GOVERNMENT OF THE REPUBLIC
OF TRINIDAD AND TOBAGO

NATIONAL INTEGRATED WATER RESOURCES MANAGEMENT POLICY 2022

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This document was prepared under the guidance of a Technical Advisory Committee of the Ministry of Public Utilities in collaboration with the Water Resources Agency, after extensive consultations with stakeholders at various levels, through a process of interviews, workshops, public consultations and review of draft documents.

Approved by the Government of Trinidad and Tobago on November 10th, 2022

FOREWORD

by The Honourable Marvin Gonzales, Minister of Public Utilities, MP

The Honourable Marvin Gonzales
Minister of Public Utilities, MP

On a planet where more than half is covered by water, it appears almost paradoxical that water is a scarce resource, enjoyed with growing infrequency by populations affected by climate change on the one hand, and the continued inequity that plagues the world's distribution of resources on the other. Though undeniable, this fact is of little comfort to the citizens of Trinidad and Tobago who have not always been provided with the level of service from their water provider that they either require or deserve.

There can be no denying though that a reliable water supply, combined with a viable water and wastewater sector are essential to the development of any country. It is this understanding that lies at the core of the Government of the Republic of Trinidad and Tobago's decision to transform both the national water and wastewater sector and the Water And Sewerage Authority (WASA). This National Integrated Water Resource Management (NIWRM) Policy provides the framework within which that transformation is being commissioned.

This policy was developed following extensive national stakeholder consultations, and incorporates elements that also recognise international best practice. Moreover, in keeping with the Integrated Water Resource Management (IWRM) approach, stakeholders were actively engaged in the development of the policy, and are also now empowered to participate in its implementation, thereby fostering the co-management of the nation's water resources.

Enshrined within that management framework is the creation of the Office of Water Resource Management (OWRM), which will play a key role in the implementation of this policy. Vested with the functions, autonomy and authority of water resource management that currently reside in WASA's Water Resources Agency (WRA), the OWRM will be responsible for managing all surface water, groundwater and nearshore coastal waters, for regulating water abstraction and use, for establishing minimum stream flows, and for advising on measures to protect and conserve land use for aquifer recharge, watershed protection and environmental needs. In short, it will allow for the efficient and ethical management of the nation's water resources, thus allowing the Authority to focus on its primary role of supplying and distributing water to the population.

This National Integrated Water Resource Management (NIWRM) Policy is also closely aligned to Government's Vision 2030 National Development Strategy, which prioritises the improvement of public utility services by providing greater access to high quality services, supported by resilient infrastructure and systems.

This synergy between vision and implementation for the common good is what lies at the heart of the NIWRM Policy. Indeed, it requires citizen-wide ownership of, and responsibility for, our water resources, and a collective demonstration of responsible stewardship of this most precious resource. Citizens of Trinidad and Tobago have long demonstrated their ability to rise to the occasion when confronted by these realities, and there is no doubt that through the implementation of this NIWRM Policy, the successful transformation of the water and wastewater sector for the long-term benefit of the people of Trinidad and Tobago will be a very welcome reality.

This NIWRM Policy represents a call to action for all stakeholders, irrespective of age, gender, geographic location or social standing, as there is no citizen who will not benefit from its successful implementation. With boundless faith in our collective destiny therefore, I look forward to its fullest implementation, and ultimately, to the enhancement of the quality of life, deservingly hoped for by the citizens of this blessed Republic.

Marvin Gonzales

The Honourable Marvin Gonzales
Minister of Public Utilities, MP

ACKNOWLEGDEMENTS

Our sincere gratitude and appreciation to all those who have played a part in the development of the National Integrated Water Resources Management Policy (NIWRMP) for Trinidad and Tobago. Thank you to those persons that organised, led, facilitated and participated in the numerous rounds of public consultations and focus groups. Special thanks to the members of the Ministry of Public Utilities and the Water Resources Agency, WASA that led and facilitated these exercises. The success of the policy development process was greatly impacted by the collaborative efforts and contributions from the involvement of multiple stakeholders.

Recognition is given to those that provided technical guidance at various stages of preparation of the draft document, specifically, the Cabinet Appointed Technical Steering Committee for the review and revision of the NIWRMP. The members of the Committee and contributing organisations were the Ministry of Public Utilities, Ministry of Planning and Development, Ministry of Agriculture, Land and Fisheries, Ministry of Works and Transport, Regulated Industries commission, Water and Sewerage Authority, Water Resources Agency (WASA), Council of Presidents for the Environment, and Global Water Partnership-Caribbean.

To the persons that supported the process by going above and beyond; and to all Government Ministries, Agencies and State Enterprises, Educational Institutions, Professional Organisations, NGOs, the Private Sector and members of the public whose inputs were invaluable to this Policy, our heartfelt thanks.

This Policy would not have been possible without the efforts of everyone involved, and gratitude is given for your contributions. It is heartening to see that so many people from various sectors and backgrounds were involved, which is an indication of a strong commitment to improving water resources management in Trinidad and Tobago. It is a great reminder of the importance of collaborative efforts and the power of collective action towards achieving common goals.

Thank you.

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ABBREVIATIONS

EMA	Environmental Management Authority
IMA	Institute of Marine Affairs
IWRM	Integrated Water Resources Management
LSA	Land Settlement Agency
MALF	Ministry of Agriculture, Land and Fisheries
MCM	Million Cubic Metres
MEEI	Ministry of Energy and Energy Industries
MoH	Ministry of Health
MoWT	Ministry of Works and Transport
MPD	Ministry of Planning and Development
MPU	Ministry of Public Utilities
NGO	Non-Governmental Organisation
NRW	Non-Revenue Water
NSDS	National Spatial Development Strategy
ODPM	Office of Disaster Preparedness and Management
RIC	Regulated Industries Commission
SWMCOL	Solid Waste Management Company Limited
TCPD	Town and Country Planning Division
TEI	Tertiary Education Institutions
THA	Tobago House of Assembly
TTBS	Trinidad and Tobago Bureau of Standards
UWI	University of the West Indies
WASA	Water and Sewerage Authority
WRA	Water Resources Agency

GLOSSARY

Abstraction	The withdrawal of water from a stream, lake, reservoir or aquifer.
Ambient Water Quality	A set of concentrations, specifications and physical partitions of inorganic on organic substances and the composition and state of aquatic biota found in a water body.
Aquifer	A water-bearing stratum of permeable rock or soil able to hold or transmit much water.
Assessment (Water Resources)	An examination of the aspects of the supply and demand for water and the factors affecting the management of water resources.
Catchment Area	The area from which rainfall flows into a river, reservoir or sea, often used interchangeably with watersheds.
Climate Change	Any change in climate over time whether due to natural variability or because of human activity that alters the composition of the global atmosphere.
Climate Variability	A measure of the departures from the statistical mean, which are usually called anomalies. Climate variability is caused by naturally occurring internal processes, which occur on all time and spatial scales outside of individual weather events, and involves many modes of variability involving components of the climate systems such as the atmosphere and the ocean.
Coastal Water	Territorial waters or a territorial sea as defined by the 1982 United Nations Convention on the Law of the Sea, is a belt of coastal waters extending at most 12 nautical miles (22.2 km; 13.8 mi) from the baseline (usually the mean low-water mark) of a coastal state.
Coastal Zone (Area)	That area in which development and use are immediately affected by and have an immediate effect on the coastal and nearshore environment.
Coastal Nearshore	The limit of the coastal nearshore is 3 nautical miles (5.6 kilometres) offshore parallel with the mean high-water mark.
Coastal Zone Management	The comprehensive assessment, setting of objectives, planning and management of coastal systems and resources taking into account traditional, cultural and historical perspectives, cumulative impacts, and conflicting interests and uses.
Comprehensive Water Resources Management	Water resources planning, development and control that incorporate physical, social, economic and environmental interdependencies.
Conservation	The prudent use and preservation of water resources, most notably in drought. The treatment and re-use of water through proper watershed management.
Cost-Effective (Least Cost Combination)	An appraisal and programmes monitoring technique used primarily in social programmes and projects, in which benefits cannot be reasonably measured in monetary terms. The least expensive alternative combination of tangible costs that will realise essentially the same intangible benefit determined on a present worth basis.

Cost Recovery	Fee structures that cover the cost of providing the service or investment.
Decentralisation	The distribution of responsibilities for decision-making and operations to lower levels of government, community organisations, the private sector and non-governmental organisations (NGOs).
Demand Management	The use of price, quantitative restrictions and other devices to limit the demand for water services.
Designated Uses	Deciding what uses of the water resources are to be protected and with what degree of certainty.
Drought	An extreme climatic condition that results from an extended period of decreased rainfall that is significantly less than the expected amount for a specific period and is not enough to meet the demands of social activities as well as the environment.
Ecosystem	A complex system formed by the interaction of a community of organisms with its environment.
Effluent	The liquid drainage output that is discharged to an inland, nearshore or offshore receiving water body.
Environmental Biosecurity	The protection of the environment and social amenity from the negative effects associated with invasive species, including weeds, pests and diseases. It occurs across the entire biosecurity continuum: pre-border preparedness, border protection and post-border management and control.
Environmental Impact Assessment (EIA)	An instrument to identify and assess the potential environmental impacts of a proposed project, evaluate alternatives, and design appropriate mitigation, management and monitoring measures.
Environmental Management	Managing the protected uses of natural resources without reducing their productivity and quality.
Fauna	All the animals found in a given area.
Flora	All the plants found in a given area.
Financial Self-Sufficiency Principle (Autonomy)	The ability of an entity to operate and sustain its activities for a long period, based on the revenue it collects from the users of its services.
Government	The Government of the Republic of Trinidad and Tobago.
Hydrology	The science that encompasses the occurrence, distribution, movement and properties of the waters of the earth and their relationship with the environment within each phase of the hydrologic cycle.
Hydrogeology	The study of groundwater that deals with how water gets into the ground (recharge), how it flows in the subsurface (through aquifers) and how groundwater interacts with the surrounding soil and rock (the geology).

Hydrometeorological Cycle	The process and pathways involved in the circulation of water from land and water bodies to the atmosphere and back again. The movement or exchange of water between the atmosphere and the earth. It includes the processes of precipitation, interception, surface storage, runoff, infiltration, percolation, evaporation and transpiration.
Hydrological Drought	Deficits in surface and sub-surface water supplies based on measurements of stream flow, lake, reservoir and groundwater levels when rainfall is deficient during an extended period.
Institutions	Organisational arrangements and the legal and regulatory framework – the "enabling environment" – in which organisations operate. More broadly, institutions include entities, processes and linkages between individual entities.
Integrated Flood Management	A process that integrates land and water development in a river basin, within the context of Integrated Water Resources Management (IWRM), to maximise the efficient use of flood plains and minimise loss to life.
Integrated Water Resources Management	A process that promotes the co-ordinated development and management of water, land and related resources to maximise the resultant economic and social welfare equitably without compromising the sustainability of vital ecosystems.
Land	A delineable portion of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface, including those of the near-surface climate, the soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes and swamps), the near-surface sedimentary layers and associated groundwater and geo-hydrological reserve, the plant and animal populations, the human settlement pattern and the physical result of past and present human activity such as terracing, water storage, drainage structures and roads.
Land-use Planning	An activity aimed at achieving the optimum use of all land. The core tasks are aimed at identifying strategies for the long-term, medium- and short-term development of land, allocating land for the various activities and managing land use and land development to achieve optimum use.
Meteorological Drought	Short-period droughts or dry spells and is based solely on deficiency in rainfall that is far below the expected average (usually the period's long-term average) over a specific extended period, usually a few months, a season, to a few years. It is expressed solely based on the degree of dryness (often in comparison to some "normal" or average amount) and the duration of the dry period.
Mitigation (Disaster)	Measures taken to reduce the loss of life, livelihood and property by disasters, either by reducing vulnerability or by modifying the hazard, where possible.
Non-Revenue Water	The sum of Unbilled Authorised Consumption (water for firefighting, flushing, etc.) plus Apparent Losses (customer meter inaccuracies, unauthorised consumption and systematic data handling errors) plus Real Losses (system leakage and storage tank overflows).
Paradigm	A model of reality.

Policy	A declared intention and course of action adopted by government, party or other organisation for the achievement of a goal or objective which may be reviewed and amended from time to time.
Polluter Pays Principle	Where the remediation costs of environmental impacts should be done by those responsible for the specific process, project or activity, rather than by society at large.
Pollution	The introduction by man, directly or indirectly, of substances or energy which result in such deleterious effects as: (i) harm to living resources, (ii) hazards to human health, (iii) hindrance to aquatic activities including fishing, (iv) impairment of water quality with respect to its use in agriculture, industrial and economic activities, and (v) reduction of amenities.
Poor	"Someone who is not able to provide food, shelter and clothing for himself and his family." (Social Welfare Division, Ministry of Social Development and Family Services)
Potable Water	Water that is clear, colourless, odourless and does not pose any danger to human health.
Precautionary Principle	Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. Greater caution is required to protect the environment when information is uncertain, unreliable or inadequate.
Prevention	Measures taken to prevent natural or man-made phenomena from causing or giving rise to disasters or other emergencies.
Produced Water	A term used in the oil industry to describe water that is produced as a by-product along with oil and gas.
Programme	A definite plan of the intended procedure. A set of logically related projects within a common goal.
Project	A scheme or undertaking. A linked set of activities, which use resources to generate defined deliverables (outputs) to beneficiaries or customers within defined time, cost and quality parameters.
Protected Area	A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.
Public Property	Property that is dedicated to public use and is a subset of State property. The State is the custodian of public property.
Receiving Water	A standing or dynamic, inshore or coastal body of water that is the destination of effluents.
Recovery (Disaster)	Activities carried out after a disaster to bring the society back to or above its normal state.
Recurrent Interval	The average interval of time within which the magnitude of an event will be equalled or exceeded.

Reliability (Water Resource System)	The ability of existing and proposed water resource systems to operate satisfactorily under the wide range of possible future demands and hydrologic conditions.
Reliability Criteria	Describes how likely a system is to fail (reliability), how quickly it recovers from failure (resiliency), and how severe the consequences of failure may be (vulnerability).
Response (Disaster)	Actions carried out in a disaster situation to save lives, alleviate suffering and reduce economic losses.
River Basin	A geographical area determined by the watershed limits of a water system, including surface and underground water, flowing into a common terminus.
Setback	A prescribed distance to a coastal feature such as the line of permanent vegetation, within which all or certain types of development are prohibited (Cambers, 1998). A setback may dictate a minimum distance from the shoreline for new buildings or infrastructure facilities or may state a minimum elevation above sea level for development. Elevation setbacks are used to adapt to coastal flooding, while lateral setbacks deal with coastal erosion. (http://www.climatetechwiki.org/content/coastal-setbacks)
Seasonal Variation	In time series, that part of the movement which is assigned to the effect of the seasons on the year, e.g. seasonal variation in rainfall. (https://stats.oecd.org/glossary/detail.asp?ID=3838)
Sewage	Liquid refuse or waste matter carried off by sewers.
Sewerage	The removal and disposal of sewage and surface water by sewer systems.
Stakeholder	An organisation or individual that is concerned with or has an interest in water resources and that would be affected by decisions about water resources management.
Standstill Principle	No actions may be taken that will result in a degradation of the ecological systems. If such actions are unavoidable, then these actions must be combined with measures that mitigate and/or compensate for the negative impacts of the action.
Stormwater	Runoff from precipitation that does not infiltrate into the soil.
Strategy	A set of chosen short, medium and long-term actions to support the achievement of development goals and to implement water-related policies.
Sustainable Development	Development that meets the needs of the present without significantly compromising the ability of future generations to meet their own needs.
Sustained Yield	The annual amount of groundwater abstraction that does not exceed annual recharge, permanently lower the water table to an uneconomic level, or allow the intrusion of poor quality groundwater.
Targets	Detailed performance requirements, quantified where practicable, applicable to the organisation or parts thereof that arise from the objectives and the goals to be set and met to achieve those objectives.
Total Suspended Solids	The portion of total solids retained by a 0.45-micron filter under defined conditions.

Turbidity	The measure of the ability of suspended colloidal material to diminish the penetration of light through the water sample.
Waste	1. Unwanted materials left over from agricultural, commercial, industrial manufacturing, mining or other extraction processes. 2. Refuse from places of human or animal habitation.
Wastewater	Water that may contain dissolved or suspended matter, discharged after being used in, or produced by, a process, and which is of no further immediate use or value to that process.
Watercourse	A system of surface and underground waters that constitute, by their physical relationship, a unitary whole and that flow into a common terminus.
Water Resources	Water which is: 1. Contained in any spring, river, stream or other watercourse, whether natural or artificial, including any lakes, reservoirs, wetlands, estuaries and the coastal zone. 2. Located under the surface of the ground, whatever may be the geological structure in which it is standing or moving.
Water Resources Assessment	The determination of the sources, extent, dependability and quality of water resources, upon which is based an evaluation of the possibilities for their utilisation and control and long-term development.
Water Security	The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.
Water Transfer (Abstraction)	The transfer of a licence to abstract water from one person/entity to another, or the transfer of a licence to abstract from one location to another. Transfer from one location to another negates the right of the abstractor to access water from the initial location.
Watershed	The line separating waters flowing into different rivers, basins or seas. Often used to mean catchment area or river basin.
Watershed Management	A process of formulating and implementing a course of action that involves a region's natural and human resources taking into account social, political, economic, environmental and institutional factors operating within the watershed, the surrounding river basin, and other relevant regions, to achieve desired social objectives.
Wetlands	Areas of marsh, fen, peat land, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water less than 6 metres deep at low tide.

