Fondes Amandes Community Reforestation Project – Sustainable Community Forestry Initiative.
- Fondes Amandes Community Reforestation Project - Sustainable Community Forestry Initiative – Phase 2.
- Environmental Management Authority – National Restoration, Carbon Sequestration , Wildlife and Livelihoods Project
- IAMovement (IAM) – Me:We:Green An Education & Empowerment Programme for Climate Adaptation in T&T.

6.1.1.3 Private Climate Finance

The total investment-to-GDP ratio in T&T has declined strongly between 1990 and 2015, while the public investment-to-GDP ratio remained relatively high, indicating potentially crowded out private investment. Regarding the private investment climate in T&T, sources generally regard the country as open for investments, but rank it below the LAC regional average, mainly due to ineffective and untransparent bureaucratic practices. As per most recent information there is no detailed account of private climate investment or financing in T&T, thus making it difficult to quantify its contribution in climate action. However, as for most large-scale projects there is private sector involvement in the form of project execution, co-financing, or public-private partnerships (PPPs). Further, the strong economic focus on the oil and gas sector in the country ties the largest emitting sector to financing projects to mitigate emissions. T&T in its Financial Investment Plan for NDC Implementation from 2020, analyses financing options for fulfilling its NDC targets and identifies various pathways for private investment pathways. These include political momentum to spur investments in climate change in the oil and gas sector and identify the potential to leverage the strong domestic banking sector. Further, it identified that there is a lack of incentives for companies involved in power production. Overall, the report covers a wide range of potential sources for financing T&T's NDCs and provides a successive strategy for ramping up private finance.

Private Investment Support and Public-Private Partnerships

InvesTT Limited (InvesTT) was established in 2012 as the national investment promotion agency (IPA) aligned under the Ministry of Trade and Industry to facilitate private investments by providing information on opportunities and regulations for investments. Essentially the government's tool to attract Foreign Direct Investment (FDI), InvesTT specifically aims at diversification of the economy away from the usual FDI recipient sectors in oil & gas and in its vision statement expresses the target toward a more sustainable economy, albeit not strictly linked with climate change. Projects presented as investment opportunities and connected to climate and sustainability by the platform include for instance ecological business real estate, agro-processing, electric battery production and storage and recycling and circular economy in the industrial sector. The platform thus holds the potential to facilitate and streamline FDI into sustainable projects in T&T.

Moreover, some of the multilateral institutions active in T&T, such as the IDB, CAF or CDB provide expertise for private sector partnerships. On the Government side, a PPP policy and specialized unit was established within the Ministry of Economy in 2011 and is tasked with overseeing the National PPP Policy invoked in 2012. The policy details the rules PPPs generally must follow. Under this new policy framework most infrastructure projects have been realized, with little engagement in other sectors. The CBD in 2019 estimated the costs for 7 large scale projects at 750 million USD in T&T, of which 3, the Wind and Solar Power Production projects, the integrated solid waste system and the Waste to Energy Project, represent climate change mitigation activities. Due to entering into a PPP agreement and extra loans and grants, the government was able to cut the estimated costs to about 50%. In its NDC Investment Plan, T&T acknowledges the necessity to further strengthen the institutional arrangements of PPPs to establish a clear investment framework for private investors.

6.2 Information on Country Priorities and Strategies on aspects of the Party's NDCs under Article 4 of the Paris Agreement

This section discusses T&T's existing priorities and strategies related to climate change.

6.2.1 National Development Strategies

At the National level, T&T's national development is primarily guided via the following four strategies: Vision 2030 - The National Development Strategy (NDS) of T&T 2016-2030, National Environmental Policy (NEP) of 2018, National Tourism Policy 2020-2030, and National Spatial Development Strategy (NSDS) for T&T.

6.2.1.1 Vision 2030 - The National Development Strategy of T&T 2016-2030

The NDS 2016-2030 (Vision 2030) establishes the vision and constitutes a comprehensive national development planning framework that serves as the foundation for the development agenda to the year 2030 for T&T. It acknowledges the many development and environmental challenges the country faces, including the urgent need to protect and sustain use of our environmental resources, the necessity to transform the existing economic growth model into one that is environmentally friendly while addressing both climate change mitigation and adaptation, and the high dependence on the energy sector.

The NDS is structured around five thematic areas, including a thematic area concerning 'placing the environment at the centre of social and economic development', and 56 national goals which are progressively linked over three five-year planning horizons. There are 24 short term goals which are to be achieved over the short-term planning period 2016-2020; 16 over the medium-term period (2016-2025); and 16 over the long-term planning period (2016-2030).

The thematic area dedicated to the environment (Theme V) is composed of multiple goals categorized in short-term, medium-term and long-term periods (Table 6-1).

The National Performance Framework (NPF) was developed as a tool to provide a consistent approach for systematically collecting, analysing, utilizing and reporting on the implementation progress of Government's NDS. It outlines the Key Performance Indicators (KPIs) to measure the achievement of the Vision 2030 goals as defined in the NDS and thus the targets pertaining to the SDGs.

Table 6-1: Goals of thematic area V 'Placing the Environment at the Centre of Social and Economic Development

Period	Years	Goals
Short-term	2016-2020	<ol style="list-style-type: none"> 1. Environmental governance and management systems will be strengthened 2. Carbon footprint will be reduced 3. Climate vulnerability will be assessed 4. Comprehensive waste and pollution management systems will be created 5. Natural resource management will be improved
Medium-term	2016-2025	<ol style="list-style-type: none"> 1. Renewable energy will be incorporated into the energy supply 2. Institutional arrangements for effective environmental management will be improved 3. Meet all international environmental obligations 4. Improved waste management and recycling capabilities

Period	Years	Goals
		5. Biodiversity and ecosystem services are incorporated into all areas of national development
Long-term	2016-2030	1. A healthier environment 2. Improved energy efficiency 3. Improved climate resilience 4. Wastes will be reduced 5. Improve the quality of ecosystems and sustainable use of natural assets 6. Citizens are more environmentally aware

6.2.1.2 National Environmental Policy (NEP) (2018)

The NEP of T&T is the overarching framework for environmental management in the country and defines the essential priorities to achieve environmental sustainability and sustainable development. It ultimately aims to improve and maintain a high level of environmental quality for current and future generations while ensuring that the health, interests and development of the people of T&T are not compromised. To achieve sustainable development, the NEP identified six environmental priorities perceived as critical, namely:

1. Protecting Environmental & Human Health through Pollution Control
2. Sustainable Managing Natural Assets
3. Improving the Local Environment
4. Evolving a Greener Economy
5. Fostering an Environmentally Responsible Society
6. Addressing Climate Change & Environmental and Natural Disasters

The sixth priority area is devoted to Climate Change Mitigation & Adaptation and Comprehensive Environmental & Natural Disaster Management. The NEP highlights commitments of the Government of T&T related to climate change mitigation, energy efficiency & conservation, and renewable energy, namely:

- I. Climate Change Mitigation:
 - a) Conduct regular inventories of GHGs.
 - b) Cooperate with relevant local, regional and international agencies to implement technologies that will sequester, reduce, prevent or control man-made emissions of GHGs across all sectors.
 - c) Conserve and enhance natural ecosystems that serve as sinks or reservoirs of GHGs such as forests, coastal and marine wetland ecosystems.
 - d) Utilise mechanisms under the UNFCCC including, but not limited to: Low Emission Development Strategies, NAMAs, Clean Development Mechanism (CDM), REDD+ and market mechanisms.
 - e) Establish and strengthen the institutional arrangements, including the designation of focal points, national authorities, and other entities, for the purpose of utilising financial mechanisms related to climate change including, but not limited to the: Special Climate Change Fund (SCCF), the GCF, and the Adaptation Fund (AF).
 - f) Mobilise resources, and seek global partnerships to secure resources, to support the implementation of the mitigation measures contained in the National Strategy for the Reduction of Carbon Emissions in T&T, 2040, National Climate Change Policy and other national policies related to climate change, and Nationally Determined Contributions under the Paris Agreement.
 - g) Amend existing legislation or develop new legislation, as appropriate, to give effect to T&T's commitments under MEAs related to climate change.

- h) Explore market-based mechanisms that give effect to T&T's commitments under MEAs related to climate change.
- i) Establish a national monitoring, reporting and verification system for GHG emission inventorying, reduction, avoidance or sequestration.
- j) Support institutional capacity building in the public, private and non-governmental sector towards emissions reductions, monitoring, verification and reporting.

II. Energy Efficiency & Conservation:

- a) Create an enabling fiscal, legislative and institutional environment that encourages and supports the use of cogeneration systems with an emphasis on the power generation sector.
- b) Develop a regulatory framework to promote energy efficiency in buildings, equipment and appliances, that is aligned with regional and international standards and best practice.
- c) Strengthen the capacity of public, private and non-governmental actors to undertake energy efficiency interventions including energy audits, energy-efficient design, and other energy services.
- d) Strengthen existing or further develop, as appropriate, appropriate financial and market-based mechanisms to encourage energy efficiency and energy conservation across all sectors.
- e) Continue to develop and implement demand-side management programmes to encourage energy efficiency and energy conservation practices in the residential, commercial and industrial sectors.
- f) Adjust, as appropriate, electricity tariffs and pricing mechanisms to encourage more efficient and responsible consumption of energy

III. Renewable Energy:

- a) Revise existing legislation or develop new legislation and policies, as appropriate, to facilitate the deployment and integration of renewable energy technology into the residential, commercial and industrial sectors.
- b) Strengthen existing or further develop financial and market-based mechanisms, as appropriate, to encourage the use of renewable energy across all sectors.
- c) Partner with local, regional and international entities to create an enabling environment for investment into renewable energy research, support services, and projects, including feasibility studies.
- d) Develop and implement programmes aimed at enhancing public awareness and education on renewable energy.
- e) Develop and implement, as appropriate, capacity building programmes in collaboration with private and non-governmental actors to enhance renewable energy integration and deployment.
- f) Develop and adopt, as appropriate, standards and codes for the buildings sector to enable the development and integration of renewable energy technologies, and are harmonised with international and regional standards, codes and best practice.