1. INTRODUCTION

The Government of Trinidad and Tobago (GoRTT), in the National Development Strategy 2018 – 2030 (Vision 2030) articulated the promotion of Integrated Water Resources Management (IWRM) as a strategy to meet Goal 2: Our public utility system will be better managed with improved access for all under Theme III: Improving Productivity through Quality Infrastructure and Transportation. IWRM is the overarching policy approach for improving the water sector by meeting present demands of all, while ensuring continued sustainability and availability of water resources to meet the needs of future generations.

The IWRM approach has been accepted internationally as the way forward for efficient, equitable and sustainable development and management of the world's limited water resources and for coping with conflicting demands.

It is based on four (4) pillars, namely the:

1. **Enabling Environment** of policies and legislation;
2. **Institutional Framework** which gives effect to policies, strategies and legislation;
3. **Management Instruments** that are undertaken through wide stakeholder participation, which include water allocation, assessments and economic tools; and
4. **Financial Instruments** that build capacity for meeting water demand, addressing water-related emergencies and balancing development with environmental sustainability.

The pillars of IWRM set the foundation for a country to achieve economic efficiency, ecological sustainability and social equity.

To allow for robust governance of the water and wastewater sector, the GoRTT has recognised the need for major institutional reform and has therefore renewed its commitment to adopt IWRM in Trinidad and Tobago which is the framework within the transformation of the water utility would be commissioned. This revised National IWRM Policy is linked to other national policies while taking into account the international conventions to which we are a party.

To allow for robust governance of the water and wastewater sector, the GoRTT has recognised the need for major institutional reform

General Framework for IWRM

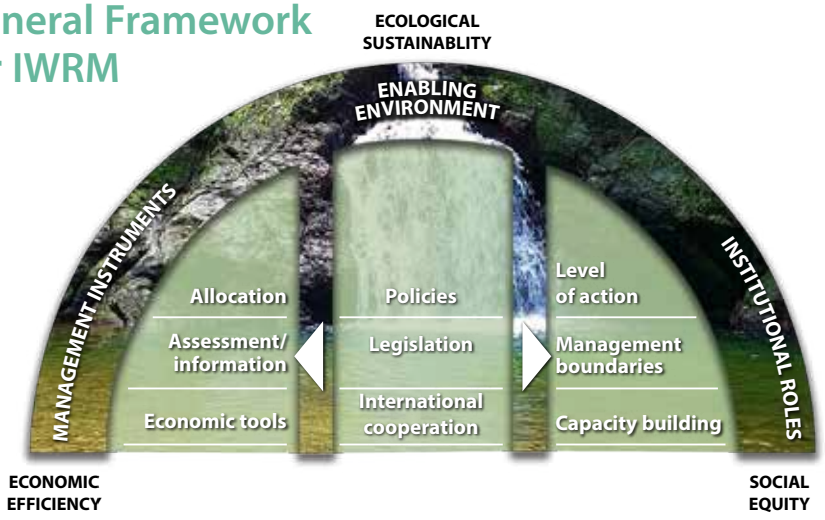

Figure 1: Stages in IWRM Planning and Implementation (GWP, 2020)

Challenges of Meeting Water Demand

Various challenges are facing the water sector in Trinidad and Tobago. These include:

- Archaic distribution system, inadequate storage and antiquated infrastructure for providing water and wastewater services to the population;
- Widespread customer dissatisfaction in the provision of water and wastewater services that has spiralled into an unwillingness to pay for the services and a resultant imbalance between the revenue and expenditure of the main service provider;
- Difficulty to meet the needs of a growing and developing society which compromises water security;
- Water utility that is in urgent need of organisational transformation;
- Little to no measurement and data analytics in the sector resulting in limited scientific understanding of water resource availability and usage in the country;
- Weak economic, resource and environmental regulation that focuses on the protection and conservation of water resources and the water environment;
- Poor management and co-ordination in the water sector ecosystem;
- Limited management of all sources of water (i.e. rainwater, stormwater, coastal waters, treated wastewater); and
- Adverse effects of climate change and variability.

Government intends to improve the water sector by implementing a National Water Sector Transformation Programme

In recognition of these challenges, the Government intends to improve the water sector by implementing a National Water Sector Transformation Programme that includes several initiatives:

- Adoption and implementation of IWRM;
- Separation of the functions of water resources regulation from the water and wastewater utility;
- Implementation of a National Water Stabilisation and Improvement Programme;
- Transformation of the Water and Sewerage Authority (WASA);
- Implementation of community-based projects with wide stakeholder involvement; and
- Development of a long-term strategy to achieve water security.

Alignment with Other Sectors

Water is an all-encompassing resource. Therefore, mainstreaming and aligning with the policies of other sectors, including, but not limited to, the environment, agriculture, industry and commerce, education, tourism and housing, are necessary.

Outline of the National Integrated Water Resources Management Policy

The intent of the National Integrated Water Resources Management (IWRM) Policy is to unify the various initiatives related to water, and provide a strong direction and vision for the effective management of the nation's water resources in an integrated and sustainable manner.

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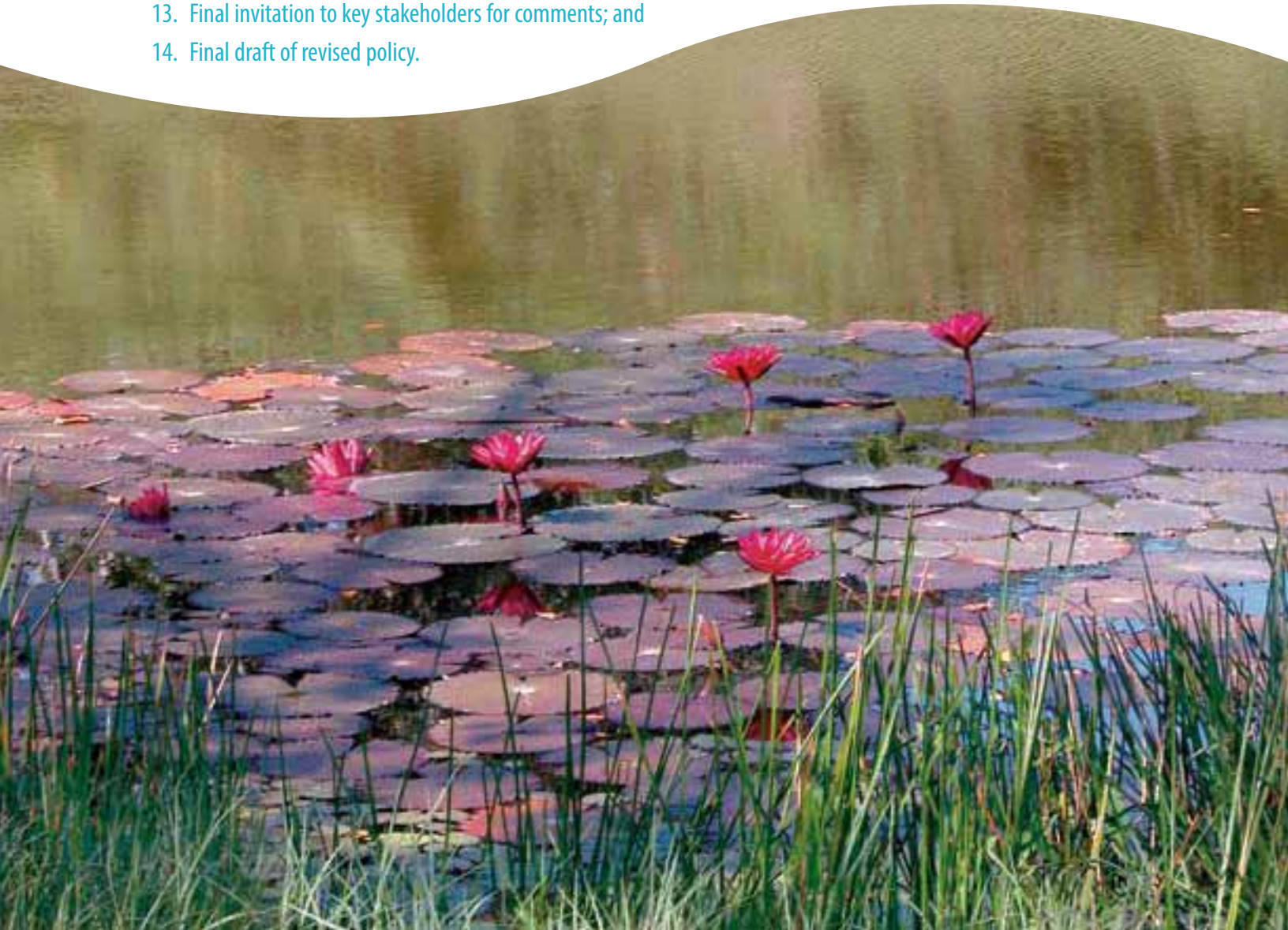
The Policy document contains:

- An overview of the status of the country's water resources;
- Goals and objectives of water resources management;
- Principles which guide the policy;
- Priorities for the allocation of water;
- Issues and policy implementation for land-use planning, water resources assessment, water resources planning, abstraction licensing, designating uses of water bodies, ambient water quality, public water supply, public water supply quality, water demand management, rainwater harvesting, agricultural water management, seasonal variation in water availability, water-related emergencies, flooding, watershed management, water-related ecology, wetlands, coastal zone management, climate change and variability, wastewater, water for national security, pricing and cost recovery, public participation and access to information, water infrastructure, water supply reliability criteria, gender and poverty alleviation;
- Instruments for policy implementation;
- Monitoring and evaluation;
- Process for review and revision of the policy; and
- Assignment of responsibilities for implementation of the policy.

Policy Revision Activities

The steps taken to revise the policy were as follows:

1. Establishment of a Cabinet Appointed Technical Steering Committee for the Review and Revision of the National IWRM Policy;
2. Initial comments from key stakeholders;
3. Online survey to obtain comments and suggestions;
4. Draft policy framework;
5. Multi-stakeholder workshop;
6. First draft of revised policy;
7. Public consultations;
8. Second draft of revised policy;
9. Focus groups' review of draft policy;
10. Third draft of revised policy;
11. Public consultation workshops;
12. Fourth draft of revised policy;
13. Final invitation to key stakeholders for comments; and
14. Final draft of revised policy.



2. OVERVIEW OF THE STATE OF WATER RESOURCES

Although Trinidad and Tobago has an abundance of freshwater resources, their quantity and quality are under significant threat due to climate change, pollution, watershed degradation and increasing sectoral demand. In order to address these issues, there must be a co-ordinated and integrated approach to manage and optimise these resources across all sectors. IWRM is recognised internationally as best practice for guiding countries towards co-ordinated development and management of water, land and related resources.

Freshwater Availability: Freshwater is a very limited resource, accounting for only 2.5% of the Earth's total water (UNESCO, 2003). The available surface water is estimated at 794,000 imperial million gallons (IMG) per year in Trinidad and at 50,700 IMG per year in Tobago (FAO, 2021). Therefore, it is estimated that the total water available for consumption in Trinidad and Tobago amounts to 0.6 IMG (2,700 cubic metres) per year, expressed on a per capita basis, and utilising extrapolated statistics from the 2011 census. Since the international criterion for water scarcity is less than 1,000 cubic metres per year (m^3/year) per person (UN World Water Development Report 4, 2012), it follows that, by international standards, Trinidad and Tobago is not a water-scarce country.

Raw Freshwater Abstraction: Water abstracted from surface (50%) and groundwater (24%) sources range between 170 to 198 IMG per day, with the three major groups of abstractors being WASA (96%), industrial/commercial (3%) and agriculture (1%).

Public Water Supply: The public water supply ranges from 215 to 243 imperial million gallons per day (IMGD), comprising approximately 50% surface water, 24% groundwater, 18% desalinated water and 8% rural intakes and springs (MPU & WASA, 2021). Water availability fluctuates during severe dry weather due to low surface water flows adversely affecting the reliability of the water supply. In comparison, during the wet season, WASA's intakes are often severely affected by flooding and heavy sedimentation.

The domestic sector is the largest single user of water in the country, accounting for approximately 74% of potable water demand. Industrial and commercial consumption accounts for 16%, with the Pt Lisas Industrial Estate accounting for 10% of total demand (MPU & WASA, 2021).

The domestic sector is the largest single user of water in the country, accounting for approximately 74% of potable water demand.

An area of concern is the very high rate of non-revenue water (NRW) ranging from 40 to 50% based on a 2019 Water Balance. This level of NRW not only affects the supply to customers but also places a higher expenditure on treatment and pumping costs. Major causes of NRW are lack of pressure management, no district and customer metering, no proactive asset maintenance and illegal water connections.

All these factors of seasonal fluctuations in water availability, NRW and other institutional and infrastructural problems result in Trinidad and Tobago having an intermittent water supply. In June 2021, WASA recorded that 21% of its customers in Trinidad received a 24/7 supply while 8% in Tobago received a 24/7 supply.

Most of Trinidad and Tobago's existing forest reserves protect critical water resources. However, major changes in land use have taken place over the past 40 years, resulting in forest fires and other disasters that negatively impact the country's water resources.

Watershed Management: Trinidad and Tobago has a long history of watershed protection. The first forest reserve in the Western Hemisphere, the Main Ridge of Tobago, was created in 1776 for attracting frequent showers (EMA, 2009). Most of Trinidad and Tobago's existing forest reserves protect critical water resources. However, major changes in land use have taken place over the past 40 years, resulting in forest fires and other disasters that negatively impact the country's water resources. Inappropriate land-use practices include, but are not limited to, indiscriminate quarrying, slash and burn agriculture, and unregulated/unchecked land development for residential, industrial and other uses.

The satellite imagery captured in 2000 suggests an estimated 44% (2,290 km^2) of forest cover (Government of the Republic of Trinidad and Tobago, 2011). Of this, 6.2% or roughly 140 km^2 is classified as primary forest, the most biodiverse form of forest. The total forested area declined from 256.3 km^2 in 1970 to 226.4 km^2 in 2010 (Food and Agricultural Organisation of the UN, 2016). During the period 1990 and 2000, Trinidad and Tobago lost an average of 7.0 km^2 of forest per year (Office of Disaster Preparedness and Management, 2014). This equates to a total loss of 3.8% of its forest cover or around 90 km^2 (Office of Disaster Preparedness and Management, 2014) for the period 1990 – 2005.

At present, the State owns over 50% of the land and 80% of the forested areas in Trinidad and Tobago. There are also several legally designated protected areas: Forest Reserves, Wildlife or Game Sanctuaries, and Protected Marine Areas and Environmentally Sensitive Areas (ESA). The existing ESAs include the Aripo Savannah, Matura National Park and Ramsar-designated wetlands: Buccoo Reef and Nariva Swamp. The Caroni Swamp is also a Ramsar site. It is not designated, however, as an ESA (Government of the Republic of Trinidad and Tobago, 2011).

Wetlands, including riparian zones (riverbanks and floodplains), are very important since they support high productivity and biodiversity. They provide food and habitat for both aquatic and terrestrial species (Naiman, Decamps, & McClain, 2005) while acting as natural filters and flood buffers. They can also serve as source regions to stabilise base flow during dry periods and replenish groundwater stores. Mangrove swamps, another type of wetland, which play a critical role in flood abatement, fisheries and carbon storage, are being threatened by encroachment from built development, human activities and sea level rise (IMA, 2016).

Several distinct terrestrial ecosystems exist in Trinidad and Tobago, the most biodiverse of all the Caribbean islands. Over 420 species of birds, at least 600 different species of butterflies, over 95 different mammals, 85 different reptiles, 30 amphibians and 54 species of freshwater fishes coexist here, along with more than 2,100 different flowering plants, including over 190 species of orchids (Government of the Republic of Trinidad and Tobago, 2011).

Water Quality: Trinidad and Tobago has historically enjoyed potable water of a consistently high standard. However, increasing pollution from sewage, agricultural runoff and industrial effluents, combined with soil erosion and unplanned developments (EMA, 2009), are threatening the quality of raw water while increasing treatment costs for potable water. At the same time, pollution can have significant implications for public health and natural ecosystems.

The quality of the surface water resources is deteriorating in many places, as is evidenced by high levels of biological oxygen demand, bacterial content, turbidity and the presence of chemical pollutants in rivers (EMA, 2009). The main threats to water quality are untreated wastewater discharges from industries and domestic sources, as well as the high level of erosion in the upper reaches of the watercourses. Pollution of

surface water not only affects the production of potable water but also the ability of the rivers to provide favourable habitats for terrestrial and aquatic species. In-stream problems due to pollution are further exacerbated during periods of low flows when the dilution effect is at its lowest.

Most aquifers in the absence of thick overlying clay layers are very vulnerable to contamination. The potential sources of pollution to groundwater systems include hazardous waste dumps, underground fuel storage tanks, untreated sewage and industrial effluents.

Aquifers in Diego Martin and El Socorro (GENIVAR, 2008) are affected by salt-water intrusion due to over-abstraction. The predicted rise in sea level due to climate change is expected to have a similar effect on other systems, causing the interface between freshwater and brackish water to move inland. This may have significant impacts on the availability of quality groundwater and increase the cost of treatment. Sea level rise will also cause salt water to move further inland, thereby increasing the salinity of estuarine surface water systems. It will also affect the development and life of people in the coastal zones.