6.2.1.3 National Tourism Policy 2020-2030

The National Tourism Policy serves as the overarching policy framework for the development of tourism in T&T. It aims to provide a clear path for advancement of the tourism sector, addresses changing circumstances that impact the sector, and help achieve national objectives, inspire greater confidence among prospective investors and entrepreneurs, and provide a basis for sensitizing the public on the direction of tourism in T&T.

The National Tourism Policy outlines several key guiding principles and seeks to achieve the vision and objectives through a multitude of policy statements, which are identified under strategic areas of intervention, and include aspects related to climate change mitigation. For instance, the GoRTT will facilitate funding for infrastructure needed for tourism development, with priority given to options based on renewable and green technology, climate change adaptation, disaster risk mitigation, etc. For climate resilience it will support the elaboration and implementation of climate mitigation and adaptation strategies that provide for the development of a resilient, climate smart tourism destination and which are aligned to Caribbean Community and Common Market's (CARICOM) regional strategy; partner with the EMA and the Environmental Commission of T&T to implement climate change mitigation and adaptation measures for the tourism sector in T&T, which are in line with the policies of the Caribbean Climate Change Centre (CCCCC); and conduct public education and awareness programmes on climate change mitigation and adaptation.

6.2.1.4 National Spatial Development Strategy for T&T

The NSDS defines the framework for the ways national space will be used and developed in T&T during the ten-year period from 2013 to 2023 and working towards a vision of desired progress that could be achieved by 2033. The NSDS is structured around twelve objectives, grouped under three key themes (strong and resilient communities, sustainable prosperity, and sustainable infrastructure), and set within an overarching goal of delivering sustainable development.

One of the objectives relates to meeting the challenges of climate change, and to adapt the ways in which we live, build, travel, and communicate to maximize resilience to the effects and impacts of climate change and to reduce contributions to factors that are adding to it. This is further reiterated in the NSDS through the core principles for achieving sustainable development, which state that spatial planning activities and decisions should take full account of the potential impacts of natural events, hazards and disasters, including flood risk, coastal change, land instability and seismic activity, and of the impacts and consequences of climate change.

The NSDS highlights several policies related to the objective to meet the challenges of climate change, which also include policies concerning climate change mitigation, namely:

- Requiring that the design of development minimizes carbon emissions relating to the use of energy and other resources and encourages low-carbon lifestyles by the occupants and users of the development.
- Promoting an overall pattern of settlement and growth that reduces the need to travel.
- Supporting investment and job-creation in low carbon industries, services and products.
- Promoting modal shift from the car to less carbon-intensive modes of transport through appropriate investment, infrastructure provision and the design of development.
- Promoting development and application of Information and Communications Technologies (ICTs), thereby helping to reduce travel demand and emissions.
- Promoting a reduction in energy use in line with an energy hierarchy and promotes the use and development of low carbon and renewable energies.

6.2.2 National Climate Change Policies

More specifically pertaining to climate change, the National Climate Change Policy of 2011 and the Carbon Reduction Strategy of 2015 are the two primary national climate change policies that lay out the mitigation priorities set out under T&T's first NDC until the year 2030.

6.2.2.1 NDC for the period 2021-2030

Under its commitment to the Paris Agreement, T&T communicated its first NDC to the UNFCCC on February 22, 2018, setting out the targets for the 2021-2030 period for mitigation. T&T's NDC

is based on the country's Carbon Reduction Strategy, initially developed for mitigation in the power generation, transport, and industry sectors. In T&T, these sectors are still heavily reliant on fossil fuels and as such, are the key emitters, leading to a relatively high share of GHG emissions per capita in the country in international comparison. The NDC is consistent with the provisions of the country's National Climate Change Policy. (NCCP)

The NDC includes an unconditional commitment to reduce public transportation greenhouse gas (GHG) emissions by 30%, or 1,700,000.00 CO₂e, by December 31, 2030, compared to the BAU scenario (reference year 2013). Furthermore, the country conditionally commits to achieve a reduction in overall GHG emissions from the power generation, transport, and industry sector by 15%, or 103,000,000.00 CO₂e, by 2030 compared to the BAU scenario.

Although the NDC does not include specific mitigation actions to reach the unconditional and conditional commitments, the Carbon Reduction Strategy and the NDC implementation plan constitutes the tool for the GoRTT in achieving its international commitments. The Strategy includes a list of actions selected to mitigate GHG emissions in the electricity power generation, industry, and transport sector of T&T.

6.2.2.2 National Climate Change Policy (2011)

The NCCP was developed based on the recognition by the GoRTT for the need to address the challenge of climate change in accordance with relevant national policies as well as relevant guidance of the UNFCCC.

The purpose of the NCCP is to establish a multifaceted framework, in harmony with other sectoral policies, for the pursuance of a low-carbon development path for T&T through suitable and relevant strategies and actions to address climate change, including sectoral and cross-sectoral adaptation and mitigation measures. It is guided by several overarching objectives, namely:

- Reducing or avoiding greenhouse gas emissions from all emitting sectors.
- Enhancing carbon sinks.
- Protection of the natural environment and human health.
- Conserving and building resilience of human and natural systems to adapt to the adverse impacts of climate change, including through capacity building, the application of cleaner and energy efficient technologies, and relevant research and development.
- Enhanced agricultural production and food security.
- Educating the wider public on the potential impacts of climate change and the recommended adaptation strategies.
- Conserving and guaranteeing a sustainable supply of potable water.

Furthermore, the NCCP identifies several climate change mitigation policies to achieve sustainable development through a low greenhouse gas emission economic development pathway across all sectors of the economy (Table 6-2).

The NCCP is currently being updated to reflect developments in the global climate policy landscape.

Table 6-2: Climate change mitigation policies specified in the NCCP.

Area	Policy
Increase the use of renewable energy	<ol style="list-style-type: none"> 1. Develop renewable energy policy and standards. 2. Develop suitable fiscal incentives for domestic use and sale to the national grid. 3. Develop initiatives such as replacing conventional street lighting with solar powered LEDs utilising a phased approach through routine maintenance programmes.
Increase energy efficiency in commercial and residential buildings	<ol style="list-style-type: none"> 1. Develop a Green Building Code that will seek to maximise renewable energy and energy efficiency. 2. Formulate and adopt energy efficiency standards through the T&T Bureau of Standards.
Increase the use of alternative fuels and fuel switching in the transportation sector	<ol style="list-style-type: none"> 1. Maximise the use of CNG as a vehicle fuel and the provision of suitable fiscal incentives for vehicle conversion for private owners, and mandatory conversion for state-owned and public vehicles such as buses and taxis 2. Explore fiscal incentives for the importation of hybrid vehicles and fuel cell vehicles. 3. Improve public transport efficiency including through mass transit systems. 4. Examine the potential and feasibility of a percentage replacement of traditional fuels by biofuels for domestic production and consumption. 5. Explore other waste minimisation technologies related to emissions such as combined heat and power, and energy from waste.
Increase the use of cleaner technology in all GHG-emitting sectors	<ol style="list-style-type: none"> 1. Institute mandatory inventorying, reporting and auditing of greenhouse gas emissions from all sectors to monitor emission trends and quantities that will inform technology intervention options. 2. Develop regulatory approaches and technology standards. 3. Explore the feasibility of developing cap-and-trade regimes within and across emitting sectors. 4. Retrofit emitting sectors with cleaner technologies. 5. Provide fiscal incentives for and disincentives to encourage the use of cleaner technology. 6. Utilise ICTs.
Enhance natural carbon sinks	<ol style="list-style-type: none"> 1. Conserve forests and protecting natural systems, including rehabilitation of degraded areas that contribute to carbon sequestration.
Maximize the use of the carbon market	<ol style="list-style-type: none"> 1. Strengthen institutional capacity to participate in the CDB of the Kyoto Protocol. 2. Develop incentives for participation in feasible domestic cap-and-trade regimes.
Enhance research and development	<ol style="list-style-type: none"> 1. Encourage research and development in the maximization of renewable energy resources such as solar, wind, oceans and tides through the development of incentives and institutional arrangements for multipartite involvement including private sector, academia, government and NGOs. 2. Encourage the development and manufacturing of raw materials for renewable energy technologies such as fuel cells and solar cells through the provision of requisite enabling environment including, inter alia, the formulation of incentives to involve private sector investment. 3. Explore new technologies for carbon sequestration through cooperating with the international community to develop carbon capture and storage technology in geological formations utilizing the already abundant experience of T&T in using carbon dioxide for enhanced oil recovery (EOR). 4. Explore the potential of emerging and innovative technologies such as those for utilising carbon emissions, for example, greenhouse gas to chemical resources technology.

6.2.2.3 Carbon Reduction Strategy (2015)

The Carbon Reduction Strategy was designed to create the necessary conditions and capacities for multidisciplinary implementation of climate change action based on the policies of the GoRTT. It aims to contribute to the implementation of the NCCP through the establishment of a roadmap for the reduction of GHG emissions of T&T's electricity power generation, industry and transport sectors over the 2013-2040 horizon and thereby create a framework for the development of green growth in T&T.

It should promote sustainable development, fostering new economic sectors linked to green growth and creating new employment options, with the following sector-specific objectives:

- i. In the electricity generation sector, renewable energies will be a reality in T&T energy mix, energy efficiency will have helped reduce the country's electricity consumption, and the electricity generated will cause less GHG emissions due to the use of more efficient technologies in generation plants.
- ii. In the industry sector, energy resources will be used wisely, by minimising the production of waste heat and cut energy consumption through the implementation of energy efficiency actions. The industrial sector of T&T will have incorporated the latest Best Available Technologies (BAT) and, as a result, minimised the process-based GHG emissions and the associated environmental impact of their activities.
- iii. In 2040, the transport system of T&T will not only be based on the use of private vehicles, but a reliable public transport system will be a safe and economic alternative for the population. Combined with effective traffic management plans and the responsible use of the car will lead to less traffic congestion, lower GHG emissions in the sector and reduce environmental impacts. The use of alternative fuels and alternative technologies such as electric vehicles will be a reality for all modes of transport and the vehicles used will be more efficient.

Furthermore, the Strategy includes a list of actions selected to mitigate GHG emissions in the electricity power generation, industry, and transport sector of T&T (Table 6-3).

Table 6-3: GHG mitigation actions outlined in the Strategy for the electricity power generation, industry and transport sectors of T&T.

Sector	Mitigation Action
Power Generation	<ul style="list-style-type: none"> • Wind and solar atlases and wind pilot project • Energy audits • Electrical energy generation technology • Efficiency improvements in generation • Waste to energy • Energy conservation and efficiency measures • Smart grids • Promotion of energy conservation • Renewable energy systems • Decentralisation of renewable energy generation • Review energy pricing
Industry	<ul style="list-style-type: none"> • Energy audits • Characterization, diagnosis, and BAT implementation • Carbon Capture and Sequestration (CSS) studies • EOR studies • Improved use of energy and heat in industrial processes • Complementary renewable energy sources • Thermal desalination • Reduce venting and flaring

Sector	Mitigation Action
	<ul style="list-style-type: none"> • Efficient technologies in the oil and natural gas sector • Promotion of energy conservation and lower waste generation • Review fuel subsidies for the industry sector
Transport	<ul style="list-style-type: none"> • Biofuel studies • Ridesharing • Vehicle energy efficiency and fuel switching • Parking management • Upgrade and replacement of aircrafts • Alternative fuels in aviation • Efficiency in water transport • Alternative fuels in marine navigation • ICT technologies • Low emissions driving practices and standards • Awareness raising campaigns to reduce the use of private vehicles • Air traffic management systems • Best practices to reduce fuel consumption in waterborne navigation • Public transport systems • Review fuel subsidies for the transport sector • Vehicle registration fees and taxes

6.2.2.4 Whole of Economy Net-Zero Strategy

The MPD will begin execution of the GEF-8 project entitled, “Accelerating the transition to a net-zero, nature-positive economy in T&T (TT Net-zero)”. This project seeks to address three key barriers that prevent an accelerated switch towards sustainable economic activities and livelihoods. These are:

1. Limited long-term strategy and coherent policy framework for a national transformation towards a NZNP economy.
2. Missing NZNP-aligned enabling framework limits investments in nature-positive low-emission energy technologies and solutions.
3. Limited local experience with nature-positive low-emission technologies and solutions (especially in terms of renewable energies and green mobility projects).

The project’s overall objective is to significantly accelerate the reduction of T&T’s dependency on oil and gas production while contributing to a national transition towards a net-zero, nature-positive economy.

This objective will be achieved through a three-fold approach:

- (i) Project activities aim to reform the national policy environment to maximize synergies between climate, biodiversity and human well-being, through the development of national net-zero strategy. Hence, the GoRTT commits and takes nature-positive action to decarbonise its economy towards a net-zero target;
- (ii) Also, project activities address barriers to finance such that T&T’s public and private sector will deploy financing mechanisms to mobilize investments for the decarbonization of the economy with a particular focus on the energy sector. This involves the implementation of sectoral and thematic reforms and plans for the energy sector in line with a developed NZNP strategy;

- (iii) It is further envisaged that interventions will showcase the feasibility of low-carbon, nature-positive technologies by implementing NZNP-aligned demonstration projects on Trinidad as well as on the island of Tobago.

The project is expected to be transformative in supporting T&T in transitioning towards a net-zero, nature-positive economy. The project is expected to achieve greenhouse gas emissions mitigation over the project's lifetime of 859,320 tCO₂e, of which 3,320 tCO₂e will be direct and 856,000 tCO₂e indirect, to achieve 100 ha of land and ecosystems under restoration, 1000 ha of landscapes under improved practices.

6.2.3 Sectoral Climate Change Policies

At the sectoral level, T&T has developed specific climate change mitigation policies for the Energy, Industry, and Transport Sectors, the three primary sources of GHG emissions in the country, as further detailed below.

6.2.3.1 Energy

RE Policy

T&T is currently in the process of drafting a RE Policy through the GCCA+ initiative, which is a EU initiative that supports vulnerable countries, mainly SIDS and Least Developed Countries to address climate change. It will identify the regulatory framework to promote the use of RE, Energy Efficiency (EE) and carbon reduction. Furthermore, the policy will promote a transformative, green economy by demonstrating the benefits of renewable energy and its potential role in creating employment, sustainable development and reducing the environmental risks associated with non-renewable energy sources.

In this context, a Framework for the Development of a RE Policy for T&T was developed in 2011, which recognizes the importance of developing the country's RE resources and the complementary role of EE to achievement of long-term sustainable development and energy security and as a mitigation strategy to address the issue of climate change. The Framework highlighted that the primary objective of RE policy measures for T&T in the context of the country's National Energy Policy is to identify and examine strategies and make recommendations for introducing RE into the local energy mix.

Industry

There is no separate sectoral policy document addressing specific objectives and strategic lines regarding climate change for the industry sector in T&T. This sector is addressed in several national climate change policies, such as the NCCP and the Carbon Reduction Strategy. These documents touch on climate change mitigation in the industrial sector through minimising the production of waste heat and cut energy consumption through the implementation of energy efficiency actions and incorporation of the latest BATs.

Transport

- Ministry of Works and Transport Strategic Plan 2019-2024

The MOWT's five-year strategic plan 2019-2024 defines the direction the Ministry will take and ensures it is aligned with the national policies of the country. The Strategic Plan intends to identify and fully implement changes to support environment management and climate change and states that steps will be taken towards reducing the carbon footprint through conversion practices.

Furthermore, the NSDS for T&T calls for the development of a Sustainable Transport Strategy to move towards sustainable transport in T&T. This will ensure full integration of all modes of transport, and full integration and coordination with spatial, social and economic policies, and should include mass transit, public transport, links to Tobago, road development programme, and walking and cycling. However, the development and implementation of a Sustainable Transport Strategy has not yet commenced.

6.2.4 Climate Change Programmes

6.2.4.1 Environmental Management Act

The Environmental Management Act Chapter 35:05 (the Act) provides the legislative framework for addressing issues related to environmental protection and conservation. According to the Act, “management and conservation of the environment and the impact of environmental conditions on human health constitute a shared responsibility and benefit for everyone in the society requiring co-operation and co-ordination of public and private sector activities”, and “sustainable development should be encouraged through the use of economic and non-economic incentives, and polluters should be held responsible for the costs of their polluting activities”. These principles establish a framework to consider when developing any climate change related policy in T&T.

The Act also provides for the development of subsidiary legislation including those for waste management, water pollution, air pollution, environmentally sensitive areas and species, noise pollution and other programmes related to recycling and reuse. Examples are the Waste Management Rules, 2021, the Water Pollution Rules, 2019, the Environmentally Sensitive Areas Rules, 2001, and the Environmentally Sensitive Species Rules, 2001.

6.2.5 Climate Change Development and Planning Processes

T&T has access to two primary documents that shape the development and planning processes of priority mitigation actions in the country, including the Technology Needs Assessment (TNA) conducted in 2021 for identifying and prioritizing mitigation technologies, as well as the Gender Action Plan of 2019 identifying the key barriers, opportunities and actions needed for mainstreaming gender in the NDC Implementation in T&T.

6.2.5.1 Technology Needs Assessment (2021)

The TNA assists in outlining technologies and actions to reduce greenhouse gas emissions in line with T&T’s NDC. The TNA is focused on the three sectors addressed in the NDC, namely, the power generation, industry, and transport sectors. These sectors were identified as the most important where technological interventions are needed for the development opportunities in line with the establishment of carbon reduction and mitigation strategies, to achieve the NDC objectives, as well as those in the NCCP. The TNA process is fundamentally based on the deployment of a Multicriteria Analysis (MCA), which included consideration of emissions reduction potential, and cost/benefit analysis of the identified mitigation measures and associated potential technologies. The MCA process resulted in the following prioritised technologies within the three considered sectors:

- Electricity generation
 - Energy audit and efficiency improvements of the supply side
 - Designing and implementing utility scale solar RE
- Industry
 - Renewable sources of fuel
 - Carbon capture storage and use

- Transportation
 - ICT for intelligent traffic management systems
 - EVs
 - Hybrid electric vehicles (HEV)

The prioritised technologies were selected to be considered in the next step of the TNA process, namely the barrier analysis and enabling framework (BAEF).

The prioritised technologies were moved forward to the BAEF stage. The BAEF identifies and summarises potential barriers to the deployment and diffusion of the prioritised adaptation and mitigation technologies. Regarding the selected mitigation technologies, several barriers were identified, namely, economic and financial, policy, legal and regulatory, and technical skills to deploy the technologies. Greater institutional capacity is required to strengthen the regulatory process and build technical capacity within the local workforce to foster these largescale mitigation projects and there is a need for greater capacity building throughout the various implementing agencies with adequate resources to carry out their respective mandates.

6.2.5.2 Mainstreaming Gender in the Climate Change Sector and NDC Implementation in T&T (2019)

The report provides an analysis of the policy and institutional frameworks for mainstreaming gender considerations into climate change policy and programming in T&T, specifically focussing on implementation of the NDC. This analysis identified several main weaknesses related to mainstreaming gender into climate change policy and programming, namely:

- National policy and institutional frameworks do not support effective mainstreaming of gender into climate change planning and programming with specific focus on NDC implementation.
- The mandate for gender mainstreaming at the national level is weak, in large part due to the absence of an approved National Policy on Gender and Development.
- Government ministries and agencies involved in climate change mitigation in the sectors included in the NDC (power generation, industry and transportation) have not adopted gender-aware approaches to their work, nor do they have the requisite institutional capacity in terms of knowledge, skills and planning mechanisms to do so.
- Private companies in the industry sector also do not undertake actions in planning and programming that account for gender in their operations.

The main gaps were split into five categories (policy and planning frameworks, use of sex-disaggregated data and gender information, institutional capacity and coordination, financing, and women in decision-making and leadership roles) and existing opportunities and enabling factors were identified related to the gaps. Finally, recommendations were provided in each category for mainstreaming gender in the NDC implementation process.

The recommendations from the gender analysis were used as the basis for the Gender Action Plan (GAP) and provides a framework for implementing actions for gender mainstreaming in each of the climate change sectors of T&T's NDC. It sets out the key actions, activities, timeframes, responsibilities, resources, indicators and data sources for mainstreaming gender in the climate change sector and NDC implementation. Furthermore, it outlines the steps that should be followed in the policy review process to ensure gender equality is reflected, which constitutes of the following:

1. Identify policy areas that potentially affect men and women in different ways. Consultations with men's and women's organisations can highlight key policy issues for further analysis.