Irrigation: Agriculture includes activities such as hydroponics, aquaculture, animal husbandry and post-harvest activities. The supply of water to assist in the growth of crops (i.e. irrigation) is a very small percentage of total water demand in Trinidad and Tobago. However, agriculture is an important economic activity and any increased capacity for agricultural production will depend, in part, on the development of new irrigation schemes. If developed, irrigation could account for as much as 41% (World Bank, 2014) of the national water demand. The World Bank Data 2013 shows that Trinidad and Tobago has only 10.5% of land under agriculture, the lowest in the Caribbean except for the Bahamas and Belize.

Flooding: Flooding is a significant recurring problem in Trinidad and Tobago that results in debilitating economic and social losses each year (EMA, 2007). It occurs frequently in both urban and rural areas, leading to extensive damage to property and crops, increased health issues and severe inconvenience to whole communities. Perennial flash floods occur along the foothills of the Northern Range and in the Caparo and South Oropouche basins (EMA, 2012). The alleviation of flooding in the flood plains of the larger rivers, such as the Caroni, Caparo, North Oropouche and South Oropouche, may require substantial short-term investments in capital works. The Drainage Division has completed catchment studies in the Caroni, Caparo and South Oropouche basins to identify how flooding can be alleviated using an IWRM approach.

The alleviation of flooding in the flood plains of the larger rivers, such as the Caroni, Caparo, North Oropouche and South Oropouche, may require substantial short-term investments in capital works.

Coastal Zone Management: Trinidad and Tobago's coastal areas are subject to competing development demands while experiencing significant natural and human-induced changes. Environmental challenges include coastal eutrophication due to inadequate sewage treatment; contamination arising from agricultural pollutants; rising sea levels due to global warming; inappropriate coastal development; sand mining along beaches; contamination from industries and sea vessels; oil spills; over-fishing; and degradation of coastal zone and marine species, including mangrove systems, sea grass beds and coral reefs (IMA, 2016).

The coastal zone contains the most biologically diverse ecosystems on the islands. These ecosystems provide a range of provisioning, regulating, cultural and supporting services that include erosion control, storm protection, flood water retention, water quality maintenance and climate regulation (IMA, 2016).

A rapid assessment of the vulnerability of Port of Spain to the effects of climate change indicated a likely decrease in rainfall by 14% in 2050 and by 21% by 2100

Climate Variability and Change: Assessments carried out by the Intergovernmental Panel on Climate Change (IPCC) have shown that, over the period 1990 – 2100, the emission of greenhouse gases is expected to lead to an increase in the earth's temperature of between 1.4˚C and 5.8˚C (Intergovernmental Panel on Climate Change, 2014). Caribbean climate projections reveal a temperature increase of on average 1.5˚C by the years 2030 – 2050 (Taylor, 2018). By 2050, it is expected that Trinidad and Tobago would experience i) a warming trend between 0.9 to 1.7˚C, ii) a drying trend of between -3 to -11% less rainfall, iii) a rising trend of sea level rise between 0.27 to 0.3 m, and iv) extremities of drought, dry spells, flooding, high winds/landslides all associated with varying rainfall patterns (HR Wallingford, 2021). Trinidad and Tobago also faces an additional layer of uncertainty in climate change and variability caused by the El Niño Southern Oscillation that has been occurring more frequently in the 20th century.

A rapid assessment of the vulnerability of Port of Spain to the effects of climate change indicated a likely decrease in rainfall by 14% in 2050 and by 21% by 2100, combined with increases in potential evaporation of 5% (2050) and 8% (2100) (Jeppesen, Jensen, Tomicic, Miralles-Wilhelm, & Munoz Castillo, 2015). A direct consequence of these projected trends, especially if factors like catchment permeability and land cover remain unchanged, is a decrease in the recharge rates of the aquifers. If such a decrease were to occur, the present water abstraction rates would not be sustainable without the introduction of additional measures to combat aquifer salinisation and reduced infiltration (IDB, 2015).

On the other extreme, more frequent and intense storm events and hurricanes are predicted for the region.

In summary, climate change could lead, in some areas, to changes in the total amount of precipitation, its seasonal distribution and its frequency and intensity. These conditions, together with changes in evapotranspiration (water loss through evaporation and transpiration), may affect the magnitude and timing of runoff, and subsequent intensity of floods and droughts.

Institutional Framework: There are several agencies and institutions involved in the planning, management and execution of various aspects of water resources management.

These include, inter alia:

1. The Ministry of Public Utilities (MPU)
2. The Water and Sewerage Authority (WASA)
3. The Water Resources Agency (WRA)
4. The Environmental Management Authority (EMA)
5. The Ministry of Agriculture, Land and Fisheries (MALF)
6. Town and Country Planning Division (T&CPD) of the Ministry of Planning and Development (MPD)
7. The Tobago House of Assembly (THA)
8. The Ministry of Health (MoH)
9. The Drainage Division (DD) of the Ministry of Works and Transport (MoWT)
10. The Regulated Industries Commission (RIC)
11. The Institute of Marine Affairs (IMA)
12. The Regional/Municipal Corporations

It should be noted that the primary water resources management institution, the WRA, is inappropriately lodged within WASA. This is inconsistent with international best practices. Several consultancies have recommended that the agency responsible for water resources management be kept separate and apart from supply and distribution (Dillon Consulting Limited, 2000), (DHV Consultants, Delft Hydraulics, Lee Young and Patners, 1999), (Safege, Corporate Solutions, 2015). This anomaly is further compounded by the absence of a coherent policy and institutional framework for water management, particularly with the institutional challenges of the main service provider – WASA.

Legislative Framework: Water resources issues are addressed directly or incidentally in a substantial body of national legislation and international treaties, which the country has adopted.

The major legislative instruments are:

1. The Water and Sewerage Act, Chap. 54:40
2. The Waterworks and Water Conservation Act, Chap. 54:41
3. The Regulated Industries Commission Act, Chap. 54:73
4. The Environmental Management Act, Chap. 35:05
5. The Litter Act, Chap. 30:52
6. The Municipal Corporations Act, Chap. 25:04
7. The Public Health Ordinance, 1917

Before the Water and Sewerage Act came into force, the MoH was the sole authority responsible for the purification and supply of water under the Public Health Ordinance. The new Act did not take these responsibilities away from the MoH but instead, held WASA *"jointly and severally responsible"*. The Act also makes provision for WASA to prevail, should there be a conflict in the exercise of powers or duties between the two bodies.

Given the challenges inherent in the existing legislative framework, there is the need for new legislation to provide support to the globally accepted paradigm of integrated water resources management and to clarify the roles and responsibilities of various agencies within the water sector.

Given the challenges inherent in the existing legislative framework, there is the need for new legislation to provide support to the globally accepted paradigm of integrated water resources management

3. BACKGROUND

Water is essential to life. Development, health and the environment all depend on access to water of sufficient quantity and quality. Water, therefore, should not be used or exploited solely or primarily for economic gains, but should be preserved and cherished by all to ensure sustainability for current and future generations. It is therefore essential to articulate the overall direction and thrust of water management in Trinidad and Tobago. This document attempts to do just that as it presents the Integrated Water Resources Management Policy of the Government of the Republic of Trinidad and Tobago.

Article 4 of the Constitution of Trinidad and Tobago declares that every citizen has the fundamental rights to life and enjoyment of property. In this regard, the following basic environmental, health and development principles are interdependent and in harmony with the Constitution:

Development Economic and social development is essential to ensure an acceptable living and working environment. Development should be in harmony with environmental principles so that it is sustainable.

Health Health, which is the state of complete physical, mental and social well-being, and not merely the absence of disease and infirmity, is a fundamental right and the attainment of the highest possible level of health is an important social goal for the country.

Environment Humans have a right to live in an environment of a quality that permits a life of dignity and well-being. We bear solemn responsibility to protect the environment for present and future generations. This responsibility includes the careful planning and management of natural resources.

Sustainable Development Goal (SDG) 6 of the agenda refers to the role government plays in ensuring that all citizens have access to water and sanitation.

On September 25, 2015, Trinidad and Tobago adopted the United Nations Sustainable Development Agenda 2030 that included 17 goals to end poverty, protect the planet and ensure prosperity. Sustainable Development Goal (SDG) 6 of the agenda refers to the role government plays in ensuring that all citizens have access to water and sanitation. Target 6.5 of the SDG 6 specifies that by 2030, IWRM should be implemented at all levels.

According to the United Nations Conference on Environment and Development (UNCED), Agenda 21 Chapter 18, water resources development and management should be planned in an integrated manner, consideringW long-term planning needs. It should focus on the principle of sustainability with environmental, economic and social considerations. These sustainability considerations should include requirements for the prevention, and mitigation of water-related hazards and constitute an integral part of the socio-economic development planning process.

The management for sustainable use of this scarce but vulnerable resource that is fresh water requires the identification of its full cost of production as an input to planning and development exercises. Planning considerations should reflect investment benefits, environmental protection and operational costs, as well as the opportunity costs highlighting the most valuable alternative use of water.

The National Development Strategy 2016 – 2030 (Vision 2030) *"builds the pathway to the future that will transform Trinidad and Tobago into a developed country, sustaining growth and development and optimising the quality of life of all citizens"* (Government of the Republic of Trinidad and Tobago, 2017). Vision 2030 identifies five strategic themes, which are grounded in the draft Vision 2020 pillars, the National Policy Framework, and the Global Development Agenda by way of the SDGs. Two of these themes which carry specific relevance for IWRM are:

1. **Improving Productivity through Quality Infrastructure and Transportation** – giving prominence because it is integral to human and economic development, i.e. water and sanitation are fundamental to human sustenance, health and dignity, and by extension, to economic opportunity.
2. **Placing the Environment at the Centre of Socio-Economic Development** – of critical importance because of the burgeoning impact of climate change and the need for renewable energy, as well as Trinidad and Tobago's adoption of the United Nations Sustainable Development Agenda 2030 and its commitment under various multilateral environmental agreements.

Government has accepted its responsibility to adopt policies and measures to improve human health and the quality of life, consistent with the above visions. In 2005, the Government pursued a new paradigm for water resources management with the development and approval of the National Integrated Water Resources Management Policy on March 17, 2005. Ensuring that the policy remains relevant and corresponds with Vision 2030 and other policies is the basis for the present review and revision of the approved 2005 policy document.

Government has accepted its responsibility to adopt policies and measures to improve human health and the quality of life, consistent with Vision 2030

3.1 Trinidad and Tobago's bid to manage its water resources faces certain challenges, including:

1. A growing population and the resultant increase in housing developments, the immigrant population and the COVID-19 pandemic have placed a continuous demand for improved water and sewerage services.
2. Degradation of watersheds and soils due to inefficiencies in land-use planning and limited watershed management that result in illegal and unregulated quarrying operations; deforestation; landslips; flooding; and poor solid-waste disposal practices.
3. Pollution of watercourses due to malfunctioning wastewater treatment plants, the use of pesticides and herbicides, dumping and industrial waste.
4. Degradation of wetlands, coastal ecosystems and habitats.
5. Lack of a proper institutional and legislative framework to address water resources management.
6. Deteriorating levels of water and wastewater service provision caused by infrastructural and institutional challenges.
7. Vulnerability, as a Small Island Developing State, to the adverse impacts of climate change and variability such as those related to temperature increases, changes in precipitation, sea level rise and extreme weather events.
8. Lack of public awareness on conservation and sustainable management of water resources.

3.2 Since 2005, Government has undertaken several measures to improve the framework for water resources management in Trinidad and Tobago. These measures included the:

1. Revision of the National Environmental Policy 2018;
2. Revision of the Water Pollution Rules 2019 and development of Waste Management Rules 2021; and
3. Enactment of the Planning and Facilitation of Development Act 2014.

This National IWRM Policy is intended to unify these various initiatives and provide a strong direction and vision for the effective management of the nation's water sector sustainably.

3.3 This National IWRM Policy is intended to unify these various initiatives and provide a strong direction and vision for the effective management of the nation's water sector sustainably.

3.4 There are several other national policies and plans that have a direct bearing on the National IWRM Policy. These policies include the:

1. National Development Strategy 2016–2030 (Vision 2030);
2. Development Plan for Tobago 2013–2017;
3. Development of a draft Integrated Coastal Zone Management Policy Framework 2019;
4. National Waste Recycling Policy 2015;
5. National Spatial Development Strategy 2014;
6. National Action Programme to Combat Land Degradation and to Mitigate the Effects of Droughts in Trinidad and Tobago 2013–2017;
7. National Food Production Action Plan 2012–2015;
8. National Wildlife Policy 2013;
9. An Integrated Solid-Waste Resources Management Policy of Trinidad and Tobago 2013;
10. National Climate Change Policy 2011;
11. National Forest Policy 2011;
12. National Protected Areas Policy 2011;
13. National Tourism Policy 2010;
14. National Programme of Action for the Protection of the Coastal and Marine Environment from Pollution from Land-Based Sources and Activities 2008–2013; and
15. Municipal/Regional Corporations Plans.

3.5 In addition to these policies, there are numerous policy statements contained in legislation and other Government documents and reports.

This National IWRM Policy will integrate and/or complement the various statements in existing policies and take precedence where conflicts exist regarding water resources.

4. POLICY GOALS AND OBJECTIVES

4.1 The national goal for the water sector is to support the socio-economic development of Trinidad and Tobago through the integrated management of water resources and the water environment (land, air, flora and fauna), satisfying and managing the growing demands of all water users in a sustainable, efficient and effective manner, while maintaining and/or enhancing the quality of the environment and the integrity of ecosystems, and minimising losses to life and damage to property due to water-related disasters.

4.2 The policy objectives for the National IWRM Policy are to:

1. Establish an integrated framework for national planning and environmental management that protects water resources, particularly as it relates to adaptation to the impacts of climate change and variability;
2. Protect, manage and restore watersheds (forests and rivers), aquifers, wetlands and coastal areas as sources of water for current and future generations;
3. Ensure a resilient and water-secure future for Trinidad and Tobago;
4. Minimise, mitigate and manage the impacts of flood, drought and other water-related disasters;
5. Ensure the fair and efficient allocation of water among all water users;
6. Ensure that charges for water services reflect water's economic value, subject to the principles of equity and affordability;
7. Make available adequate quantities of water of a defined and acceptable quality that meet the growing needs of all sectors;
8. Develop capacity and tools to collect, analyse and store water-related data and information that would facilitate planning, engineering design, research and development;
9. Promote public education, awareness, conservation and wise use of water resources;
10. Promote joint ownership, partnership and collective responsibility in the management of the nation's water resources;
11. Promote the use of appropriate technologies to facilitate sustainable water resources management; and
12. Establish a coherent governance framework for the water sector.

Ensure a resilient and water-secure future for Trinidad and Tobago

5. BASIC PRINCIPLES

5.1 The Government of Trinidad and Tobago, in its National Development Strategy 2016–2030, (Vision 2030) stated as its goal, the attainment of developed nation status by 2030. This Vision recognises emerging issues such as climate change; the use of renewable resources; and water, food and energy security. It acknowledges that natural resources must be optimally used while taking cognisance of environmental issues.

Women play a central role in the provision, management and safeguarding of water.

5.2 The International Conference on Water and the Environment, Dublin, Ireland 1992, gave rise to four (4) principles, known as the Dublin Principles that have been the basis for much of the subsequent water sector reform in Trinidad and Tobago (United Nations, 1992). The following are the Dublin principles that are the foundation of the current National IWRM Policy:

1. Fresh water is a finite vulnerable resource, essential to sustain life, development and the environment.
2. Water development and management should be based on a participatory approach, involving users, planners, and policy-makers at all levels.
3. Women play a central role in the provision, management and safeguarding of water.
4. Water has an economic value in all its competing uses and should be recognised as an economic good.

5.3 The Third UN Small Island Developing States (SIDS) Summit held in September 2014 offered recommendations from various sector representatives from the three SIDS regions: the Caribbean, Pacific and Africa, Mediterranean and South China Sea (AIMS) on the critical issues affecting them. The outcomes Document, the **SAMOA Pathway**, highlight the following issues relevant to the water sector:

1. **The need for bold climate change action and commitment:** Trinidad and Tobago, being a small island state, is vulnerable to climate change. Among the most important impacts of climate change will be its effects on the hydrological cycle, impact of sea level rise and water-management systems.
2. **The sustainable use of islands' natural resources:** This is of significance to Trinidad and Tobago since healthy marine ecosystems, forests, water, watersheds and biodiversity resources are critical for livelihoods and sustainable development.
3. **The importance of balancing private sector interest with a national, people-centred vision for development:** This can increase efficiency in service provision, expand coverage and reduce delivery costs.

5.4 The Government of Trinidad and Tobago, through its adoption of the 2030 SDG and the Paris Agreement addressing climate change, has endorsed the new collective vision for the peoples of the world for the next fifteen years. Within the SDGs, there is a dedicated goal for water that aims to ensure access to water and sanitation for all. One of the main target areas is to implement integrated water resources management at all levels.

5.5 Trinidad and Tobago is a Signatory to the Revised Treaty of Chaguaramas. As such, under Article 58(2) (a), it has a responsibility for, inter alia, the effective management of "all water resources, the exclusive economic zone and all maritime areas within the jurisdiction of Member states". At the Twenty-Fifth Special Meeting of the Council for Trade and Economic Development (COTED) – Environment, the development of IWRM Plans and Water Use Efficiency (WUE) Plans in the various Member States were encouraged. At the CARICOM level, work is being done to develop a CARICOM Common Water Framework and to support the furtherance of IWRM among Member States.

At the CARICOM level, work is being done to develop a CARICOM Common Water Framework and to support the furtherance of IWRM among Member States.