2. Collect gender-disaggregated data and gender information related to these key areas identified.
3. Conduct a gender analysis to determine differentiated outcomes or impacts for men and women of proposed policy areas.
4. Design policies that incorporate actions to address the differentiated outcomes and impacts so that inequality is not perpetuated.
5. Ensure that institutional mechanisms for the implementation and monitoring of policy actions include women and women's NGOs in decision-making bodies.

Existing national policies, legislation and strategies on climate change mitigation and development priorities not discussed above have been included in Table 6-4.

Table 6-4: Existing national policies, legislation and strategies on climate change mitigation and development priorities not discussed (TNA, 2021)

Policy/Legislation Provision	Relevance to technological innovation, adaptation to climate change and development priorities
CEC Rules	The CEC Rules (2001) under the Environmental Management Act chapter 35:05 provides for mitigating potential negative environmental impacts associated with any designated activity (e.g., the release of air pollutants such as carbon dioxide and other GHGs).
Air Pollution Rules (APR)	The APR (2014) provides for the regulation of air pollution in T&T and classifies GHGs as an air pollutant.
Miscellaneous Taxes Act (Green Fund Levy)	The Miscellaneous Taxes Act (2000) Chapter 77:01 Part XIV established a national environmental fund (Green Fund Levy), to finance environmental projects to eligible entities. The Green Fund is capitalised by a 0.3% tax on gross sales of receipts of companies doing business in T&T and is payable quarterly.
Finance Act	The Finance Act No.13 (2010) includes fiscal incentives to promote renewable energy and energy efficiency.
T&TEC Act	The T&TEC Act (1945) identifies that T&TEC is legally authorized to generate electricity under the T&TEC Act, Chap. 54:70. All independent power producers (IPPs) must be licensed by T&TEC.
RIC Act	The RIC falls under the purview of the MPU. The RIC Act was established in 1998 and regulates the power generation sector. The RIC is mandated to perform certain regulatory functions for service providers of public utilities and for the licensing of service providers.
Renewable Energy Target	A renewable energy target of 10% in the national energy mix by 2021.
FIT Policy	A FIT Policy is being developed by the MEEI. The draft policy develops a framework for policy and legislation to govern FITs for RE feed into the national grid.
Energy Services Company Certification Committee (ESCO)	The MEEI established an ESCO Certification Committee in 2016. It has produced draft recommendations which outline certification criteria for ESCOs in T&T to operationalize the fiscal incentives of the Finance Act No. 13 of 2010.
Petroleum Act	The Petroleum Act (1969) provides for any licensee "to take care that gas is not liberated in such manner as to cause pollution of the surrounding air and to prevent all waste". This section can be used to control the flaring of natural gas.
National Transport Plan	Established in 1967, the National Transport Plan outlines strategy for development of road networks and was scheduled for complete revision by 1986.

Policy/Legislation Provision	Relevance to technological innovation, adaptation to climate change and development priorities
Motor Vehicle and Road Traffic Act	The Motor Vehicle and Road Traffic Act (2010) identifies the rules and regulations for licensing and owning a vehicle. There is also an amendment to the Act which includes a fine for visible emissions from vehicle. GHG emissions are however not explicitly included in the Act, although there is potential for its inclusion.

6.3 Institutional Arrangements Update with respect to Finance, Technology and Capacity Building Needs and Support since last BUR

Under the project “Strengthening T&T’s capacity in transparency for climate change mitigation and adaptation” (See CBIT Case study Section 6.7) the MRV for support was established. Key indicators were developed within the support received sector, which focus on the total financial backing for climate change mitigation from both international and private sources, particularly in power generation, industry, and transport. The NTS is adeptly aligned with the Common Tabular Format (CTF). The CTF is instrumental for T&T in reporting the support that is needed and received in accordance with Articles 9-11 of the Paris Agreement, which encompass financial aspects, technology transfer, and capacity building.

The NTS collates information on the support received for the power generation, industry, and transport sectors. The indicator is the “Total amount (TTD/USD) of climate change mitigation-related support received from international public funds and private sector funding in the power generation, industry, and transport sectors.” The indicator tracks the climate change-mitigation related support received for attaining the NDC mitigation goals for the power generation, industry, and transport sector (Table 6-5). Training on the use of the indicators is ongoing for all stakeholders for use in the next reporting cycle.

Table 6-5: Indicator reference sheet for support received.

Indicator Reference Sheet	
Indicator Overview	
Mitigation Relevance	The indicator tracks the climate change-mitigation related support received for attaining the NDC mitigation goals for the power generation, industry, and transport sector.
Associated Policy (REF Code)	Not applicable
Unit of Measure	TTD/USD
Type of Indicator	Quantitative
Sector & Sub-sector	Power Generation, Industry, Transport
Gender-responsiveness	Not gender-responsive
Data Collection	
Data requirements	<ul style="list-style-type: none"> - Total (TTD/USD) climate change-mitigation support received from international public sources related to the NDC the power generation, industry, and transport sectors - Total (TTD/USD) climate change-mitigation support received from private sources related to the NDC power generation, industry, and transport sectors - Total (TTD/USD) climate change-mitigation support received from national private sources related to the NDC power generation, industry, and transport sectors

Indicator Reference Sheet	
Data sources	<ul style="list-style-type: none"> - MoF - MPD - MOWT - MEEI - MPU - THA - Private sector stakeholders - NGOs/Community-based organisations (CBOs) - Local developmental organisations - International development organisations
Process of data collection	The MPD annually collects data on the total amount of support received by T&T related to the three NDC sectors from the relevant data sources.
Frequency of data collection	Annually
Estimation Methodology	
Formula	$A=B+C+D$
Definition of variables	<p>A = TTD/USD of climate change mitigation-related support received from international public funds and private sector funding in the power generation, industry, and transport sectors</p> <p>B = TTD/USD climate change-mitigation support received from international public sources related to the NDC the power generation, industry, and transport sectors</p> <p>C = TTD/USD climate change-mitigation support received from private sources related to the NDC power generation, industry, and transport sectors</p> <p>D = TTD/USD climate change-mitigation support received from national private sources related to the NDC power generation, industry, and transport sectors</p>
Methodology & assumptions	The indicator aims to monitor the total support received for NDC implementation. As such, it tracks the support received from both public and private sources at the national and international level for the power generation, industry, and transport sectors. It therefore does not consider expenditure in the national budget of the country.
Monitoring frequency	Annually
Indicator Management	
Lead institution	The MPD
Reporting procedures	The indicator should be reported as per CTF table III.7 in the BTRs every two years. Reporting should be carried out by the designated institution of the national MRV system charged with reporting to the UNFCCC.
Verification procedures	The indicator and progress on the indicator should be verified under the verification procedure implemented under the MRV system and be conducted by the high-level institution charged with validation. In addition, independent verification involving the review by a qualified third-party external to the process will need to be conducted.
Archiving procedures	Information on the indicator should be archived continuously by data providers, compilers and by the entity carrying out the reporting to the UNFCCC. Data should be backed up regularly to avoid information loss.

Indicator Reference Sheet	
Limitations	Standardisation of methodology for obtaining and preparing the information/data from the various input sources/entities.

6.4 Underlying assumptions, definitions and methodologies

The methodology for obtaining the information for this chapter entailed detailed requests for information from the participating stakeholders on:

- All financial support contributed, needed and received between 2019-2022 (and extending beyond 2022) for the purpose of GHG reduction in T&T and contributing to the achievement of the NDCs.
- Information on technology development and transfer, and capacity-support contributed/invested, needed, and received between 2019-2022 (and extend beyond 2022) for the purpose of GHG reduction in T&T and contributing to the achievement of the NDCs, and
- Any gaps, constraints and support needed to further contribute to GHG reduction and achievement of the NDCs in T&T.

The EMA provided templates and guidance to all stakeholders for collecting the information. Once completed, they were submitted to the Air Unit of the EMA for review. Submissions were cross-referenced with each other and public reports, files, articles and EMA documents to ensure accuracy and avoid double counting of any support.

Additionally, several underlying assumptions were made in compiling the submissions for this chapter of the report. They are as follows:

- Figures/ amounts reported directly as the figures/amounts reported by the respective institutions, organizations, companies, ministries and agencies to the reporting body, the EMA.
- All figures are reported in USD and TTD (the domestic currency) using the exchange rate that represents the current 5-year average. The exchange rate used was: 1 \$USD = 6.7 \$TTD. (Central Bank of T&T, 2024).
- The amount of support needed was calculated to be US \$2 billion (as stated in T&T's NDC).
- The reporting period is 2019-2022.
- The sectors reported on are primarily the power generation, transportation and industrial sectors.
- Financial instruments through which financial support was obtained include multilateral grant financing, internal company investment, loan financing, technical assistance grants, co-financing and grants.
- All channels of receiving financial, technological and capacity-support assistance and details surrounding it were considered and reported, including bilateral, regional and multilateral support.
- To avoid double counting, all information received from stakeholders were compiled and thoroughly checked and cross-referenced with each other in the case where more than one stakeholder reported the same "shared" assistance, the receiving parties/stakeholders were grouped together.

6.5 Information on financial support needed and received by developing country Parties under Article 9 of the Paris Agreement

T&T has received financial support for climate action across several sectors as is reported in CTF Table III.7. The CTF table also gives a description of the programmes it was received for, the type of support and explains how the support will contribute to technology development and transfer, and/or capacity-building. However, there is still a lot of room for improvement and, therefore, for continued financial investment. These needs are outlined in CTF Table III.6. Currently, of these needs, the GoRTT is prioritizing digital transformation and wishes to attract financial support for digitization across all sectors which is projected to contribute to emissions reduction. Such financial support is facilitated by the generally open investment climate of T&T, where most formal investment barriers have been eliminated. However, barriers to investment still exist and are primarily attributed to “inefficient bureaucracy” and “opaque procedures” locally, especially by U.S. companies and organizations (T&T NDC Tracker, 2021). As such, there is still much financial support needed to achieve the climate action goals and the NDCs, and they are outlined in CTF Table III.6.