5.6 In furtherance of these agendas, the following principles will guide water resources management in Trinidad and Tobago:

1. Water resources will include surface water, groundwater and coastal waters.
2. Good water governance will be adopted through meaningful participation from all stakeholders, transparent and informed decision making as well as accountability of the managers of water.
3. Water resources will be managed on the basis of watersheds in an integrated fashion, with a continued and deliberate effort to maintain and restore ecosystem functions within catchments and the coastal and marine ecosystems with which they are connected.
4. Water resources management is intrinsically linked to planning and environmental management. Therefore, socio-economic planning and development, environmental management, and water resources management must be conducted in harmony with each other.
5. Water is a fundamental human right and everyone is entitled to sufficient, safe, acceptable, physically accessible and affordable water for basic human needs.
6. Potable water of such quality and quantity as to sustain life should be available to all citizens, irrespective of the citizen's ability to pay. This minimum service is a requirement for reasons of public health and environmental condition.
7. Poor water management hurts the underprivileged most, and in times of shortage, they are generally the first to be adversely affected. Consequently, wise water management will be pursued with a focus on poverty alleviation.
8. Although priorities may need to be established, the management of water resources will allow for multiple uses of water.
9. Responsibility for water resources policy, planning and regulation will be kept distinct and separate from the responsibility for water resources development and distribution.
10. Water resources management will be participatory, and the responsibility for water resources management will be co-ordinated among Government Ministries and Departments, Municipal Corporations, local authorities, local communities and non-governmental entities to the maximum extent practicable.
11. Government has a responsibility to ensure that adequate water and wastewater services are provided. Wherever practicable, however, Government will promote the actual provision of water and wastewater services with the participation of communities and the private sector.
12. Where practicable, emphasis will be placed on local solutions to minimise watershed transfer.

13. The management of water resources will be financially self-sufficient. (Financial Self-Sufficiency Principle).
14. There will be a direct linkage between payments made for services and services provided (Accountability Principle).
15. The quality of service provided should meet or exceed established national standards.
16. All inhabitants and institutions will have access to timely and relevant water-related information, allowing them to be aware of the state of water resources so that they may participate meaningfully in the decision-making and management process.

Users of the water will have a civic duty to take no more water than they need and to take all reasonable measures to conserve water and eliminate its wastage

17. Users of the water will have a civic duty to take no more water than they need and to take all reasonable measures to conserve water and eliminate its wastage.
18. Subsidies to ensure equitable access to water and to satisfy other social-policy priorities will be targeted, explicit and time limited.
19. No actions will be taken that will result in degradation of the ecological functioning of a watercourse or watershed unless measures are taken to mitigate or compensate for the negative impacts of the action (Standstill Principle).
20. The cost of preventing pollution or of minimising the environmental damage due to pollution will be borne by those responsible for the pollution (Polluter Pays Principle).
21. Priority will be placed on conservation and efficiency of existing sources of water over the development of new water supplies.
22. Efforts to improve freshwater quality will favour pollution prevention over treatment.
23. Water infrastructure will be designed following a no-regret principle and will be as simple as practicable, minimising the need for complex operation and maintenance and energy usage.
24. If there are threats of serious irreversible damage to human health, ecosystems, aquifers, surface and coastal waters, watersheds, or water supply systems, lack of full scientific certainty will not be a reason for postponing preventative or mitigating measures (Precautionary Principle).
25. All management of water resources and the water environment, including, but not limited to fulfilment of the foregoing principles, will be based on the best available or reasonably attainable scientific information, technical and economic feasibility.

6. ALLOCATION PRIORITIES

Water allocation balances the conflicting needs for security and flexibility in water-use practices. A water allocation system is part of the institutional framework for water resources management that defines the right to use the resources.

6.1 Allocation of water will be in accordance with national socio-economic development priorities, with due consideration given to environmental factors. Allocation of water will be according to present and future reasonably anticipated needs and will always emphasise long-term sustainability, including the protection of aquifers from contamination, over-abstraction, salt-water intrusion and the sustainable maintenance of natural water systems, including streams, rivers, wetlands and coastal areas.

6.2 The actual order of these priorities will be determined on a watershed basis. The Government will always seek to establish a fair balance between competing priorities. In cases of short-term states of shortage, droughts or urgency, it is expected that basic human needs will be fulfilled over other uses. The following are priority areas for water resources management in Trinidad and Tobago:

Government will always seek to establish a fair balance between competing priorities

6.2.1 Domestic Use:

Domestic potable water use includes water for households, hospitals, schools and office buildings.

6.2.2 Ecological Use:

Ecology use includes the protection of natural water ecosystems, including streams, rivers, wetlands and coastal areas.

6.2.3 Agricultural Use:

Agricultural use includes irrigation, post-harvest practices and drainage for agriculture, as well as water for livestock, hydroponics and aquaculture.

6.2.4 Industrial and Commercial Use:

Industrial and commercial use includes development for the energy, manufacturing, services, retail and tourism sectors.

6.2.5 Recreational, Cultural and Religious Use:

These uses include swimming, boating, recreational fishing, as well as festivals and other cultural and religious uses.

6.3 These are long-term priorities for water-resource allocation that will shape three types of decision-making:

1. The allocation of abstraction licences, including the terms and conditions therein.
2. The allocation of Government funding for water resource management, including research, management activities, education, training and infrastructure development.
3. The pricing of water services.

Where conflicts in allocation exist, Government will make reasonable efforts to resolve these conflicts transparently, objectively, judiciously and fairly

6.4 Where conflicts in allocation exist, Government will make reasonable efforts to resolve these conflicts transparently, objectively, judiciously and fairly.

6.5 The Water Resources Entity for the allocation of water and abstraction licences will seek to obtain adequate information for understanding the hydrologic and hydrogeologic systems.

6.6 The criteria to achieve optimal allocation of water resources will include:

1. Flexibility in the allocation of resources.
2. Security of tenure for established users.
3. True opportunity cost of abstracting freshwater is covered by the users.
4. Predictability of the outcome of the allocation process.
5. Equity of the allocation process.
6. Political and public acceptability.

6.7 The water allocation mechanisms will include consideration of marginal cost pricing, public allocation, water market and user-based allocation.

7. ISSUES AND POLICY IMPLEMENTATION

There are many aspects to integrated water resources management. This Policy addresses the most significant issues.

7.1 Land-use Planning and Management

Land-use planning and management focus on the conservation and restoration of natural systems while ensuring sustainable development.

7.1.1 Water resources management and land-use planning are intrinsically linked. All persons and organisations owning, occupying and/or developing land are under a duty to use such land with due regard for the wider interests of both the present and future of society. The Government has to take account of all relevant social, economic, ecological and cultural factors to ensure that the most efficient, equitable and environmentally sustainable use is made of land in the interests of all people of Trinidad and Tobago.

7.1.2 In this regard, **the responsible agencies for land-use planning and regulating land development along with any other relevant authorities will give due consideration to this Policy, the National Integrated Water Resources Plan, and specific watershed management issues in the development of national spatial development strategies and in granting planning approvals.**

7.1.3 Wherever practicable, planning will be conducted on a watershed basis. Planning approvals for new developments will incorporate water resources management concerns, including but not limited to: the mitigation of potentially negative impacts on watersheds, the supply of adequate water and wastewater services, the protection of surface and groundwater resources, protection of groundwater recharge areas, the provision of adequate stormwater drainage system, and the linkages between land use and water resources.

7.1.4 Control of critical degradation practices such as quarrying, deforestation, forest fires, unapproved development and informal settlements will be given priority.

7.1.5 Wherever practical, unapproved and unplanned developments will be encouraged to conform to the requirements of all land development regulating agencies such as Town and Country Planning Division (TCPD), Land Settlement Agency (LSA), Drainage Division, Minerals Division of the Ministry of Energy and Energy Industries (MEEI), Tobago House of Assembly (THA), Municipal Corporations and others.

7.2 Comprehensive Water Resources Assessment

An essential foundation for scientific water resources management is adequate information for understanding the hydrological and hydrogeological systems and their interaction with other natural and socio-economic systems. This requires an adequate data collection, analysis and storage programme which includes climatic, surface water, groundwater, water use and socio-economic data.

An essential foundation for scientific water resources management is adequate information

The Government, through the Water Resources Entity, will undertake continuous comprehensive water resources monitoring, surveying, investigations, data collection and analysis to determine the sources, extent, sustainability and quality of water resources. In this regard, the continuing assessment will address:

1. Continuous monitoring and analysis of the hydrometeorological cycle and the nature of surface water, groundwater and coastal water with associated environmental data.

2. Enhancement and maintenance of hydrological, hydrogeological and meteorological networks, i.e. groundwater, surface water and climate.
3. Establishment and maintenance of an effective co-operation in water resources assessment and forecasting activities among the Water Resources Entity and national agencies, i.e. Meteorological Service Division (MSD) of the Ministry of Public Utilities (MPU), University of the West Indies (UWI), Drainage Division, and Institute of Marine Affairs (IMA).
4. Continuous monitoring of the natural behaviour of water and human-induced variations and alterations to hydrometeorological systems.
5. Acquisition of real-time data to ensure the timely issuing of forecasts and early warnings thus protecting life and property against the risk of natural and man-made disasters, i.e. flood monitoring and early warning systems.
6. Analysis of trends and subsequent publishing of reports on hydrological and hydrogeological variables such as precipitation, river levels and discharge, aquifer levels, capacity and production, water quality, climate trends and sediment transport.

7.3 Water Resources Plan

Water resources planning addresses water problems and opportunities within and across watersheds.

Water resources planning addresses water problems and opportunities within and across watersheds. Planning is the means by which water-related demands and impacts are analysed and appropriate water management strategies formulated.

7.3.1 Government, through the Water Resources Entity, will produce a comprehensive National Integrated Water Resources Master Plan. The Plan will cover a 25-year period and will be reviewed at least every five (5) years and monitored annually.

The Plan will include:

1. A qualitative and quantitative analysis and assessment of water availability in Trinidad and Tobago on a watershed basis;
2. An assessment of the present and projected water demand for the next 25 years on a five-year basis;
3. An assessment of the present and projected water balance for the next 25 years on a five-year basis;
4. An assessment of trends in water use, quality and availability particularly considering climate change and variability;
5. An assessment of existing plans and alternatives for changes in water demand based on population growth, sectoral growth and changes in land-use patterns;
6. A clearly articulated strategy for the sustainable development of water resources;
7. Targets for increasing the quantity and improving the quality of water resources;
8. Targets for conservation and demand management;
9. A programme for water resources protection and proposals for the creation of protected areas subject to restrictions on water use and development, to protect water resources and watersheds;
10. Response, mitigation and recovery programmes for water-related emergencies; and
11. Specific measures to be taken, programmes to be developed, and projects to be implemented for attaining the targets envisioned, including costs, timeframes and responsibilities.

7.4 Abstraction Licensing

Water is a renewable but finite economic resource. There is a cost to managing the nation's water resources in such a manner as to ensure the availability of this resource on a sustainable basis.

7.4.1 Government will maintain and improve the abstraction licensing system administered by the Water Resources Entity in accordance with environmental principles to ensure sound management of water resources and to protect the interests of competing water users. This system will include monitoring and regulation of abstraction licences.

7.4.2 The abstraction of any surface, ground or coastal nearshore water will require an abstraction licence and such licence will include a volume-based rate for abstraction and a specific volumetric allocation. The award of abstraction licences will consider the rights of multiple users of the water resource, the protection and sustainable management of the water resource and allocation priorities.

7.4.3 All abstractors shall be required to apply for an abstraction licence.

Types of abstraction requiring a licence will include:

1. The diversion or impoundment of water from precipitation, runoff or a water body;
2. The abstraction of water from subterranean and surface-water sources;
3. The abstraction of water from coastal nearshore sources;
4. The abstraction of water for the generation of any form of energy;
5. The abstraction of water for cooling or purposes ancillary to a manufacturing process or industrial activity; and
6. Any other uses that affect the flow, quantity or quality of any water body.

7.4.4 Abstraction of groundwater and surface water will be managed on a sustained yield basis. However, during periods of emergency, increased abstraction may be permitted on the optimal-yield basis, provided that an impact assessment identifies that an acceptable level of risk is involved and that system recovery is reasonably guaranteed through the adoption of appropriate mitigation measures.

7.4.5 The licensing system will provide a legal framework for the abstraction of water under clearly defined conditions, i.e. purpose of use, place of use, point of withdrawal, total quantity of water involved, time pattern of use, and conditions of effluent return along with the continuing supervision of the licence.7.4.6 The abstraction fees will be collected through a licensing system to cover the reasonable cost of an operating programme to protect water resources, including, but not limited to, the costs of research, planning, monitoring, watershed management, water resources assessment, coastal zone management, administrative costs, overheads costs and incident remediation.

7.4.7 Abstraction fees will be charged based on the rate and the volumetric allocation. However, to encourage conservation, systems for credits or rebates and trading allocation licences may be established. Credits may also be established for water that is used and returned to its source with no significant alteration in quality.

7.4.8 To encourage local and innovative solutions, Government will establish certain categories of abstractions with insignificant requirements, which will be exempted from abstraction fees. Such categories will include the collection of precipitation, the impoundment of on-property and on-farm runoff, and the use of water resources to meet the needs of poor households, rural communities and small farms. Government will set the guidelines as appropriate and review every five (5) years.

The award of abstraction licences will consider the rights of multiple users of the water resource, the protection and sustainable management of the water resource and allocation priorities.

7.4.9 Government will take necessary measures to protect and improve the quality of water sources. However, abstraction licences will be granted on an "as is" basis, with the abstractor assuming full responsibility for any necessary treatment. In cases where upstream activities are determined to affect downstream water quality, Government will encourage upstream investments in pollution control and abatement and optimum land uses in lieu of downstream treatment.

7.4.10 Government will develop rates chargeable for abstraction. In determining a reasonable price level, Government will consider the maintenance of financial viability of the Water Resources Entity to execute its co-ordination and regulating role in the management of the country's water resources.

7.4.11 An abstraction licence may be partially or entirely suspended or revoked, and/or penalties assessed for failure to comply with the terms of the licence. An abstraction licence may be suspended, revoked or amended in the event of emergency failure to use the allocated amount, failure to pay required fees, excessive wasting of water, or threats to the environment, public health or public welfare.

7.5 Pricing and Cost Recovery

Historically, one of the greatest challenges to water resources management in Trinidad and Tobago has been the lack of full-cost pricing for water. This has led to distorted price signals creating inefficient use of water and depriving the system of sufficient funding for necessary operation, maintenance and capital investment.

7.5.1 Government will price water and wastewater management services to establish that water is an economic good, to give the user a sense of its real value, to encourage the conservative and efficient use of water, and to provide funding for effective water resources management. In this regard, financial self-sufficiency will be pursued in the water sector and, wherever practical, private sector participation in the sector will be encouraged to promote efficiency and accountability.

7.5.2 In some circumstances, the pricing necessary for financial self-sufficiency may create certain hardships, exacerbate inequality, or run counter to other Government policy objectives. In such circumstances, Government will consider targeted and explicit subsidies rather than cross-subsidies or other hidden subsidies to alleviate hardships and to facilitate easy access to water by the poor and vulnerable.

In such circumstances, Government will consider targeted and explicit subsidies rather than cross-subsidies or other hidden subsidies to alleviate hardships and to facilitate easy access to water by the poor and vulnerable.

7.5.3 Financial self-sufficiency comes with responsibility and accountability. Therefore, Government will ensure that there is a direct linkage between payments made for services and services provided. The pricing of water should reflect its scarcity, but consideration should also be given to its affordability to the poor.

7.5.4 All fees for water abstraction and water and wastewater services will be subject to approval and oversight by the Regulated Industries Commission (RIC).

7.5.5 Government will ensure a fair and efficient pricing system by metering all water and wastewater customers.

7.6 Designated Uses

Identification of appropriate water uses takes into consideration the usage and value of public water supply, protection of aquatic life and ecosystems, agricultural, industrial and navigational waterways, and recreational and cultural waters. The suitability of a water body is examined for usages based on physical, chemical and biological characteristics, examination of geographical **settings, scenic qualities and economic considerations.**

7.6.1 In collaboration with the Water Resources Entity, the Forestry Division of the Ministry of Agriculture, Land and Fisheries (MALF) and the Environmental Management Authority (EMA) and other relevant national and local authorities,

and the interested public, Government will establish designated uses for all significant water bodies in Trinidad and Tobago (e.g. drinking-water supply, environmental conservation, irrigation, aquaculture, recreation, cultural use, domestic use other than drinking, and industrial receiving water).

In establishing designated uses, consideration will be given to:

1. The National Integrated Water Resources Master Plan.
2. Existing uses and the major end-use to which the water is targeted.
3. The necessary water quality of the most demanding uses for which the water is targeted.
4. The National Spatial Development Strategy and Municipal Corporation Plans.
5. Environmental legislation factors, including but not limited to, the designation of Environmentally Sensitive Areas, Environmentally Sensitive Species, Forest Reserves, Wildlife Reserves, Parks and Protected Areas, and Certificate of Environmental Clearance and Water Pollution Rules.

7.6.2 Government may designate an entire water body for multiple uses, or portions of the same water body for different uses. Government may also designate water improvement areas and critical watersheds.

7.6.3 Water bodies will be managed in a manner consistent with their designated use while ensuring the preservation and enhancement of their ecological function.

Government may also designate water improvement areas and critical watersheds.

7.7 Ambient Water Quality

Ambient water quality standards vary significantly due to different environmental conditions, ecosystems and intended human uses. Toxic substances and high population of certain microorganisms can present a health hazard for non-drinking purposes such as irrigation, swimming, fishing, rafting, boating and industrial uses. These conditions may also affect wildlife, which uses the water for drinking or as a habitat.

7.7.1 In collaboration with the EMA, the Water Resources Entity, the IMA and other relevant national and local authorities, and the interested public, the Government will establish ambient water-quality criteria (parameter levels and/or water-quality indices) for both surface and groundwater. These criteria will vary by water body based on the designated use of the water body, sound scientific information about the sensitivity of the water body, and technical and economic feasibility. For each water body for which ambient water-quality criteria are set, Government will collect baseline data and monitor ambient water quality at specified frequencies to track progress towards achieving the criteria.

7.7.2 In achieving goals for maintaining healthy ecosystems, Government will concentrate primarily on the protection of populations of aquatic and wetland native species and associated habitats. In this regard, the development of the Ambient Water Quality Standards will be actively pursued and implemented.

7.7.3 Pursuant to the Environmental Management Act and in consultation with all relevant national and local authorities, and the interested public, the Government will use these ambient water-quality criteria in prioritising and establishing terms and conditions for Water Pollution Permits and Certificates of Environmental Clearance.

7.8 Public Water Supply

The public water supply is used for drinking, personal hygiene and other domestic purposes, as well as a wide range of tourism, industrial and commercial activities which are important for national development.

7.8.1 The Government will ensure the enhancement of the public water supply system to satisfy the quality and reliability requirements of public water demand.

Government will meet this demand through:

1. Continuous assessment of the operations of existing assets relative to intended performance, and will seek feasible and cost-effective methods to increase production.
2. Maintenance of current water supply infrastructure to ensure reliability of the supply.
3. Increasing the country's water storage capacity to meet fluctuating water availability due to seasonal variation and the changing climate.
4. Continuous improvement of the efficiency and integration of the transmission and distribution system.
5. Implementation of a network modernisation and optimisation including a universal metering programme.
6. Development of new freshwater sources with particular emphasis on localised supply sources, including new and enhanced reservoirs and groundwater aquifers.
7. Development of source-water protection plans.

7.8.2 Government will promote the use of advanced technology systems to harness alternative water sources e.g. wastewater reuse, multipurpose reservoirs and rainwater harvesting where it is economically, technically and environmentally feasible.

7.9 Public Water Supply Quality

Provisions must be made for the continuous monitoring of all aspects of public water supply quality, including microbiological, biological, chemical and physical.

7.9.1 Government, through the Ministry of Health, the RIC and other national and local authorities, will establish minimum national standards for pipe-borne drinking water. Such standards will be no less stringent than World Health Organisation guidelines and will address all contaminants that could reasonably be expected to be present in drinking water in Trinidad and Tobago. In the absence of national standards, the World Health Organisation guidelines or other appropriate international standards will apply.

7.9.2 Government will establish guidelines for water designated for industrial, agricultural or other non-drinking uses.

7.9.3 All water service providers will have an affirmative duty to ensure that the water received by consumers meets the existing guidelines or standards. These guidelines/standards will be included as service standards in licences granted to water service providers. The licensing body will be responsible for monitoring the provider's compliance with these standards and for enforcing them when necessary.

All water service providers will have an affirmative duty to ensure that the water received by consumers meets the existing guidelines or standards.

7.10 Water Demand Management

Water demand can be met by either increasing supply or by reducing demand, thus postponing or avoiding the need for new resources. Water demand management achieves the latter by utilising certain measures to reduce water use and improve overall efficiency. In so doing, it provides an equivalent outcome to supply augmentation.

7.10.1 Water demand can be reduced by introducing an equitable water tariff based on consumption, thereby resulting in increased cost-effectiveness, a more reliable water supply to customers and a lessened impact on the environment. This has to be facilitated by the installation of universal metering.

7.10.2 Government, through the service provider WASA, will implement a comprehensive water-loss reduction programme. This programme will include the following components:

1. Metering of all parts of the water supply network;
2. Pressure management and installation of district metered areas throughout the transmission and distribution networks;
3. Strategic pipe and asset replacement;
4. Proactive leak detection and repair;
5. Updating of asset and customer databases; and
6. Public education and incentives to promote the use of technologies that reduce water use.

7.10.3 Government will establish conservation and demand management targets as part of the licensing process for water service providers. These targets will be prescribed and enforced by the RIC.

7.10.4 Government will encourage water-use efficiency, water re-use and recycling of wastewater by all users.

7.11 Rainwater Harvesting

Rainwater harvesting is an important water augmentation technique, providing an owner-operated independent water supply if access to the municipal water supply is disrupted after storms or hurricanes. If enough water is captured and stored during rainy periods, a rainwater supply can also provide water during drought and periods of water restrictions. Rainwater storage can also help mitigate flooding of low-lying areas, reduce hillside erosion and landslides, and lessen the demand on wells, which may enable groundwater levels to be sustained.

7.11.1 In recognition of the contribution that rainwater harvesting can make to reducing demand on public water supply, Government will encourage the application of this water collection technique. It will do so by developing standards and guidelines for effectively and safely harvesting rainwater and promoting the uptake of rainwater harvesting in new building design and construction, based on regional and international standards and best practices.

7.11.2 In instances where detention basins are being used to serve a single purpose for stormwater management, Government will encourage the use of this infrastructure for alternative purposes without compromising the existing detention capacity.

Rainwater harvesting is an important water augmentation technique, providing an owner-operated independent water supply

7.12 Agricultural Water Management

Water, together with land, labour and capital, are necessary conditions for successful agricultural production. Therefore, a pre-condition for eliciting capital investment in agriculture is the assurance of water availability. Water and wastewater management (drainage and irrigation) is a critical risk-reducing, yield-increasing and production-enhancing strategy in agricultural production. There are significant opportunities in Trinidad and Tobago to increase the value and efficiency of agricultural production through water-use efficiency techniques and the augmentation of effective agricultural water management such as rainwater harvesting, use of stormwater and water re-use.

7.12.1 The Government, through the MALF and other national and local authorities will facilitate improved water management for agriculture, consistent with national development and water allocation priorities. In this regard, a National Irrigation Plan will be prepared. This plan will include the identification of potentially irrigable areas, the development of water sources for irrigation supply, irrigation requirements, institutional strengthening and incentives for investment in irrigation.

The development of irrigated agriculture will be based on demand and will involve the participation of farmers.

7.12.2 The Government will facilitate the development of water management infrastructure on state lands, particularly where a large number of small farmers are the target beneficiaries. The development of irrigated agriculture will be based on demand and will involve the participation of farmers. In this regard, the irrigation projects will be based on feasibility studies, which will include technical, economic, social, environmental, and organisation and management considerations.

7.12.3 The Government will provide support for technological innovations in agricultural water management, along with their development and diffusion. This will be accomplished through a programme of research and development that assigns high priority to the reduction of pesticide and chemical use.

7.12.4 Where water management infrastructure is intended to serve a large number of small farmers, the local communities will be involved at every stage of development, from planning to implementation, operation and maintenance. Farmer representative organisations will be given due recognition thus ensuring that the process is both participatory and cost-effective. As such, project identification and implementation will be undertaken in a way that is responsive to the real needs of farmers, and that contributes to the development of their commitment and sense of ownership of the system.

7.12.5 To ensure that these irrigation and drainage systems are financially viable, the Government will seek full long-term cost recovery for the capital, operation and maintenance costs incurred. Where Government determines that subsidies are appropriate to assist farmers in meeting these costs, such subsidies will be explicit and targeted. In developing subsidies, Government will favour one-off subsidies for capital investment and start-up costs over ongoing subsidies for operation and maintenance.

7.12.6 In addition to irrigation, recognition must be given to other agricultural subsectors that require significant quantities of water, such as livestock and aquaculture. Provision will be made to meet this demand.

7.12.7 Solutions to agricultural wastewater and runoff are needed because of their polluting effect on receiving streams. As such, the Government will promote systems to minimise the impact of agricultural wastewater and runoff on human health and the environment.

7.13 Water-Related Emergencies

Water-related emergencies include extreme events such as severe floods, storm surges, drought, pollution, and their related incidents/accidents along with any resultant infrastructure failure.

7.13.1 Government will continue to prepare/update National Disaster Preparedness Plans. Disaster Preparedness Plans will address natural disasters such as earthquakes, hurricanes, storm surges, drought, etc., along with other crises like oil and chlorine/ chemical spills, terrorism, industrial sabotage, microbial contamination, pandemic/ biological hazards and major pollution events. The plan will pay particular attention to the key areas of disaster management: mitigation and preparedness, response, recovery and restoration.

7.13.2 Government will encourage all water and water-related agencies to prepare Business Continuity Plans to ensure a minimum level of service during periods of disaster.

7.13.3 Government will ensure that efficient operation and maintenance procedures, routine surveillance inspections, and recording of maintenance activities are carried out for all major water infrastructures and facilities.

7.14 Integrated Flood Management

Flooding is a natural phenomenon caused by prolonged and/or intense rainfall. It is exacerbated by anthropogenic activities such as deforestation, slash and burn agriculture, urbanisation, improper solid waste disposal, squatting and quarrying. Over the past decade, the country experienced significant events of flooding leading to property losses and disruption in transportation systems.

Government will develop an integrated flood management programme in collaboration with the Drainage Division of MoWT, Municipal/Regional Corporations, the THA and other key stakeholders to identify flood risk areas and to implement prevention, mitigation and response measures. This programme will include:

1. Restricted development in flood plains;
2. Enhancement of urban drainage systems over the next fifteen (15) years. This will also involve the systematic maintenance of existing and proposed systems;
3. Establishment of a flood monitoring network and early warning systems. This may include Real-Time Monitoring, an Early Warning System and Community Based Early Warning Systems;
4. Implementation of a public education campaign;
5. Harnessing of flood water to augment water supply;
6. Where feasible, allowing the natural process of riverine flooding to take place to sustain aquatic, riparian and floodplain ecosystem functioning; and
7. Promotion of water infiltration zones in urban areas.

Government will develop an integrated flood management programme in collaboration with key stakeholders.

7.15 Watershed Management

Watershed management is a comprehensive process involving the implementation of land-use practices and water management practices that protect and improve the quantity and quality of the water and other natural resources within a watershed.

7.15.1 The Government will create a watershed management programme in collaboration with the Forestry Division, the Water Resources Entity, the Municipal/ Regional Corporations, the THA, Minerals Division and other key stakeholders to:

1. Designate, protect and maintain the total area of land zoned for forest reserves, watershed protection, water reserves, game sanctuaries, environmentally sensitive areas and prohibited areas, and to prevent its conversion into other uses such as agriculture, housing and quarrying.
2. Classify watersheds based on water resource protection, restoration, conservation, flood buffers, slope, intakes and sediment loads.
3. Establish zoning requirements for all watershed areas, including restrictions on land use based on elevation, degree of slope, riparian rights, proximity to surface and groundwater resources, and other factors.
4. Promote the use of ecologically and technologically appropriate agroforestry, soil conservation and reforestation methods through education, outreach, regulation and incentives. These initiatives will be carried out with public and private stakeholders.
5. Develop and implement approaches to control all degradation practices such as quarrying, deforestation, fires and uncontrolled development.
6. Control "non-point" sources of pollution from stormwater, agricultural runoff, septic systems and other sources.
7. Establish, where possible, ecologically appropriate buffer zones along watercourses, around aquifer recharge areas and water intakes.
8. Restore small rivers and streams, reconnecting them to the ecosystems, and where possible, providing recreation and a source of water supply, while enhancing the landscape.

7.15.2 Measures will be instituted to address the acquisition of private lands in the upper watershed which need protection. These and other lands owned by the State will be brought under the forest reservation category.

The Government will implement measures such as the control of effluent discharges, re-afforestation, soil and water conservation and the creation of water protection areas

7.15.3 The Government will implement measures such as the control of effluent discharges, re-afforestation, soil and water conservation and the creation of water protection areas to protect the sources of fresh water in streams, aquifers, reservoirs and coastal areas.

7.15.4 The Government will promote solid-waste management practices to address the collection, treatment and disposal of solid waste and their impact on water sources, along with the sorting of waste for recycling.

7.16 Water-Related Ecology

Water is critical to ecosystem functioning, and the preservation and enhancement of the natural environment are critical to the country's sustainable development. Ecosystems are key elements in the continuity of life, the preservation of a healthy environment and the generation of a safe water supply.

7.16.1 The Government, through the Water Resources Entity, the EMA and other national and local authorities will establish a minimum stream flow level based on scientific assessment and economic and technical feasibility. The minimum flow depends on the specific function awarded to that particular river section, i.e. site-specific

rules will have to be developed, considering aquifer recharge, environmental needs and other management purposes.

7.16.2 In the absence of an established minimum stream flow level, the water resources will be managed to maintain a minimum flow in rivers and streams of at least 20 percent of natural flows, taking into consideration climate change, and seasonal and other natural fluctuations.

7.17 Wetland Management

Wetlands, including but not limited to mangrove swamps, are areas of transition between terrestrial and aquatic ecosystems, and as such, they perform critical ecological functions that help maintain environmental equilibrium. These include defending coastlines from erosion, extreme tidal events and storm surges, exporting nutrients to the sea, building land by entrapping sediments, providing nurseries and important habitat for various species, and serving as a carbon sink. They are also the focal point of recreational, spiritual and cultural events within their surrounding communities (NEP, 2006).

7.17.1 The Government, through the IMA, EMA, and other national and local authorities, will develop a programme to protect wetlands from pollution and will take measures to restore degraded wetlands and conserve them for current and future generations.

7.17.2 The Government, through the IMA, EMA, and other national and local authorities, will promote public awareness and understanding of the wetland resources of Trinidad and Tobago and actively encourage the participation of landowners, non-governmental organisations and institutions in wetland conservation (NEP, 2006).

7.17.3 The Government, through the IMA, EMA, and other national and local authorities, will support and promote scientific research and the development of technological expertise needed for wetland conservation (NEP, 2006).

7.17.4 Consistent with the allocation priorities established in this Policy, the Government will ensure adequate flows to wetlands for annual recharge and maintenance.

7.18 Coastal Zone Management

Coastal areas, particularly in small island states like Trinidad and Tobago, are sensitive and fragile and their sound management is critical to the sustainable development of the countries of which they are a part.

7.18.1 The Government, through the IMA, the Coastal Division of MoWT, and other national and local authorities, will pursue an integrated coastal zone management programme that takes into consideration the combined effects of all activities that impact coastal areas. In this regard, special emphasis will be placed on integrating watershed and coastal zone management, thus ensuring that developments are in harmony with the aesthetic, environmental and cultural attributes of Trinidad and Tobago.

7.18.2 The Government, through the Coastal Division of MoWT, IMA, and other national and local authorities, will develop and implement a National Coastal Zone Management Plan that designates uses for various coastal areas and establishes restrictions on use. The Plan will promote the sustainable use of the coastal zone by implementing policies that maintain and enhance environmental quality while enabling economic development. This Plan will be prepared following the National Spatial Development Strategy and any other relevant plans. This plan will include:

The Plan will promote the sustainable use of the coastal zone by implementing policies that maintain and enhance environmental quality while enabling economic development.

1. Establishment of clear coastal setbacks for any new coastal developments;
2. Measures to rehabilitate degraded coastal ecosystems and habitats, and establish and effectively manage a system of coastal protected areas;
3. Measures to control pollution and minimise adverse impacts of coastal erosion and solid waste on coastal ecosystems; and
4. Measures to adapt to climate change for the protection of coastal ecosystems and coastal zones.

7.18.3 The Government will facilitate meaningful co-operation, participation and partnership with the private sector and civil society to foster co-responsibility in coastal management while promoting public awareness to ensure more effective coastal zone planning and management.

7.19 Climate Variability and Change

The Government is committed to undertaking several initiatives that will facilitate adaptation to the impacts of climate change

Trinidad and Tobago is a ratified signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol (1997) enforced in 2005, and to the Paris Agreement (2015) enforced in 2016. As such, the Government is committed to undertaking several initiatives that will facilitate adaptation to the impacts of climate change. These include the development and elaboration of appropriate and integrated plans for IWRM, coastal zone management, agriculture, and the protection and rehabilitation of areas affected by drought and floods.

7.19.1 Recognising that responses to climate change must be multi-sectoral, the Government will take steps to adapt to the effects of climate change and mitigate its impact by integrating key potential outcomes of climate variability and climate change into Integrated Water Resource Management (IWRM) Plans, i.e. watersheds, wetlands, coastal zones and agriculture.

7.19.2 The Government will include climate variability and change parameters into the design and implementation of all plans identified in this Policy.

7.19.3 The Government will support and encourage a climate-comprehensive risk management approach to the operations and maintenance of infrastructure assets, thus ensuring reliable and climate-resilient water services.

7.20 Seasonal Variation

Low rainfall during January to May and ensuing droughts can adversely impact a public water system. Recognising that seasonal variation is a normal part of the water cycle, the Government will manage the water resources in a proactive, year-round manner that takes into consideration this natural seasonal variability. Such an approach will involve establishing systems for the collection of high wet season flows in storage facilities for dry season use, establishing improved upper watershed management programmes to slow wet season runoff, establishing year-round conservation, and implementing demand management programmes.

7.20.1 The Government, through WASA, the Water Resources Entity, and MSD of MPU will develop comprehensive dry season and drought water supply management plans for Trinidad and Tobago, in collaboration with Municipal/ Regional Corporations, the THA, and other key stakeholders. These plans would encompass the entire hydrological year to effectively manage the year-round changes in raw and potable water supplies for all sectors during periods of low rainfall and drought conditions.