The financial support contributed is intended to fund and help the progress of the major climate action projects that currently require international support, mainly: the construction of utility scale solar plants, the development of an e-mobility policy, enabling the conversion of conventional motor vehicles to run on cleaner compressed natural gas, and developing a poly carbon capture and storage; according to Trinidad investment statements in 2023 (T&T NDC Tracker, 2021). These projects are prioritized as the country is working toward implementing its NDCs as per the Paris Agreement since individually and together, they can achieve significant GHG emissions reductions for the country and contribute toward achieving the long-term goal of 15% reduction by 2030 specifically across the targeted power generation, transportation and industrial sectors (T&T NDC Tracker, 2021).

6.6 Information on technology development and transfer support needed and received under Article 10 of the Paris Agreement

The GoRTT conducted a TNA - Identification and Prioritization of Technologies for Mitigation and Mitigation Analysis Reports in 2021 to determine the needs and priorities of the country and to develop feasible plans as it relates to the involvement of technology development and transfer as well as capacity-building for enhanced GHG emissions reduction. The TNA project targeted financial and technical support. It was also aimed at helping implement GHG-reducing technologies that align with the country's NDCs and the NDC-IP under the Paris Agreement, supporting adaptation to climate change, and informing national development plans, needs and priorities (UNEP Copenhagen Climate Centre, 2021). The assessment targeted the power generation, transportation and industrial sectors since those are the sectors that the country is currently focusing on when it comes to GHG emissions reduction (UNEP Copenhagen Climate Centre, 2021). Therefore, the report entails results of the assessment with respect to mitigation, which includes two (2) project plans (one each for agriculture and transport) and a list of priorities for each of the three target sectors, some of which are ongoing and others which are pending.

Needs were determined, considered by sector, prioritized and ranked considering the following criteria:

1. Environment/ CO₂ reduction (mitigation potential measured as total CO₂ avoided)
2. Cost Effectiveness

3. Overall Evaluation of Importance

Note:

- Figures for all three criteria for the respective technologies were provided by the NDC IP 2020 Review.
- Other considerations included: benefit/cost ratio, job creation and generation of economic activity; and the technology prioritization. The MCA approach was used (UNEP Copenhagen Climate Centre, 2021).
- For power generation: emissions from the singular operator and distribution network of the power generation sector, using natural gas, were calculated and compared with emissions associated with electricity generation through renewable sources.

A summary of the technologies and their determined priority rank is presented in Table 6-6, which was adapted from the information and tables published in the TNA Report. More in-depth details are provided in the TNA and can be found at: tuna-mitigation-trinidad-tobago.pdf (unepccc.org).

Table 6-6: Technology Prioritization for Technology Development and Capacity-Building for the Power Generation, Transportation and Industrial Sectors (Table adapted from Tables 3.4-3.5 of the TNA Mitigation Report, May 2021) (UNEP Copenhagen Climate Centre, 2021)

Sector	Rank	Technology Name	Technology CO ₂ Mitigation Potential	Status
Power Generation	1	Energy audit and efficiency improvements of the Supply Side	Energy audit and updating of the generating plants and generation dispatch algorithms	Ongoing (MEEI, 2022)
	2	Designing and implementing utility scale solar RE	This would encourage RE participation by a wider economic cross section and Solar RE generation on a small scale.	Pending (MEEI, 2024)
	3	Cooperative Solar RE	Gradual replacement of fossil-based power generation by solar plants as the old fossil plants are retired, and the natural gas reserves are depleted.	Pending – 1 plant setup in progress (MEEI, 2024; The Energy Chamber of T&T, 2015)
	4	Solar power water treatment plans	If solar panels are installed, there would be cost reductions even considering the payback period. Additionally, use of these solar panels would improve the country's resilience in case of a natural disaster	Pending (MEEI, 2024)
Transport	1	Carbon Capture	Introduction of EV and HEV for public transport vehicles including buses and maxi taxis; Reduction in consumption of fossil fuels and CO ₂ emissions.	Research ongoing
	2	Biofuels	Use of alternative fuel for marine navigation and other systems on ships	Pending – Possibility being

Sector	Rank	Technology Name	Technology CO ₂ Mitigation Potential	Status
			to reduce the overall CO emissions associated with fossil fuels.	explored (The Energy Chamber of T&T, 2023)
	3	Blue and green hydrogen	Promote of ICT technologies to avoid the need to travel, red light coordination and traffic management systems to reduce traffic and increase traffic coordination.	Roadmap launched in 2022 (MEEI, 2022)
	4	Nitric Oxide (NOx) Abatement Technologies	Establish vehicle registration fees and taxes to control vehicle emissions and promote efficient vehicles with lower fossil fuel consumption (UNEP Copenhagen Climate Centre, 2021)	Pending (MOWT)
Industry	1	ICT	The reduction of emissions in this measure is based on the substitution of natural gas by biofuels. It is estimated that 10% of natural gas consumption can be replaced by alternative fuels by 2050	Ongoing
	2	EV and HEV	The available potential could reduce emissions generated by the industrial sector by 10% under a trend scenario.	Ongoing
	3	Vehicle emissions monitoring systems	It is estimated that 10% of natural gas consumption can be replaced by alternative fuels by 2050.	Pending
	4	Biogas for marine navigation	Plant retrofit for lower process emissions and reduction in emissions from venting.	Research ongoing (Bioenergy Insight, 2021)

The findings of the TNA were further to the country's Mitigation Analysis Report which concluded in 2020, ahead of the 2021 BUR submission. It focused on current and planned mitigation action for five (5) sectors including the power generation, transportation and industrial sectors; and some of these needs are synonymous with the priorities determined by the TNA and already have plans put in place that have begun to roll out (UNEP Copenhagen Climate Centre, 2012). They are outlined in Table 6-7.

Table 6-7: Needs and Plans for the Technology Development and Capacity-Support for the Power Generation, Transportation and Industrial Sectors Derived from the 2020 Mitigation Analysis Report

((UNEP Copenhagen Climate Centre, 2012; MPD, 2021)

Sector	Plans	Status
Power Generation	RE and Direct Electricity Replacement Campus Initiative	Ongoing
	Cooperative RE	Ongoing (outlined in draft MEEI RE Policy)
	Increased penetration of Utility Scale RE (30%)	Ongoing (commenced 2024)
	Using solar power for water treatment plants	Pending
	Green-building awareness with an incentive programme	Ongoing
	EE Appliance	Ongoing
	Electricity usage behavioural research	Completed 2017
	Economic instruments to foster carbon reduction	Ongoing (tax and customs incentives)
	Installation of solar power generation capacity at the Piarco International Airport	Completed 2024
Industry	Renewable fuels	Research Ongoing
	Captured Carbon and Storage	Research Ongoing
Transport	Introduction of park-and-ride system pilot	Efforts ongoing
	Transit Service improvements	Completed/ Ongoing
	Pay-as-you-drive auto insurance	Pending
	Parking pricing and parking supply management	Ongoing
	E-mobility or increased EV in the transportation mix	Ongoing

Further to these plans and priorities, the Ministry of Digital Transformation has embarked on a project called the “The T&T Digital Transformation Project” which is described as a “Whole-of-Society Digital Transformation” that is expected to enable social inclusion and the achievement of the SDGs; and together with the aforementioned needs (plans and priorities), enhance the country’s endogenous capacities and technologies. However, achieving these plans and realizing

these priorities is a process and there are still technological, and capacity-support needs that are still outstanding, and they are reflected in CTF Table III.8. Conversely, CTF Table III.9 reflects that which was received between 2018 and 2022. All the support received includes external and internal sources and reflects receipt by stakeholders across the three targeted sectors, to include ministries, companies, institutions, government agencies and other organizations with a role to play with respect to GHG emissions reductions (UNDP, No Date).

CASE STUDY – Development of Green Hydrogen Economy Roadmap for T&T

The development of T&T's Green Hydrogen Roadmap was successfully completed and published in 2022 by the Inter-American Development Bank. The roadmap was conducted through collaboration with the National Energy Corporation of T&T, with the MEEI' support and additional advisory services.

The proposed roadmap for T&T is based on a 35-year development programme and is split into 3 horizons which are depicted in Figure 6-2 (taken from the developed Green Hydrogen Roadmap document).

1. Horizon 1 – is the first foundational phase which aims to establish a consensus among the local stakeholders, advance the enabling policies and regulatory frameworks and visible carbon initiatives in T&T; and conceive the first offshore wind pilot at the end of the phase.
2. Horizon 2 – uses the foundation created during horizon 1 to commence both the first utility scale RE project and the first green hydrogen production facility. This phase will be marked by the installation of 25 GW of offshore wind with 10.5 GW output in T&T, which would have produced 1.5 million tonnes per annum (Mtpa) of green hydrogen.
3. Horizon 3 – anticipates increasing offshore wind capacity to 57GW where 25GW output is directed to feed electrolyzers and produce 4 Mtpa of green hydrogen by 2065.

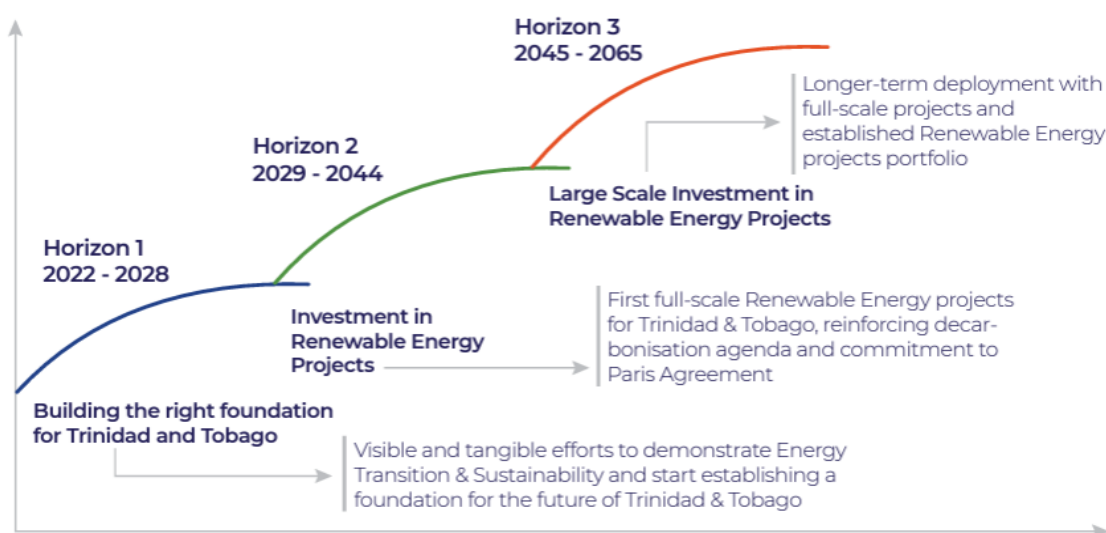


Figure 6-2: T&T's Hydrogen Economy: the Horizons (T&T's Green Hydrogen Map, 2022)

The key success of this project is the establishment of a detailed plan, in phases (horizons) – roadmap, for T&T's green hydrogen initiative and development. The roadmap is a success because it provides direction for green hydrogen as a viable alternative energy source. Other successes of the project include: the breakdown of the next steps into a 2-track interlinked approach (securing programme funding and launching demonstration projects) and identifying the regulatory frameworks necessary.