7.20.2 The Government, through WASA and the Water Resources Entity, will develop a water security programme for Trinidad and Tobago, in collaboration with Municipal/Regional Corporations, the THA, MSD of MPU and other key stakeholders. This programme will ensure that the water requirements of all users and the environment are adequately met, given the negative impact of climate change, and of incidents like pollution and infrastructure failures.

7.20.3 The Government will continue to develop a monitoring programme for predicting local dry spells and droughts.

7.21 Wastewater Management

Proper wastewater management is essential for the protection of human health and the environment.

7.21.1 The Government is committed to improving the quality of wastewater effluent (both domestic and industrial) to minimise any adverse effects on the environment and protect human health. In this regard, Government will create an effective, financially sustainable wastewater sector through an appropriate institutional framework and sound strategic planning.

Government will create an effective, financially sustainable wastewater sector through an appropriate institutional framework and sound strategic planning.

7.21.2 Government, through WASA, will continue to maintain and upgrade the existing wastewater collection, treatment and disposal systems, while rationalising the role that private wastewater treatment plants can play within these systems.

7.21.3 Government, through WASA, will continue to pursue the integration of smaller wastewater plants into larger plants, and the upgrade from secondary to tertiary level treatment.

7.21.4 Government will develop and implement effective strategies and programmes for economic investment related to the operation of public and private wastewater systems. To this end, it will also support the implementation of rate structures to ensure that wastewater systems will be financially self-sustaining.

7.21.5 The Government will ensure that all industrial waste producers are identified, industrial waste loads are quantified, standards for industrial waste are established, cleaner production technology is adopted and the Polluter Pays Principle is enforced.

7.21.6 Government will pursue the re-use of wastewater and produced water as a means of meeting the demand for industrial and agricultural water. This initiative will address the appropriate levels of treatment that reflect the different categories and accompanying standards and will facilitate the involvement of private entrepreneurs.

7.22 National Security

The mission of national security is to create an environment that ensures public safety and security through the maintenance of law and order and the commitment of resources to the protection of life and property. Threats to water resources can destabilise a country and pose a significant risk to national security.

7.22.1 Water service providers will implement appropriate security measures to protect water supplies from contamination, terrorism and sabotage.

7.22.2 Government has a vested interest in ensuring that water is available for national security purposes, particularly for fighting fires that can threaten human life and lead to significant economic loss. Provisions will be made for adequate water supply to meet fire-fighting needs.

7.22.3 Government will implement environmental biosecurity measures to protect against invasive species that negatively impact the water supply.

Successful water resources management depends on the full participation of all members of society

7.23 Public Participation and Access to Information

Successful water resources management depends on the full participation of all members of society in promoting public awareness and building capacity among the various water and water-related sector stakeholders.

7.23.1 Government is therefore committed to promoting joint partnerships, collective responsibility, and ownership for water resources, while providing opportunities for the public to have input into the entire water management process, from policy formulation to strategy implementation and co-management.

7.23.2 The Freedom of Information Act, Chap. 22:02 establishes the right to access information housed within public authorities. Consistent with that Act, Government will support meaningful and effective public participation in water resources management by providing the public with timely and accurate information about the status and trends of the quality, quantity and management of the country's water resources. Providing citizens and customers with information empowers them to make decisions and promote accountability in Government and the private sector.

7.23.3 In support of this and to ensure the widespread and timely dissemination of water resources management information to facilitate stakeholders' participation, the Government will require all water service providers to publish and distribute to consumers, annual water supply statistics and reports. Wastewater service providers will be required to provide performance reports. In addition to this annual information, water and wastewater services suppliers will provide public notifications upon discovering any violation of a required standard.

7.23.4 The Government, through the EMA, and other national and local authorities, will have responsibility for posting, publishing and otherwise providing clear information to the public about ambient water quality, including instances where water quality presents an imminent human health threat or exceeds standards for the designated uses.

7.23.5 The Government, through the Water Resources Entity, will prepare a "State of the Water Resources Report," every five (5) years. This Report, which will be presented in Parliament by the Minister responsible for water resources management, will describe the status and trends of the quality, quantity and uses of the country's water resources.

7.24 Infrastructure

Dams, water treatment plants, storage tanks, canals and drainage works are the most visible components of a water management system.

7.24.1 Government will continue to prioritise and develop medium to long-term water supply projects. The construction of new facilities and the integration of existing infrastructure to meet increasing demand will continue to be pursued where a comprehensive analysis indicates such an option to be the most cost-effective and environmentally sound.

7.24.2 Government will develop and implement a comprehensive asset management programme for effective and efficient maintenance of water and wastewater systems and infrastructure.

7.24.3 Government will facilitate the application of innovative and appropriate technology for water and wastewater infrastructure.

7.25 Reliability Criteria

Reliability Criteria (national performance criteria) describes how likely a system is to fail (reliability), how quickly it recovers from failure (resiliency), and how severe the consequences of failure may be (vulnerability). These criteria can be used to assist in the evaluation and selection of alternative design and operating policies for a wide variety of water resource projects, and can be used to monitor and evaluate the performance of the service provider.

7.25.1 In determining reliability, the Government through the RIC, and other national and local authorities, will consider the following criteria:

Public water supply, including industrial supply:

1. The percentage of time that demand cannot be satisfied should be 10% or less; and
2. The average deficit should be less than 10% of the average demand.

Irrigated agriculture, environmental flows and other supplies:

1. The percentage of time that demand cannot be satisfied should be 20% or less; and
2. The average deficit should be less than 20% of the average demand.

7.25.2 These are general reliability criteria. Specific reliability criteria will be established for specific water bodies and specific uses. For example, it is recognised that in the case of environmental flows, an absolute minimum flow may be necessary to sustain ecological functions. In addition to these criteria, the Water Resources Entity will establish flood and drought criteria.

7.26 Gender Equity and Poverty Alleviation

Effective, efficient and equitable management of water can be enhanced when every individual – men, women, the poor and the differently-abled – are involved in sharing, supplying and protecting the resource. When safe drinking water is not available on household premises, the burden of water collection and treatment falls largely on the shoulders of women and girls. The lack of safe sanitation and hygiene facilities at home may expose them to illness, harassment and violence – hampering their ability to learn, earn an income and move around freely. Where household members fall sick due to water-borne illnesses, it is mainly women and girls who provide the much-needed care (UN Women, 2018). In this regard:

7.26.1 Government will facilitate the involvement of men, women, children and vulnerable groups in managing the sustainable use of water resources at all levels and in the sharing of the subsequent benefits.

7.26.2 A gender perspective will be integrated into the design and implementation of water resources management programmes.

7.26.3 The development of water and sanitation infrastructure and services will meet the needs of the poor and vulnerable, while also being sensitive to gender and the differently-abled.

7.26.4 When necessary, and for the sole purpose of poverty alleviation, the Government will provide the basic water requirement for domestic supply.

A gender perspective will be integrated into the design and implementation of water resources management programmes.

8. INSTRUMENTS FOR POLICY IMPLEMENTATION

Water Resources Management requires a framework of good governance, strong legislation and effective institutions. Considering this, the Government will create various instruments for the implementation of the policy that will focus on several dimensions of water resources management. The instruments of implementation outlined below will guide the country in areas of governance, economics, stakeholder interaction and co-ordination, planning and environmental sustainability.

Good water governance requires accountability, transparency and participation.

8.1 Water Governance

Water governance is the set of rules, practices and processes through which joint decisions for the management of water resources and services are taken and implemented, and by which decision-makers are held accountable (Organisation for Economic Cooperation and Development, 2015). Good water governance requires accountability, transparency and participation.

8.1.1 Government will establish a coherent governance framework for water resources management in which the roles, responsibilities and interrelationships among and between Central Government, the Municipal and Regional Corporations, and various other agencies are clearly defined. In this regard, particular attention will be paid to the responsibility of the THA for water resources management in the island of Tobago, as provided for under the THA Act, Chap. 25:03.

8.1.2 Government will ensure that the water managers such as WASA, the Water Resources Entity, will maintain integrity through a system geared towards facilitating the involvement of responsible authorities at different levels, while promoting their autonomy. Appropriate transparent and accountable management information systems will also be established.

8.2 Legal Instruments

8.2.1 Government will establish and enforce the necessary legal instruments (laws, regulations, standards, etc.) to implement this policy. The principal piece of new legislation that is required for this purpose is the Water Resources Management (WRM) Act. Several existing laws may also need to be amended. Some include:

- the Water and Sewerage Act, Chap. 54:40;
- the Waterworks and Water Conservation Act, Chap. 54:41;
- the Environmental Management Act, Chap. 35:05;
- the Regulated Industries Commission Act, Chap. 54:73;
- the Tobago House of Assembly Act, Chap. 25:03;
- the Town and Country Planning Act, Chap. 35:01;
- the Planning and Facilitation of Development Act 2014;
- the Municipal Corporation Act 1990 (as amended);
- the Public Health Ordinance Act, Chap. 12:04; and
- the Litter Act, Chap. 30:52.

8.2.2 The WRM Act will specifically provide for inter-institutional linkages. One of the most important elements of the comprehensive water resources management strategy is effective communication between key stakeholders.

8.2.3 Where conflicts, overlaps, or gaps exist in legislation, the Government will establish new legislation or make amendments to existing legislation. In all instances, the Government will ensure that all legislation is fully enforced following due process of law.

8.3 Institutional Framework

8.3.1 To ensure effective integrated management of the country's water resources, Government will establish an autonomous water resources entity. Although the Water Resources Entity will have lead responsibility for managing the country's water resources, many other government and non-government entities will play critical roles in ensuring an integrated approach to water resources management.

8.3.2 The Water Resources Entity will manage, monitor and regulate water resources. The Government will develop and operationalise a roadmap for the separation of water resource regulation from water supply and distribution and establish the Water Resources Entity.

8.3.3 The Water Resources Entity will have the authority to manage all surface water, groundwater and nearshore coastal waters, to regulate water abstraction and use, to establish minimum stream flows, advise on measures to protect and conserve land use for aquifer recharge, watershed protection and environmental needs in Trinidad and Tobago.

8.4 Inter-Agency Co-ordination and Collaboration

Effective water resources management depends on close co-ordination and collaboration among relevant government entities. Government, in keeping with established strategies and standards, will ensure beneficial collaboration between all entities mentioned in this Policy and other national and local authorities, NGOs and CBOs through mechanisms such as Memoranda of Understanding or Memoranda of Agreement.

Effective water resources management depends on close co-ordination and collaboration among relevant government entities.

8.5 Planning Instruments

8.5.1 Several policies and plans have been formulated since the publication of the 2005 National IWRM Policy, some of which include: the National Protected Areas Policy; the National Forest Policy, 2011; National Wildlife Policy, 2013; the Integrated Coastal Zone Management Policy Framework, 2014; the update of the National Environmental Policy; and Trinidad and Tobago Stakeholder Perspectives on a Water Goal and its Implementation. These plans, along with United Nations (UN) sustainable development goals and Vision 2030, will be incorporated into the National Spatial Development Strategy and other relevant plans.

8.5.2 Government, through the Water Resources Entity, will develop a National Integrated Water Resources Master Plan and encourage the establishment and/or updating of policies and plans for the various water-related sectors. These plans will be specific, establishing designated uses, objectives, and criteria for monitoring and evaluation.

8.6 Economic Instruments

8.6.1 Market forces play a central role in conserving scarce natural resources, directing those resources to their highest-valued uses, and ultimately ensuring adequate production capacity for the future. There is an opportunity cost to the inefficient pricing and allocation of water resources. Government will use economic instruments to implement this Policy wherever feasible. Examples of economic instruments that may be introduced include:

1. Behavioural economic strategies;
2. Full marginal cost pricing of water;
3. Progressive pricing schemes that encourage conservation i.e. higher prices for higher consumption;
4. Tax incentives or grants for watershed protection investments (e.g. soil conservation, replanting, conservation, covenants) on private lands;
5. Metering of water connections and volume-based water rates;
6. Rebates, tax incentives and grants for demand management measures, including rainwater harvesting, beneficial reuse and recycling of water, wastewater and produced water;
7. Explicit, targeted subsidies when justified on social or other policy grounds;
8. Pollution charges and other stringent penalties for breaches of the relevant laws; and
9. Mandatory flood insurance according to flood risk to properties and assets.

8.6.2 Government will facilitate private sector participation in the water and wastewater sectors to the extent that such involvement is feasible and congruent with national policy.

8.7 Environmental Management Instruments

8.7.1 Water resources management activities may be subject to environmental impact assessment consistent with the Environmental Management Act.

8.7.2 The EMA is the primary government agency responsible for co-ordinating all environmental management activities in Trinidad and Tobago. Five (5) enforcement instruments are the Certificate of Environmental Clearance Rules (2001), Water Pollution Rules (2019), Water Management Rules (2021), Air Pollution Rules (2014) and Noise Pollution Control Rules (2001). Another enforcement instrument proposed for enactment is the Beverage Containers Bill.

8.8 Participatory Instruments

Specific attention will be paid to the vulnerable groups and the impact of water-related issues on their quality of life.

8.8.1 The Government will take a demand-responsive approach to water management that allows stakeholders to guide key management and investment decisions. Specific attention will be paid to the vulnerable groups and the impact of water-related issues on their quality of life.

8.8.2 Government will consider providing incentives to upstream stakeholders whose land-use practices contribute to downstream improvements in water quantity and quality.

8.8.3 Information is one of the most critical tools for effective stakeholder participation in water resources management. The Government will develop a communication strategy and promote public participation in water resources management by digital transformation in the water sector, actively disseminating timely and relevant

information about the state of water resources; providing timely and accurate responses to requests for information; and providing an opportunity for the public to have input into this Policy and key water resources management decisions through consultation, public notice, comment procedures and other appropriate processes.

8.8.4 There are significant opportunities for stakeholders to take direct responsibility for water resource management functions. One such example is the Adopt a River Programme implemented by WASA. Such opportunities include:

1. Watershed management projects in which communities and other stakeholders take responsibility for restoring and protecting catchment areas through reforestation, improved agricultural practices, improved waste management practices and peer education;
2. Water projects in which communities and other stakeholders take responsibility for developing, operating, and maintaining decentralised water supply and wastewater facilities;
3. Disaster management programmes, including community-based flood early warning systems; and
4. Broader stakeholder participation projects in which individuals implement measures such as water conservation, improved septic system design, construction, maintenance, abandonment, renewal and management. Other measures may include reductions in grey water loadings and agricultural chemical use and increased setback of agricultural activity from watercourses.

8.8.5 Government will facilitate the implementation of these and other similar projects by creating specific legal, institutional and financial mechanisms for stakeholder participation in water resources management. These mechanisms may include: granting water abstraction licences to communities and stakeholder groups, establishing and empowering representative community-based water user associations and watershed committees, providing grants and loans to communities and individuals, providing training and education, and promoting stakeholder participation in monitoring the quantity and quality of the country's water resources.

8.9 Educational Instruments

8.9.1 The Government will establish a comprehensive programme for water resources management education to foster joint ownership, partnership, increased awareness and collective responsibility. The education programme will include non-traditional public awareness approaches, as well as primary and secondary school education to explain the benefits of prudent use of water resources and to promote the conservation, wise use and preservation of water resources. The programme will also have the training and tertiary education components for building capacity for effective water resources management.

8.9.2 Through its extension and outreach programmes, Government via the relevant authorities will also educate private landowners, farmers and other interested parties on sound soil conservation and water resource management practices.

8.9.3 The successful implementation of water resources management depends directly on the acquisition of relevant knowledge and expertise. Government will consider the establishment of a Training Fund for water resources management. Attention will be focused on technical education and training, education to enhance administrative skills, and enhancement of general awareness of water and water management issues. The areas directly impacted will be flood management, hydrological modelling, groundwater modelling, data processing, disaster risk management, artificial recharge of aquifers, and communication and transfer of information.

Attention will be focused on technical education and training, education to enhance administrative skills, and enhancement of general awareness of water and water management issues.

Government will facilitate and support research in appropriate aspects of water and wastewater management

8.10 Research and Information Management Instruments

8.10.1 To advance the knowledge and technology used in water resources management, Government will facilitate and support research in appropriate aspects of water and wastewater management by considering the establishment of a Research and Development Fund. This will involve the public and private sectors as well as academic institutions of higher learning.