This support has directly and indirectly contributed to technology development and transfer, and endogenous capacities in the following ways:

- It has been used to establish potential for green hydrogen as an energy alternative and significantly reduce carbon emissions;
- Encouraged private sector investments;
- Endogenous capacities and know-how exist in the oil and gas and petrochemicals industries, and the support helps to develop and transfer existing technology to an upcoming energy alternative;
- Contributes to the transfer of technology and skills from the oil and gas sector;
- The intended installation of 57GW offshore technology and 4 Mtpa of green hydrogen by 2065 ensures sustainable economic growth, and job creation.

The stage of the technology cycle supported (including research and development, demonstration, deployment, diffusion and transfer of technology) includes:

- Green technology potential, research, development and deployment. This is facilitated and supported by the country's experience, expertise and infrastructure from the existing oil and gas and petrochemicals industries which would also allow easy technology transfer (best in the Caribbean) and a key competitive advantage. Point Lisas in Trinidad is also well-positioned to be a center for hydrogen and downstream green products.
- Existing markets.
- Long-standing trade relationships, shipping and export routes for energy exports.
- However, to realize the roadmap, investments in upstream development of the hydrogen value chain as well as downstream infrastructure are necessary. It will mean the realization of a local green energy sector.

6.7 Information on Capacity-Building Supported Needed and Received

In addition to technology development and transfer support, support is also received and needed for capacity-building. The country takes a holistic approach to capacity-building support in terms of both mitigation and adaptation, especially in adaptation. The need to develop capacity in the country led to the introduction of a project called the "Capacity Development for Improved Management of MEAs for Global Benefits" in 2021. This project was funded by the GEF and implemented by the MPD, with the United Nations Development Programme (UNDP) as its partner. Its aim is to take a multi-faceted approach to capacity-building to create and maintain cooperation and synergies across sectors and organizations to create and enhance integrated approaches to environmental management through the enabling frameworks of policy, legislation and institutions (GoRTT MPD, 2024; Republic of T&T MEAs, 2018). (Greater detail including the outcomes and accomplishments of this project can be found at <https://www.planning.gov.tt/content/building-tt%E2%80%99s-capacity-sustainable-future-what%E2%80%99s-being-done>, <https://meastt.gov.tt/2018/07/23/project-entitled-capacity-development-for-improved-management-of-multilateral-environmental-agreements-for-global-environmental-benefits/>).

Overall, the project has focused on the ETF and contributed greatly to building capacity for GHG reduction and climate action, especially with respect to policy and institutions as policies seen in cases such as the APR, 2014 and the increased consciousness for producing emissions and waste by institutions. However, lack of formal legislation poses significant constraints on capacity-building as most initiatives/projects are voluntary and not mandatory. It also compromises the amount of capacity-support information that is submitted. This can be improved by the passing of

proposed legislation which has been submitted for approval. It is expected to bridge the gap and communicate the importance of building capacity among stakeholders and fulfil the country's capacity-building needs, found in CTF Table III.10. In the meantime, educational campaigns (by the EMA) and incentives on more energy efficient vehicles for the population are examples of initiatives utilized to increase public awareness and participation in capacity-building.

Please see CTF Table III.10 for Information on capacity-building support needed under Article 11 of the Paris Agreement and CTF Table III.11 Information on capacity-building support received under Article 11 of the Paris Agreement

CASE STUDY - CBIT Project.

The GoRTT received support from the GEF to aid local efforts to enhance capacity-building with respect to transparency in T&T. With this support, the government initiated the CBIT project. The project was executed from October 2021 to September 2024.

The aim of the CBIT project was to strengthen T&T's transparency systems to meet the requirements of the ETF under the Paris Agreement by enhancing our country's capacity to monitor, report, and verify our climate efforts, ensuring that we meet our commitments. This project also aimed to address the need for structured data generation and management which is necessary to enable the GoRTT to fulfil its reporting obligations on climate action, access funding for the implementation of the NDC commitments and develop informed and data-based climate policies and regulations in a sustainable manner. The project focused not only on mitigation, but also on adaptation, and the creation of enabling conditions for complying with the ETF. The project built on an already existing and operational electronic MRV system, where on an interim voluntary basis, emitting entities are able to log into a digital portal using a secure password, and upload their GHG inventories following best practice inventorying methodology and QA/QC, which was then verified by the regulatory entity, in this case the EMA. The CBIT project served to expand this system to incorporate the ETF requirements to include issues related to NDC tracking, adaptation and support received, and so developed a more comprehensive NTS using the same digital platforms. By leveraging cutting-edge technology and comprehensive data management and reporting, the NTS objective is to provide a clear and accurate account of our GHG emissions, mitigation and adaptation actions, and the support received. This comprehensive platform will monitor and report on climate action, track progress in reducing GHG emissions and empirically inform the enhancement of T&T's adaptive capacity, and climate resiliency, as well as monitoring the low carbon development objectives.

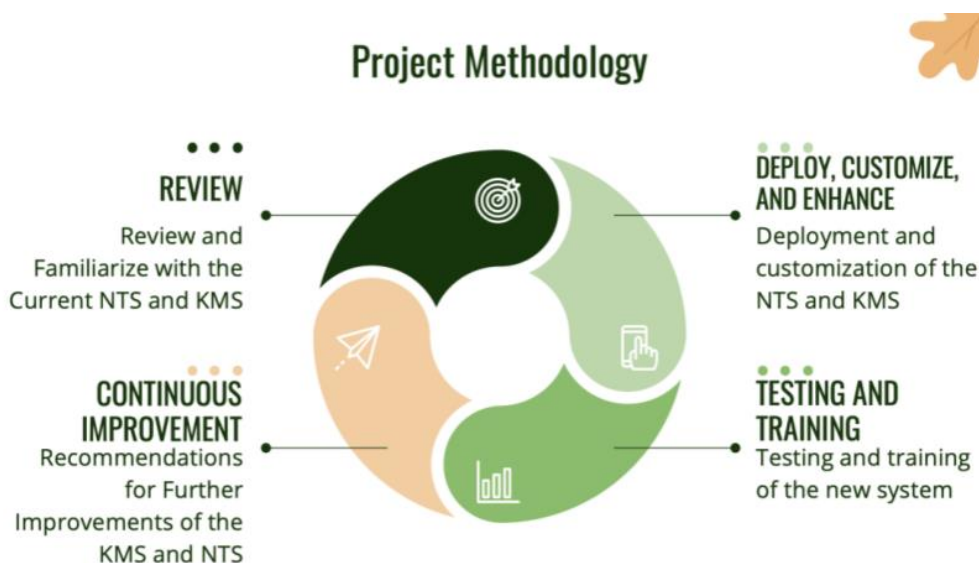


Figure 6-3: CBIT Project Methodology (taken from Strengthening T&T's capacity in transparency for climate change mitigation and adaptation INCEPTION REPORT (2023) Ministry of Planning and Development)

Figure 6-3 outlines the project methodology that was presented and completed by September 2024. The key successes of the project in enhancing capacity included:

1. The on-schedule deployment of the NTS
2. Successful implementation of the NTS including the submission of NDC and adaptation information by contributing stakeholders
3. A series of comprehensive training programs were conducted by EMA staff to build a community of users who can leverage the maximum benefits of the NTS
4. Recommendations to further enhance capacity were made. They include:
 - Integration of NTS with global and regional databases
 - Incorporating Artificial Intelligence (AI) and machine learning to enhance data-driven decision-making
 - Cross-sector integration coupled with public-private partnerships to foster innovation and ensure the maintained relevance of the NTS

The CBIT implemented a targeted capacity-building programme. The programme aimed to develop and conduct a comprehensive training component, with a view to establishing a firm knowledge and skills base in the University of the West Indies (UWI), St. Augustine Campus enabling it to provide continuous support and training to national stakeholders, and students through incorporation into relevant curricula, in relation to the technical and decision-making aspects of the reporting requirements under the ETF. Capacity-building was provided through training sessions and workshops. The workshops provided training through the dissemination of information on modules related to introduction to the ETF and NTS, Mitigation and NDC Tracking, Adaptation Fundamentals, mainstreaming climate change into national development priorities and mitigation and adaptation planning. Over two hundred stakeholders participated in the training workshops and were drawn from the sectors of water resources, health, agriculture, industry, energy and transportation, academia, and civil society. During the capacity-building process, sixty-one percent of the project's beneficiaries were women.

Additionally, under the CBIT project a five-day NTS Stakeholder Desktop Manual Training Program was executed and as a result, over eighty data suppliers from various ministries and

private sector, with sixty-six percent being women can now report verifiable climate-related data from their respective sectors. Additionally, the EMA is better equipped to utilize such data to generate reports to lead to tracking and reporting on T&T's progress in NDC implementation, policy implementation and other aspects required under the ETF. Also, through the project, the platform will include a 'Knowledge Portal' for supporting self-learning (videos of training modules, detailed user manuals and guidelines, templates).