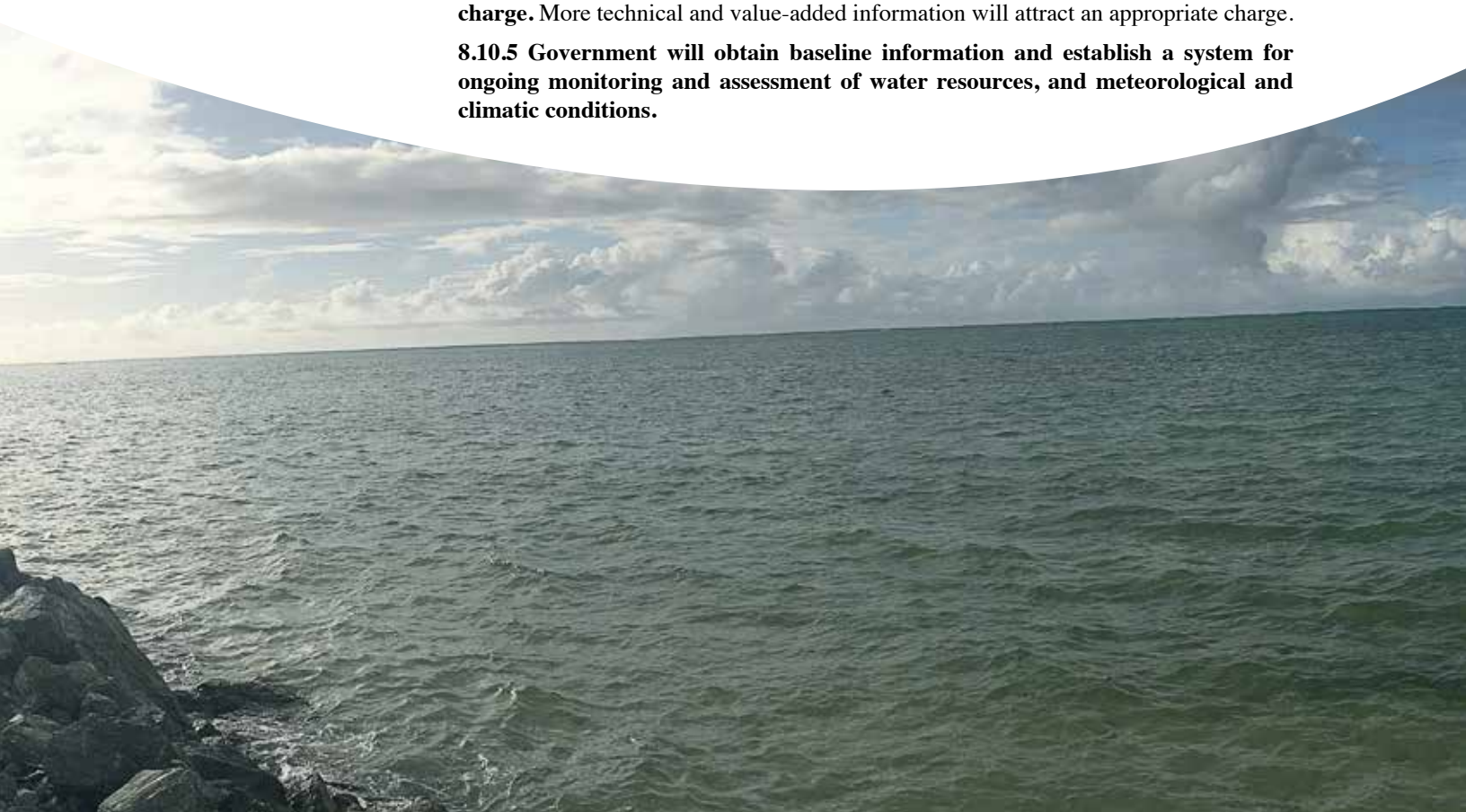
8.10.2 The Government will establish a standardised, integrated, electronic water-information management system for the collection, processing, storage, analysis and retrieval of water-related data and information to inform the decision-making process. The system will provide continual permanent monitoring of meteorological, hydrological and hydrogeological parameters, combined with associated spatial and environmental data from multiple water-related stakeholders. Some of the system's objectives will be:

1. To collect, standardise, and disseminate data and information on the quality and quantity of water resources in Trinidad and Tobago;
2. To regularly update information on the availability of, and the demand for, water resources;
3. To inform the National IWRM Plans and water resources assessments;
4. To provide real-time information to support forecasting and emergency management activities; and
5. To disseminate information for global usage and assessments of the state of the meteorological and water resources of the country.

8.10.3 The system will incorporate hydrological, meteorological, hydrogeological, geographical, environmental, social and economic information, and will form the basis for planning and decision-making. It will have the capacity for integration with the National Land Information/Geographic Information System (National LIS/GIS). Wherever practicable, Government will involve the private sector, the tertiary educational institutions and the public in the collection and processing of information.

8.10.4 Basic information in the system will be available to the public at a nominal charge. More technical and value-added information will attract an appropriate charge.

8.10.5 Government will obtain baseline information and establish a system for ongoing monitoring and assessment of water resources, and meteorological and climatic conditions.



8.11 Climate Adaptation Instruments

8.11.1 Government will take action to ensure that Trinidad and Tobago's economic, social and environmental development is safeguarded from the adverse impacts of climate variability and change. As such, specific attention will be given to the implementation of a Water Utility Adaptation Plan and the construction of resilient wastewater infrastructure.

8.11.2 Consistent with the above, Government will prepare a framework for achieving development objectives that facilitate the water sector's resilience to climate change and variability. As it pertains to the water sector, the Government will commit to building capacity for adaptation to climate change, and to develop appropriate and integrated plans for IWRM, coastal zone management, and the protection and rehabilitation of areas affected by drought and floods.

8.11.3 Consistent with this policy, the Government will develop and implement climate change adaptation strategies that will include but not be limited to reforestation, risk assessments, improved storage for water supply systems, enhanced hydrological and climatic monitoring, adapted infrastructure for multi-use purposes (storage, flood retention and agriculture), proactive flood management, diversification of water resources to reduce reliance on a single source, utilisation of available water resources in a technically and efficient manner, and promotion of stakeholder dialogue and conflict management.

The Government will commit to building capacity for adaptation to climate change, and to develop appropriate and integrated plans for IWRM

9. MONITORING AND EVALUATION

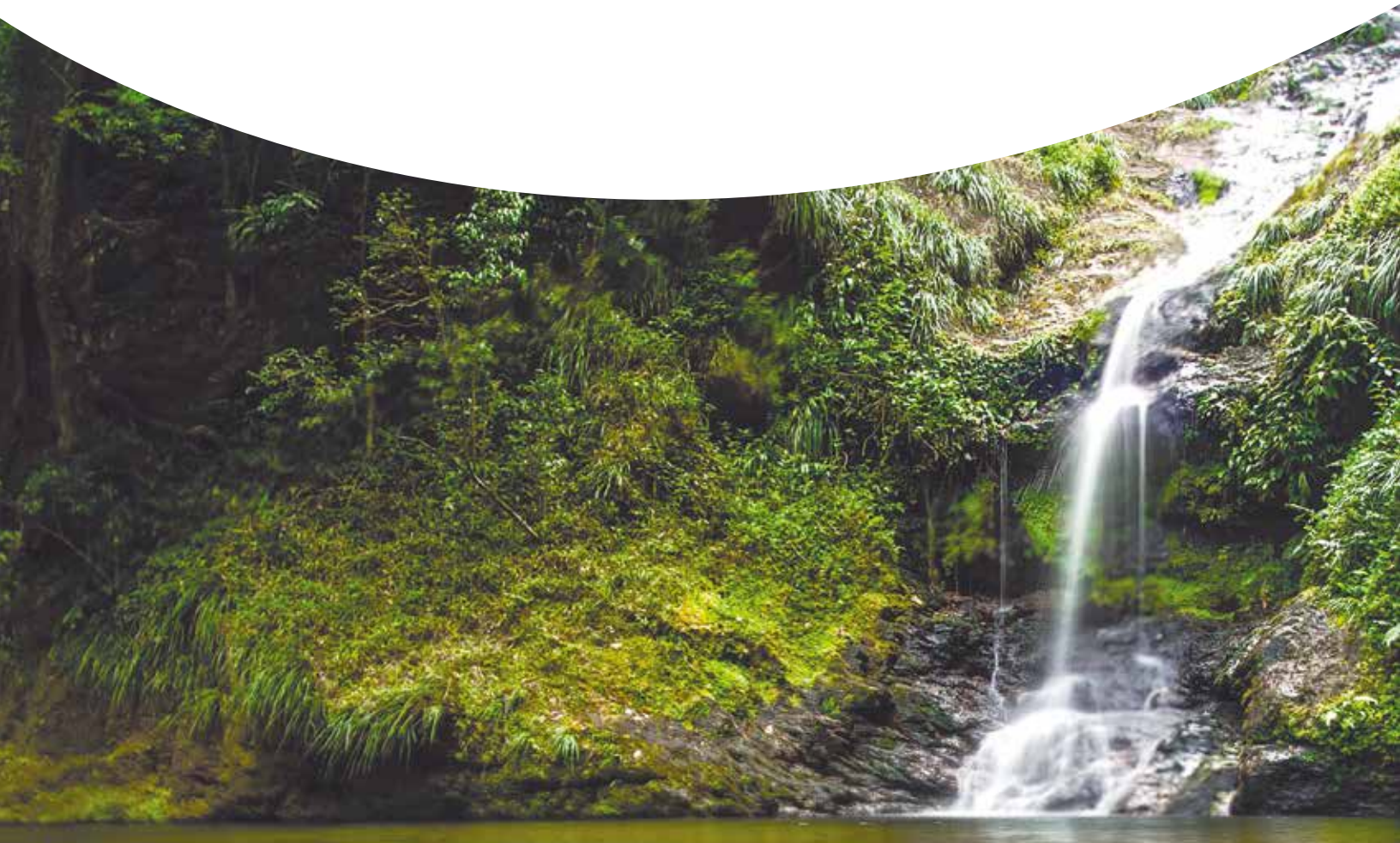
A monitoring and evaluation system is vital for the success and continued applicability of the Policy.

This Policy will be monitored at strategic intervals to evaluate its implementation and the extent of its impact.

A monitoring and evaluation system is vital for the success and continued applicability of the Policy. Through monitoring, the progress towards policy-based objectives will be tracked against key indicators and thorough evaluation, and lessons will be captured and applied to improve performance. Thus, the system will ensure that the National IWRM strategy meets its objectives of promoting positive change and adapting to the evolving needs and conditions of the country.

Upon approval of the Policy, the Monitoring and Evaluation (M&E) Unit of the MPU will develop the M&E system and lead the monitoring of the day-to-day implementation of the Policy. This system will include baseline and performance indicators, guided by international benchmarks which are to be adapted to the local context, to track the progress of achieving Policy Objectives.

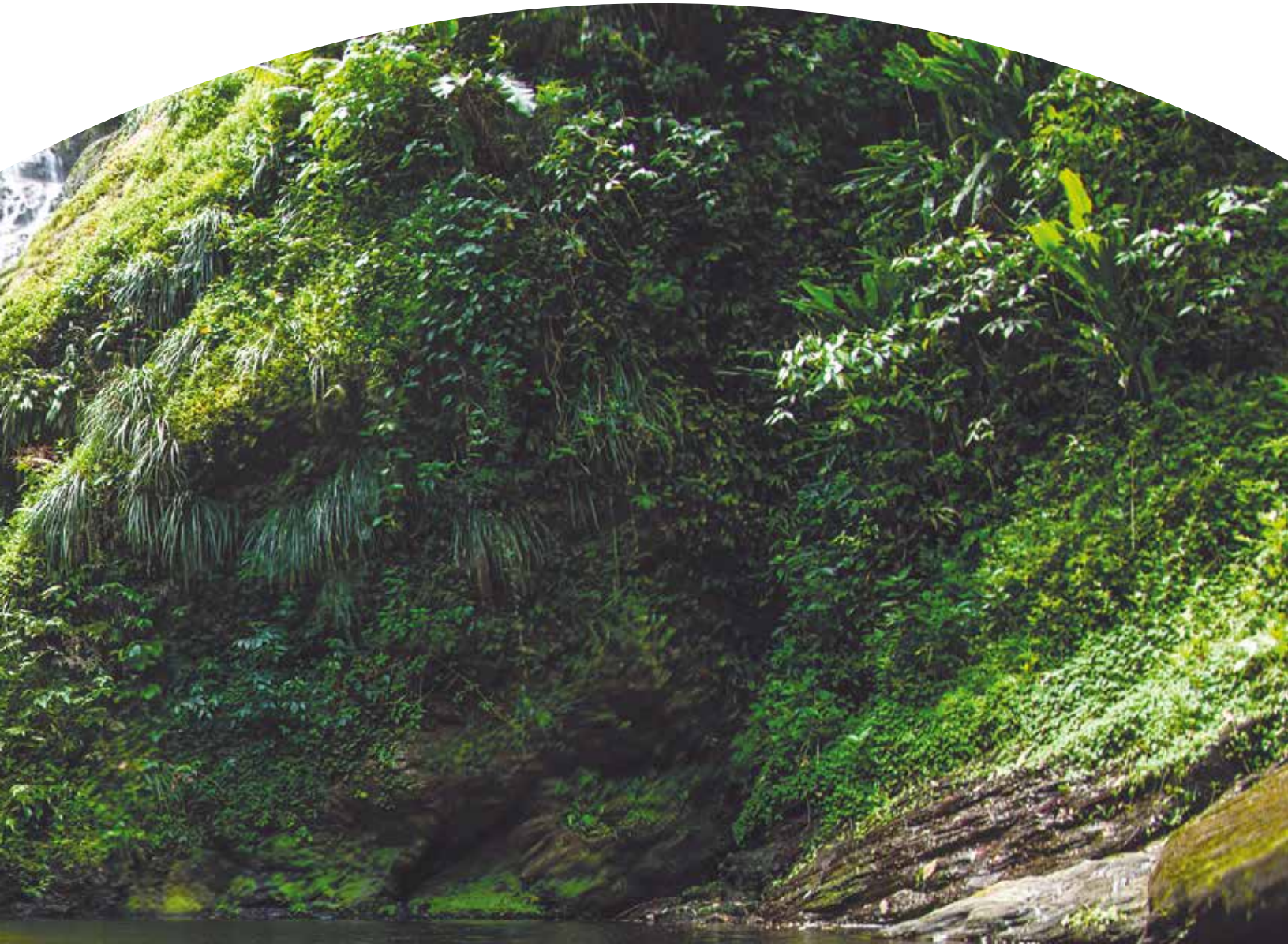
The major progress monitoring tools are quarterly progress reports and annual policy performance reports that will be compiled by the MPU, in collaboration with the executing agencies of this Policy, and presented to Cabinet annually. Further, annual review meetings organised by the MPU will engage relevant stakeholders to evaluate the Policy's performance. The review of monitoring and evaluation findings will facilitate the determination and prioritisation of future actions, including realignment of strategy, resource control and stronger reporting. This exercise may initiate a more expansive review and revision that may require the public consultation process.



10. REVIEW AND REVISION

This policy must evolve to remain relevant and consistent with other policies. To this end, it will be reviewed and revised at least every five (5) years by:

1. Formulation of a Steering Committee to guide the policy review;
2. Publishing notices to signal intent to revise the policy and inviting public comments on the suggested revisions;
3. Convening of workshops and focus group meetings;
4. Publishing of a revised draft based on the suggested revisions received;
5. Submitting the revised draft policy for public comment for no less than thirty (30) days;
6. Finalising the revised policy based on comments received; and
7. Submitting the final revised policy to Cabinet for approval.



11. ASSIGNMENT OF RESPONSIBILITIES FOR IMPLEMENTATION OF THE POLICY

This Water Resources Entity will manage and control all the surface water, groundwater and coastal nearshore waters of Trinidad and Tobago.

11.1 Responsibility for Implementation of This Policy

Given the broad reach of the National IWRM Policy, several agencies and institutions will be required to lead, collaborate and advise on the instruments outlined in this Policy. Annex 2 outlines the schedule of responsibilities. In addition, an autonomous entity will be established. This Water Resources Entity will manage and control all the surface water, groundwater and coastal nearshore waters of Trinidad and Tobago. The functions of this Water Resources Entity will include:

1. Co-ordinating and collaborating with all agencies responsible for implementing various aspects of this Policy;
2. Administering the abstraction and licensing system for surface, ground and coastal waters;
3. Monitoring, analysing and assessing the national water resources;
4. Enforcing authority for water quantity violations;
5. Collecting and maintaining a national water resources information system;
6. Developing and publishing reports on the country's water resources, policies and plans for water resources management;
7. Exercising planning and research functions for water resources management;
8. Engaging and partnering with stakeholders in water resources management; and
9. Carrying out an education and public awareness programme.

11.2 Schedule of Responsibilities

11.2.1 Functions of the Responsible Entity

The following describes the main functions of the Responsible Entity and the degree of responsibilities:

1. Water Resources Strategy Development: *Exclusive Responsibility*
2. Water Resources Assessment – Survey and Monitoring: *Exclusive Responsibility*
3. Water Resources Assessment – Research and Development: *Exclusive Responsibility*
4. Water Demand Analysis: *Lead*
5. Watershed Management: *Collaborate*
6. Master Planning and Allocation: *Exclusive Responsibility*
7. Pricing of Water – Water Abstraction: *Collaborate*
8. Pricing of Water – Water Delivery: *Advise*
9. Legislation and Enforcement – Water Abstraction Licensing: *Exclusive Responsibility*
10. Legislation and Enforcement – Water Pollution Permits: *Advise*

11. Legislation and Enforcement – Building/Land-use Permits: *Advise*
12. Demand Management (efficient use): *Lead*
13. Water Resources Development and Distribution – Domestic and Industrial water: *Advise*
14. Water Resources Development and Distribution – Agricultural water: *Advise*
15. Water Resources Development and Distribution – Multi-purpose dams/reservoirs: *Advise*
16. Water Resources Development and Distribution – Drainage/flood control: *Advise*
17. Water Resources Development and Distribution – Sewerage: *Advise*
18. Water Resources Development and Distribution – Water treatment: *Advise*

11.2.2 Responsibilities and Jurisdiction of Relevant Agencies

Annex 2 details the responsibilities and jurisdiction of all relevant agencies and institutions. These include:

1. Ministry of Public Utilities (MPU)
2. Ministry of Agriculture, Land and Fisheries (MALF)
3. Ministry of Health (MoH)
4. Ministry of Energy and Energy Industries (MEEI)
5. Ministry of Planning and Development (MPD)
6. Tobago House of Assembly (THA)
7. Town and Country Planning Division (TCPD), MPD
8. Forestry Division (FD), MALF
9. Drainage Division (DD), Ministry of Works and Transport (MoWT)
10. Meteorological Services Division (MSD), MPU
11. Coastal Protection Unit, MoWT
12. Water and Sewerage Authority (WASA)
13. Environmental Management Authority (EMA)
14. Institute of Marine Affairs (IMA)
15. Office of Disaster Preparedness and Management (ODPM)
16. Regulated Industries Commission (RIC)
17. Municipal/Regional Corporations (RC)
18. Trinidad and Tobago Bureau of Standards (TTBS)
19. Solid Waste Management Company Limited (SWMCOL)
20. Tertiary Education Institutes (TEI)
21. Non-Governmental Organisations (NGOs)

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ANNEX 1 Policy Formulation Committees And Contributing Organisations

Multi-Stakeholder Workshop

A multi-stakeholder workshop was held at the WASA Sport Facility, Farm Road, St Joseph, Trinidad, on October 14, 2016, under the leadership of the Ministry of Public Utilities (MPU) and the Water Resources Agency (WRA). Participants were from all the Government Agencies involved in the water or water-related sectors. Also participating were members of the Cabinet appointed Technical Steering Committee, and Consultants to the WRA Trinsult Associates Limited.