Further, as part of the project activities under the CBIT Project to lend to the added value and importance of the NTS to track T&T's mitigation and adaptation efforts, the MPD is expected to bring to the Cabinet for approval, legislation under the Environmental Management Act to incorporate the NTS, which will incorporate the MRV legislation that is already before the Cabinet into a single set of Rules. This legislation intends to make reporting on T&T's GHG emissions mandatory rather than voluntarily, as is currently done, thereby enhancing T&T's accountability and transparency in climate actions, as well as mandatory reporting, including data, on adaptation efforts and support received as per the ETF modalities, procedures and guidelines using the agreed templates developed thereunder.

The CBIT project strengthened the mechanisms and institutions by designing and developing indicators, an appropriate legal framework for institutional arrangements to collect, record, report and manage the data to inform the preparation and tracking of national policies and international reports such as the BTRs and NCs.

The key stakeholders involved are the MPD, the EMA and the UNEP as the overseeing body, executing agency and collaborating body, respectfully (The Energy Chamber of T&T, 2023).

6.8 Information on support needed and received by developing country Parties for the implementation of Article 13 of the Paris Agreement and transparency related activities, including for transparency-related capacity-building

For the implementation of Article 13 of the Paris Agreement and preparation of reports such as the BTR, for transparency purposes, the country received a USD1,050,400 grant from the GEF. It was received specifically by the EMA (the reporting and executing agency), and used to facilitate expertise personnel, necessary consultancy, software (including platforms and other technology), MRV and overall, strengthen T&T's capacity in transparency for climate change mitigation and adaptation. The implementing body for this grant was the UNEP (Climate Transparency Platform, No Date; GEF, No Date). Information on further support needed and received for the implementation of the ETF and transparency-related activities can be found in CTF Table III.13 Information on support received by developing country Parties for the Implementation of Article 13 of the Paris Agreement and transparency-related activities, including for transparency-related capacity building and Table III.12 Information on support needed by developing country Parties for the Implementation of Article 13 of the Paris Agreement and Transparency-related activities, including for transparency-related capacity-building.

7 Information on Flexibilities

Flexibility provisions for developing country Parties that need it in the light of their capacities were applied in the preparation of this BTR and these are listed in Table 7-1.

Table 7-1: Flexibility Provisions Applied

Area of flexibility	Para. in decision 18/CMA.1, annex	Flexibility provisions for those developing country Parties that need flexibility in the light of their capacities	T&T's Application of the Flexibility
II. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases			
QA/QC Encouragement to develop a QA/QC plan and provide information on general QC procedures implemented	34	In place of the mandatory requirement to elaborate a QA/QC plan, developing country Parties that need flexibility in the light of their capacities are encouraged to elaborate an inventory QA/QC plan in accordance with the IPCC guidelines, including information on the inventory agency responsible for implementing QA/QC.	This flexibility is applied in Chapter 3 (GHG Inventory). T&T, due to capacity constraints and lack of available category specific QA/QC data/information elected to provide an overall/general QA&QC plan with respect to the entire inventory (Section 3.5). Improvements to the QA/QC plan have been discussed in the improvement plan (Chapter 8).
	35	In place of the mandatory requirement to implement and provide this information, developing country Parties that need flexibility in the light of their capacities are encouraged to implement and provide information on general inventory QC procedures in accordance with their QA/QC plan and the IPCC guidelines.	
Gases Option to report fewer GHGs	48	In place of the mandatory requirement to report on seven gases, flexibility to report at least three gases [CO ₂ , Methane (CH ₄) and Nitrous Oxide (N ₂ O)] as well as on any of the additional four gases [Hydrofluorocarbons (HFCs), Perfluorinated compounds (PFCs), Sulphur Hexafluoride (SF ₆) and Nitrogen trifluoride (NF ₃)] that are included in the Party's NDC under Article 4 of the Paris Agreement, are covered by an activity under Article 6 of the Paris Agreement, or have been previously reported.	This flexibility is applied in Chapter 3 (GHG Inventory). T&T due to lack of data, has elected to only report on the three gases CO ₂ , CH ₄ and N ₂ O. Data collection and capacity building have been discussed as an improvement for estimating additional gases especially for the IPPU sector (Chapter 8).
Time series Option to report a shorter time series	57	In place of the mandatory requirement to report a consistent annual time series starting in 1990, flexibility to report data covering, at a minimum, the reference year/period for a Party's NDC and,	This flexibility is applied in Chapter 3 (GHG Inventory). The time series T&T is reporting on is from 2006 – 2022. This is due to lack of

Area of flexibility	Para. in decision 18/CMA.1, annex	Flexibility provisions for those developing country Parties that need flexibility in the light of their capacities	T&T's Application of the Flexibility
		in addition, a consistent annual time series from at least 2020 onward.	data/verifiable data from the years prior.
III. Information necessary to track progress made in implementing and achieving nationally determined contributions under Article 4 of the Paris Agreement			
Estimates of expected and achieved GHG emission reductions Option to report this information.	85	Each Party shall provide, to the extent possible, estimates of expected and achieved GHG emission reductions for its actions, policies and measures in the tabular format referred to in paragraph 82 above; those developing country Parties that need flexibility in the light of their capacities with respect to this provision are instead encouraged to report this information.	This flexibility is applied in Section 4.5 (Mitigation policies and measures, actions and plans). T&T was unable to provide expected and achieved GHG emission reductions for the various mitigation actions and/or policies planned, on-going or implemented. In areas where expected emissions were provided by the implementing entity, sufficient details were not provided to determine whether the emissions were in accordance with the 2006 IPCC methodologies. This is an area to be considered for improvement in future reporting and will be improved in future BTRs. Capacity for estimating these expected and achieved emissions is required.
Projections of greenhouse gas emissions and removals Option to report this information	92	Each Party shall report projections pursuant to paragraphs 93–101 below; those developing country Parties that need flexibility in the light of their capacities are instead encouraged to report these projections.	This flexibility is applied in Section 4.7 (Projections of GHG emissions and reductions) This is because of the unavailability of the required capacity at the time. It is anticipated that once funding is received for BTR1 and BTR2, projections will be conducted and submitted in the next BTR.

8 Improvement Plans

T&T has integrated many key procedural elements during the project to enable a transition towards institutionalizing the inventory process for future reporting cycles. Some of these key aspects are listed as follows:

1. National Transparency System

In 2024, T&T established a robust NTS to monitor, report, and verify progress on its NDCs and climate mitigation actions. The NTS (formerly referred to as the KMS) facilitates collecting, analysing, and reporting of data related to GHG emissions, mitigation activities, and support received for NDC implementation. As it encompasses the main reporting areas under the ETF of the Paris Agreement, and acts as a centralised MRV system, the NTS is the best choice as this centralisation allows for a consistent overview of the different reporting elements and enables central management of the stakeholders involved in the NTS. It is the intention that for future reporting, the NTS will be the mechanism via which all data will be collected, analysed, archived and stored. The components and functions of the NTS have been detailed in Section 2.1.

2. Training of key sectoral stakeholders

The EMA continued to provide training of key sectoral stakeholders to assist in providing the activity data in the format required for GHG inventory. In October 2023, four sensitization sessions were conducted with relevant stakeholders that fall into the key categories of T&T (Photographs 8-1 and 8-2). These sessions included training on the required activity data, methodologies, emission factors, uncertainty, QA/QC Plans and included hands-on exercises. The categories focused on were:

- Transport – Mobile Emissions (road, water-borne and air-borne);
- Fugitive Emissions – Onshore Oil Operations of Small Operators
- Power Generation
- Industrial Processes and Product Use – Chemical Industry

3. Proposed Legislation

A Technical Policy Guidance Brief was submitted in February 2023, to the Cabinet of the GoRTT, by the MPD, that proposes the promulgation of Climate Change (Greenhouse Gases) Reporting Rules. The Technical Policy Guidance Brief is meant to provide a basis for, and propose specific legislation intended to mitigate the challenges in obtaining the data and information necessary to fulfill the reporting requirements under the UNFCCC, Kyoto Protocol and the Paris Agreement. Implementation of this proposed legislation will make stakeholder reporting of GHG emissions and mitigation efforts mandatory. This was discussed in Section 2.3.

While several steps have been taken to improve the inventory process, there are gaps which have been identified and which will be addressed before the next inventory cycle. These gaps are detailed in Sections 8-1, 8-2 and 8-3, below.



Photograph 8-1: Sensitization Session held with Mobile Combustion Stakeholders on October 17, 2023. Photo courtesy of the Corporate Communications Unit of the EMA.



Photograph 8-2: Sensitization Session held with Power Generation Stakeholders on October 26, 2023. Photo courtesy of the Corporate Communications Unit of the EMA.

8.1 National Greenhouse Gas Inventory

Table 8-1: Potential Improvements for National GHG Inventory

Improvement No.	Category Sector	Category Code and Name	Key Category	Relevant GHG Inventory Principle	Potential Improvement	Priority Level
1	Energy	Reference Approach	Not Applicable	Transparency, Accuracy	<p>There was a large difference between the emissions derived from the reference approach compared to the sectoral approach. Improvement of data collection for the national energy balance is needed. This needs to be a collaborative effort between the MEEI (data collectors and compilers of the energy balance) and the data suppliers for the energy balance (key energy stakeholders). A workshop on Capacity-Building on the National Energy Information Management System and Energy Statistics of T&T, held in Trinidad over the period September 26-29, 2023, identified recommendations summarized in an improvement plan, including the prioritization of actions, and identification of capacity-building needs. Areas of recommendation included:</p> <p>A. Legal framework and institutional arrangements B. Cross-cutting issues in national energy statistics C. Commodity balances and energy balance D. Quality assurance frameworks and metadata E. Data dissemination</p>	High

Improvement No.	Category Sector	Category Code and Name	Key Category	Relevant GHG Inventory Principle	Potential Improvement	Priority Level
					<p>F. Energy sector greenhouse gas emissions inventories, energy planning, and climate change</p> <p>Prioritization levels were assigned.</p> <p>Improvement to the energy balance is a high priority.</p>	
2	Energy	1A1 (Main Activity Heat and Electricity Production)	Yes	Accuracy	Derive a country specific CO ₂ emission factor for natural gas. This area is of medium-high priority and capacity building is required. Additional information will also have to be collected to move to Tier 2 such as fuel quality and technology.	Medium-High
3	Energy	1A3b (Road Transport)	Yes	Accuracy	Derive a country specific CO ₂ emission factor for fuel types utilized for road transport. While a key category, this area is not of high priority as capacity building and more detailed data collection (emission factors to be developed by fuel type, vehicle type and technology) is required. Currently, this data isn't available on an annual basis and by fuel consumption based on these specific factors. Capacity building and resources are required for this improvement. As such, it is a low priority.	Low
4	Energy – Data Collection	All Reporting Categories		Accuracy	For most categories, the source of data utilized was national data sources as stakeholders did not provide all the required data on their emission. Improvements to data collection from stakeholders is required. The NTS that have been developed will allow for more effective data collection, accompanied by capacity building in the form of	High

Improvement No.	Category Sector	Category Code and Name	Key Category	Relevant GHG Inventory Principle	Potential Improvement	Priority Level
					stakeholder consultations and further training on activity data required and emission estimates. Data from stakeholders is essential for greater accuracy of the national GHG inventory. This is a high priority.	
5	IPPU	2A1	No	Accuracy	Derive a country specific emission factor for the Clinker in the cement. Calcium Oxide (CaO) content of clinker and inputs of non-carbonate CaO sources are available and hence a country specific emission factor can be developed. This will improve the accuracy of the emissions estimation. However, this is not a key category and is not a high priority.	Low
6	IPPU	2A3	No	Accuracy	There is the potential to develop a country specific emission factor, which will improve the accuracy of the emissions estimation. However, this is not a key category and only contributes 0.07% of emissions to this sector and hence is of low priority.	Low
7	IPPU	2B1	Yes	Accuracy	Fuel data for ammonia production obtained from national statistics was available along with ammonia production data, which was used to produce a country specific emission factor. However, there is the potential to develop facility specific emission factors. This will improve the accuracy of the emissions estimation and is a high priority as ammonia contributes 65% of emissions for this sector.	High
8	IPPU	2B2	Yes	Accuracy	As there is only one nitric acid plant in the country. As such there is the potential to develop a facility specific emission factor.	High

Improvement No.	Category Sector	Category Code and Name	Key Category	Relevant GHG Inventory Principle	Potential Improvement	Priority Level
					This will improve the accuracy of the emission estimate.	
9	IPPU	2B8	Yes	Accuracy	There is the potential to develop facility specific emission factors, which will improve the accuracy of the emissions estimation allowing for a Tier 2 approach. This is a key category hence is of high priority.	High
10	IPPU	2C	Yes	Accuracy	There is the potential to acquire the additional inputs for a Tier 2 approach, which will improve the accuracy of the emissions estimation. This is a key category hence is of high priority.	High
11	IPPU	2F	No	Accuracy, Completeness	The current estimates were done using country import and export data. The emissions were not broken down into the category's: refrigeration and air conditioning, foam blowing agents, fire protection, aerosols, solvents and other applications, although these uses exist in the country. Capacity building is needed in this area for the estimate of emissions. Although this category is not key, improving data collection and estimation for this category will improve the accuracy of emissions estimations. This is rated as a medium priority for the next reporting cycle.	Medium
12	IPPU	2G	No	Accuracy, Completeness	The data collection system for the inputs for the estimation of electrical equipment emissions needs to be established to ensure that the data needed for the calculation is collected by the national agency. PFCs and N ₂ O were not estimated for this inventory. Capacity building is needed in this area. Estimation	Medium

Improvement No.	Category Sector	Category Code and Name	Key Category	Relevant GHG Inventory Principle	Potential Improvement	Priority Level
					of these emissions will improve the accuracy of the emissions estimations. This item is rated as a medium priority for the next reporting cycle although it is not a key category.	
13	Agriculture – Data Collection	All Reporting Categories		Accuracy	<p>While there are national data sources, the activity data collected for agriculture is based on a census conducted by the CSO which is then extrapolated for annual data. Additionally, the data collected is for heads sold and not the number of heads for the given year. Data for estimating emissions from manure management is not currently collected. While not key categories on a national level, enteric fermentation and manure management are key categories for the agriculture sector.</p> <p>Data on crops and soils are currently not collected and as such while these activities exist, emissions cannot be estimated.</p> <p>Capacity building in the form of stakeholder consultations and further training on activity data required and emission estimates is required. Data from stakeholders is essential for greater accuracy of the national GHG inventory.</p> <p>As such, priority is required for improved data collection.</p>	Medium-High
14	LULUCF – Data Collection	All Reporting Categories		Accuracy	Activity data required for the estimation of land use and land use change isn't being currently collected. These activities do	Medium-High

Improvement No.	Category Sector	Category Code and Name	Key Category	Relevant GHG Inventory Principle	Potential Improvement	Priority Level
					<p>occur, and data should be collected to include in the national estimations.</p> <p>Capacity building in the form of stakeholder consultations and further training on activity data required and emission estimates is required. Data from stakeholders is essential for greater accuracy of the national GHG inventory.</p>	
14	Waste	4A	Yes	Accuracy, Completeness	For this inventory the waste characterization study for the country was used to estimate the quantity of waste going to SWDS. However, improvements are still needed as mostly default factors were used. Industrial waste generation rate and total industrial waste % sent to SWDS needs to be verified. The inventory can benefit from country specific values, which will improve the accuracy of emissions estimates. This is a high priority.	High
15	Waste	4C	No	Accuracy	Data collection systems need to be developed for this category. Data was only obtained from a few facilities for 2019-2022. There are instances where open burning of waste occurs in rural areas, but the data is not collected. The accuracy of the emissions estimation for this category can be improved by improving data collection systems. Although this is not a key category, this sector is a priority as capacity building is required for an accurate inventory.	Medium-High
16	Waste	4D	No	Accuracy	For industrial wastewater treatment and discharge category activity data was not	High

Improvement No.	Category Sector	Category Code and Name	Key Category	Relevant GHG Inventory Principle	Potential Improvement	Priority Level
					obtained from a number of manufacturing facilities e.g., meat and poultry, food and beverage, and chemical. Data collection systems need to be implemented for this sector to improve the completeness and accuracy of the emissions estimation. Domestic wastewater data collection systems also need to be improved. Capacity building is needed for this sector and is a high priority for the next reporting cycle.	
17	All categories: Uncertainty Analysis			Accuracy	Default values from the IPCC 2006 guidelines were used to estimate the uncertainty analysis. Country specific estimates are needed to improve the accuracy of the estimations. This area is of high priority and capacity building is required.	High
18	All categories: QA/QC			Transparency, Accuracy, Completeness, Consistency, and Comparability	Checklists were developed for Tier 1 and Tier 2 QA/QC checks. However, not all data providers employ QA/QC checks. This can affect the inventory principles. Hence, capacity building on QA/QC is needed for all data providers. This is a high priority.	High

8.2 Tracking progress of Implementation and Achievement of Nationally Determined Contribution

Improvements for this chapter include:

1. Information necessary to track progress made in implementing and achieving its nationally determined contribution under Article 4 of the Paris Agreement: As stated in chapter 4 one of the outputs of the CBIT project conducted over the period October 2021 to September 2024, was the development of gender sensitive indicators, templates, protocols and guides to support T&T in tracking progress in implementing its mitigation (NDCs) and adaptation actions. These templates were integrated into the NTS. In August 2024 a five-day NTS Stakeholder Desktop Manual Training Program was executed and as a result, over eighty data suppliers from various ministries and private sector, were equipped with the knowledge to report verifiable climate-related data from their respective sectors. However, the data needed for the reporting on the indicators was not obtained for this report. As such, this is an area for improvement and the data needed to report on the indicators will be available for the next reporting cycle.
2. Mitigation policies and measures, actions and plans, including those with mitigation co-benefits resulting from adaptation actions and economic diversification plans, related to implementing and achieving a NDC under Article 4 of the Paris Agreement: Information requests were sent to all stakeholders for the data needed to update this section. However, responses were limited. As such, the reporting for this section will be an area for improvement in the next reporting cycle.
3. Projections of GHG emissions and removals: Capacity building is needed to estimate projections. It is anticipated that once funding is received projections will be conducted and submitted in the next BTR.

8.3 Information on financial, technology development and transfer and capacity-building support provided and mobilized under Articles 9–11 of the Paris Agreement

The templates required to track this information were developed under the CBIT project. Although stakeholders were contacted, limited responses were provided. As such, this is an area for improvement. The capacity to report on this information was built in 2024. Hence it is envisioned that more data will be available for the next reporting cycle.

9 Conclusions and Recommendations

T&T is facing significant challenges due to climate change, including rising temperatures, increased frequency of extreme weather events, and biodiversity loss. Despite these challenges, the country is committed to reducing GHG emissions and enhancing climate resilience through various initiatives. These include the implementation of the NDC Implementation Plan, investment in renewable energy, improved waste management, and sustainable transportation solutions. The establishment of a robust NTS and ongoing capacity-building initiatives are crucial for tracking progress and ensuring transparency in climate action. Continued international support, effective implementation of proposed legislation, and data-driven decision-making will be essential for T&T to achieve its climate goals and contribute to global efforts in combating climate change.

The recommendations include:

- Strengthen data collection and management systems across all sectors, particularly in agriculture, forestry, waste management, energy, and industrial sectors, to ensure accurate and comprehensive emissions reporting.
- Enhance renewable energy initiatives by accelerating the deployment of solar and wind projects, promoting electric vehicles, and providing incentives for private sector investments in renewable energy infrastructure.
- Improve waste management systems by enhancing waste segregation, recycling, composting programs, and implementing advanced waste treatment technologies.
- Promote sustainable agriculture practices to enhance food security, reduce emissions, and support farmers with training and resources for climate-resilient farming techniques.
- Strengthen climate resilience and adaptation by investing in infrastructure and community programs to enhance resilience to extreme weather events, sea-level rise, and improving water management systems.
- Foster public awareness and education through campaigns and integrating climate change education into school curricula.
- Enhance policy and legislative frameworks by finalizing and implementing national energy policies, developing regulations for industrial waste management, and supporting the transition to a low-carbon economy.
- Strengthening international collaboration and funding by seeking partnerships and funding opportunities and engaging in regional and global climate forums.
- Develop a robust monitoring and reporting system to track progress towards NDC targets and other climate commitments and conduct independent audits and reviews.
- Support innovation and research by encouraging research and development in climate-smart technologies and providing grants and incentives for innovative projects.

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