1st Round of Public Consultations

Public consultations were held at the WASA Sports Facility, Farm Road, St Joseph, Trinidad, on October 31, 2016, and at the Shaw Park Complex in Tobago on November 2, 2016. These consultations were held under the leadership of the Ministry of Public Utilities (MPU), and the Water Resources Agency (WRA). Also participating were members of the Cabinet appointed Technical Steering Committee, and Consultants to the WRA responsible for preparing the draft revised policy, Trinsult Associates Limited.

Focus Groups

Focus group sessions were conducted across Trinidad and Tobago during December 2016. The focus groups explored participants' views, concerns and/or recommendations during the consultations. Eleven (11) focus groups were conducted in total, seven (7) in Trinidad and four (4) in Tobago with persons representing selected interest groups (commercial/industrial, agricultural and environment). The members of the Ministry of Public Utilities (MPU) and the Water Resources Agency (WRA) of WASA facilitated the sessions.

2nd Round of Public Consultations

The Ministry of Public Utilities (MPU) in collaboration with the Water Resources Agency (WRA) of WASA facilitated ten (10) public consultations. These consultations were held at the following venues and dates:

Venue	Date
Princes Town West Secondary School	April 12, 2017
Arima Town Hall	April 19, 2017
Port of Spain City Hall	April 24, 2017
Patna Community Centre	April 26, 2017
San Fernando City Hall	May 1, 2017
Penal/Debe Regional Corporation	May 24, 2017
Couva Chamber of Commerce	May 15, 2017
Rio Claro East Secondary School	May 17, 2017
Speyside Multipurpose Facility	June 12, 2017
Hampden/Lowlands/Auchenskeoch Multipurpose Facility	June 13, 2017

ONLINE COMMENTS

In addition to the public consultations, the public had the option of submitting their comments and concerns online. The Draft revised policy was available for download on the Ministry of Public Utilities website http://www.mpu.gov.tt/home and comments were submitted at niwrmpconsultations@gmail.com.

The Policy was advertised via social media on the Integrated Water Resources Management Facebook page – https://www.facebook.com/IWRMTT, which provides links to the draft revised Policy and dates of consultations.

The Cabinet Appointed Technical Steering Committee

Members of the Cabinet Appointed Technical Steering Committee and contributing organisations are:

1. Ministry of Public Utilities
2. Ministry of Planning and Development
3. Ministry of Agriculture, Land and Fisheries
4. Ministry of Works and Transport
5. Regulated Industries Commission
6. Water and Sewerage Authority
7. Water Resources Agency, Water and Sewerage Authority
8. Council of Presidents for the Environment
9. Global Water Partnership-Caribbean

The Cabinet appointed Technical Steering Committee for the Review and Revision of the National IWRM Policy guided the following process:

1. Initial comments from key stakeholders
2. Multi-stakeholder workshop
3. First revised draft policy
4. First round of public consultations and invitation of public comments
5. Second revised draft policy
7. Focus group workshops
6. Third revised draft policy
7. Second round of public consultations and invitation of public comments
8. Fourth revised draft policy
9. Invitation of written comments from key stakeholders
10. Final draft revised policy for submission to Cabinet

ANNEX 2 Functions and Responsibilities

Water Resources Functions Inter-Organisational Arrangements

Annex 2 – Roles And Responsibilities

Key

E = Exclusive responsibility (have sole responsibility for performing functions even though inputs may be required from other agencies)

L = Lead responsibility (responsible for leading and co-ordinating efforts of multiple agencies)

C = Collaboration (responsible for collaborating)

A = Advise (provides input and consultation)

NO	FUNCTIONS	MPU	RESPONSIBLE ENTITY FOR WATER RESOURCES	WASA	MSD of MPU	MoWT (Drainage & Coastal)	EMA	FORESTRY DIVISION	IMA	MoH	MALF	ODPM	RIC	REGIONAL/MUNICIPAL CORPORATIONS	THA	TCPD	TTBS	TEI	SWMCOL	NGOs	MEEI	MPD
1	**Policy/Strategy/IWRM Co-ordination**																					
1.1	Socio-Economic Planning	L	C	C	A	A	C	C	A						C	C						C
1.2	Policy Review and Revision	L	A	A		A	C	C	A	A	A			A	C	A						C
1.3	Policy Monitoring	E	C	C	C	C	C	C	A		C				C	C			C			C
1.4	Strategy Development	C	L	C	A	C	C	C	A		C		A		C	A			C			C
1.5	Programme Co-ordination	C	L	C	A	C	C	C	A	A	A	A	A	A	C	C						C
1.6	Inter-Agency Co-ordination	C	L	C	C	C	C	C	A	C	C	C	A	A	C	C			A			A
1.7	Information Management	C	L	C	C	C	C	C	A	A	A	A	C		C	C		A				A
1.8	Stakeholder Participation/ Involvement	C	L	C	C	C	C	C	A	A	A	C	C	A	C	C	A	A	C	A	A	C
1.9	Public Awareness /Education	C	L	C	A	A	C	C	A	A	C	C		A		A			C			
2	**Allocation/Abstraction & Licensing**																					
2.1	Allocation and Conflict Resolution	A	E				A	A	A				A	A	A	A						A

NO	FUNCTIONS	MPU	RESPONSIBLE ENTITY FOR WATER RESOURCES	WASA	MSD of MPU	MoWT (Drainage & Coastal)	EMA	FORESTRY DIVISION	IMA	MoH	MALF	ODPM	RIC	REGIONAL/MUNICIPAL CORPORATIONS	THA	TCPD	TTBS	TEI	SWMCOL	NGOs	MEEI	MPD
2.2	Setting Allocation Priorities		E			A	A	A	A		A				A	A						
2.3	Enforcement of Allocation Priorities		E			A	A	A					C	C	C	C					C	
2.4	Abstraction Licensing and Fees	C	E				A	A					C		C							
2.5	Effluent Discharge Licenses and Fees	C	C				E			A	A		C		C	A						
2.6	Pricing of Water and Wastewater Services	A	C	A			A				A		E									
3	Approval of Rates/Fees		A				A						E									
3	**Water Resources Assessment and Plans**																					
3.1	Water Resources Assessment	A	E	C	C	C	C	C	C		A		A		C	A		A				
3.2	Water Resources Planning	C	E	C	A	A	C	C	A		C				C	C		A			C	A
3.3	Water Resources Management Strategy	C	E	A	A	C	C	C	A	A	A	A			C	C		A	C		C	A
3.4	Designated uses for Water Bodies		L	A		A	L	C	A		A			A	C	C					A	A
4	**Water Quality**																					
4.1	Establishment of Ambient Water Quality Standards (AWQS		C				E		A	A					A		C	A				
4.2	Enforcement of AWQS		C				E		A	C					C			A				
4.3	Monitoring of AWQS		L	C			L		A	A					C			A	A			
4.4	Establishment of Effluent Discharge Standards		C				E		A	C					C		C	A				
4.5	Enforcement of Effluent Discharge Standards		C				E		A	C			C		C			A				
4.6	Monitoring of Effluent Discharge Standards		C	C			L		A	A					C			A	A			
4.7	Establishment of Drinking Water Standards		A	A			A			L			C		C		C	A				
4.8	Enforcement of Drinking Water Standards								A	L			C	C	C		C					
4.9	Monitoring of Drinking Water Standards			C			C		A	L				C	C			A				
4.10	Establishment of Agricultural water Standards		C	C			L	A	A	C	L				C		C	A				

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4.11	Enforcement of Agricultural Water Standards		C				L		A	C	C				C			A				
4.12	Monitoring of Agricultural Water Standards		C	A			L		A	C	C				C							
4.13	Establishment of Recreational Water Standards		C	C			L	C	A	A					C		C	A		A		
4.14	Enforcement of Recreational Water Standards		C	A			L	C	A	A					C							
4.15	Monitoring of Recreational Water Standards		C				L	A	C	C					C			A		A		
5	**Water Supply**																					
5.1	Public Water Supply Development	C	C	E			A						C	C	C	C						A
5.2	Public Water Supply Distribution	C	C	E			A						C	C	C	C						A
5.3	Public Water Supply Dams/reservoirs	C	C	E	A	A	C						C		C	C						A
5.4	Public Water Supply Plan	C	C	L			A						C		C	C						A
5.5	Agriculture Water Supply Development		C	C	A	C	A				L			A	C	A				A		
5.6	Agriculture Water Supply Infrastructure		A	A		A	A				L			A	A	A				A		
5.7	On-Farm Irrigation and Drainage		A			A	A	A			L				A					A		
5.8	National Irrigation Plan	A	C	A		C	A				E				C	A		A		A		
6	**Wastewater**																					
6.1	Collection and Treatment of Domestic Wastewater	C		L			C			A			C	C	C	C						A
6.2	Monitoring of Industrial Wastewater Discharges		C	L			L		A	A				A	C	A						
6.3	Monitoring of Agricultural Wastewater Discharges		C	C		A	L		A	C	C			A	A	C						
6.4	Licensing of Wastewater Treatment Systems		C	L			C			A			C		A	C						
6.5	Monitoring of Wastewater Treatment Systems		C	L			L		A	C				A	A							

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7	**Demand Management/Conservation**																					
7.1	Water Saving Measures	C	C	L			A				C		C		C		A	A		A		C
7.2	Re-Use and Recycling of Wastewater	C	C	L			C		A	C	A		C		A		A			A	A	
7.3	Designations of Water Protection Areas		L	A	A	A	L	L	A	A		A		A	C	C		A		A		C
8	**Land Management**																					
8.1	Land Use Planning and Development Control		A	A		A	C	C			A			C	C	E		A		A		C
8.2	Zoning		A	A		A	C	C	A					C	C	E						C
8.3	Building Permits	A	A	A			C							L	L	L		A				
9	**Watershed Management**																					
9.1	Preparation of Watershed Management Plans	A	L	C		A	C	L	A		A			C	C	C		A		A	A	A
9.2	Classification of Catchments	A	L	A		A	C	C	A		A			A	C	C		A		A	A	A
9.3	Reforestation of Denuded Lands		C			A	C	E	A		A			A	C	A				A	C	
9.4	Soil Conservation Measures		C			C	C	L			C				C			A		A		
9.5	Agroforestry		A				A	L			C				A			A		A		
9.6	Forest Fire Control		A				A	L				C		C	C					A		
9.7	Public Education	C	L	C		A	C	L			A			A	C					A		
10	**Coastal Zone Management**																					
10.1	Preparation of CZM Master Plans		C			L	C	A	C			A			C	A				A		C
10.2	Development Control		A			C	L	A	C						C	L						A
10.3	Regulation of Water Abstraction		L			A	C						C		C						C	
10.4	Coastal Zone Infrastructure		A			L	C		A					C	C	C						

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10.5	Pollution Control		C				L		A						C							
10.6	Establishment of Marine Water Standards		C			C	L		C						C		A				C	
10.7	Enforcement of Marine Water Standards					A	L		A						C						C	
10.8	Monitoring of Marine Water Standards		C				L		L						C					A	A	
11	**Water Related Ecology**																					
11.1	Establishment of Minimum Ecological Flows		E	A	A	A	C	A	A		A				C			A		A		
11.2	Monitoring of Minimum Ecological Flows		L	C	A	A	C	C	A		A				C			A		A		
11.3	Controlling Pollution in Waterways and Wetlands	A	C	C		A	L		A		A				C			A	C	A		
12	**Meteorology and Climatology**																					
12.1	Monitoring of Weather and Climate		C	A	E		A		A			A						A				
12.2	Weather Forecasting		A		E				A									A				
12.3	Monitoring Climate Variability and Change		C		E		A		A									A				
12.4	Monitoring Sea Level Rise		A		C	L	C		L						A			A		A		
13	**Flood Management**																					
13.1	Development of Flood Management Plans	A	C	A	A	L	C	A	A		A	L		C	C	C			A			C
13.2	Flood Plain Mapping		L		A	C	C		C		A	C		A	C			A				
13.3	Collection of Flood Damage Data		C			C	A				C	L		C	C							
13.4	Establishment of Flood Early Warning System		L	A	C	C	C		A		A	C			C			A				
13.5	Enhancement/Maintenance of Flood Control Structures		C	A		E	C		A			A		C	C							
13.6	Contingency Planning with Community Involvement	A	C	A	A	C	C		A			L		C	C					A		

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14	**Water Resources Technology**																					
14.1	Research and Development	A	C	A	C		A		A						A			L		A		
14.2	Decision Support Tools	A	L	C	C		A								A			C				
14.3	Technology Assessment /Selection	A	L	C	C		A											C				

LIST OF CONTRIBUTORS

Leading Government Ministry and Agency

1. Ministry of Public Utilities (MPU)
2. Water Resources Agency (WRA)

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3. David Persaud
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8. Ricardo Ramdin
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2. Candice Santana
3. David Samm
4. Keith Meade
5. Rianna Gonzales
6. Sara-Jade Govia

Consultant

1. Trinsult Associates Limited

Government Ministries, Agencies and State Enterprises

1. Ministry of Agriculture
2. Ministry of Energy and Energy Affairs
3. Ministry of Health
4. Ministry of Housing and Development
5. Ministry of Planning and Development
6. Ministry of Rural Development and Local Government
7. Ministry of Social Development and Family Services
8. Ministry of Tourism
9. Ministry of Works and Transport
10. Chaguaramas Development Authority
11. Eco-Industrial Development Company of Tobago Limited (EIDCOTT)
12. Environmental Management Authority (EMA)
13. Institute of Marine Affairs (IMA)
14. Meteorological Services of Trinidad and Tobago (MET)
15. National Reforestation and Watershed Rehabilitation Programme
16. Office of Disaster Preparedness and Management
17. Regulated Industries Commission (RIC)
18. Solid Waste Management Company Limited (SWMCOL)
19. Tobago Emergency Management Agency
20. Tobago House of Assembly (THA)
21. Trinidad and Tobago Bureau Standards (TTBS)
22. Trinidad and Tobago Electricity Commission (T&TEC)
23. Water and Sewerage Authority (WASA)
24. Arima Borough Corporation
25. Chaguanas Borough Corporation
26. Couva/ Tabaquite/ Talparo Regional Corporation
27. Diego Martin Regional Corporation
28. Mayaro/Rio Claro Regional Corporations
29. Penal/Debe Regional Corporation
30. Point Fortin Borough Corporation
31. Port of Spain City Corporation
32. Princes Town Regional Corporation
33. San Fernando City Corporation
34. San Juan/ Laventille Regional Corporation
35. Sangre Grande Regional Corporation 36. Siparia Regional Corporation
37. Tunapuna / Piarco Regional Corporation

Educational Institution

1. College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT)
2. National Institute of Higher Education, Research, Science and Technology (NIHERST)
3. National Training Agency of Trinidad and Tobago
4. University of the Southern Caribbean
5. University of Trinidad and Tobago (UTT)
6. University of West Indies, St. Augustine (UWI)

Professional Organisations

1. Association of Professional Engineers of Trinidad and Tobago (APETT)
2. Caribbean Agricultural Research and Development Institute (CARDI)
3. Caribbean Water and Wastewater Association (CWWA)
4. Geological Society of Trinidad and Tobago (GSTT

Non-governmental Organizations

1. Agricultural Society of Trinidad and Tobago
2. Argyle Environment Protection Group
3. Asa Wright Nature Centre
4. Association of Trinidad and Tobago Insurance Companies
5. Blue Caribbean Environmental Conservation
6. Buccoo Reef Trust – Mt. Pleasant, Tobago
7. Canaan/Bon Accord Senior Ambassadors
8. Caribbean Forest Conservation Association (CFCA)
9. Caribbean natural resources institute (CANARI)
10. Caroni Wetlands Scientific Trust
11. Caura Village Council
12. Cedros Harmony Community (CEDHRAM)
13. Community Action Resource (CARe)
14. Community Broadcasting Service
15. Cropper Foundation
16. El Socorro Centre for Wildlife Conversation
17. Environment Tobago
18. Environmental Research Institute Charlotte Ville (ERIC)
19. Fishermen and Friends of the Sea
20. Fondes Amandes Community Reforestation Project (FACRP)
21. Green-TT
22. Habitat for Humanity Trinidad & Tobago
23. Healing with Horses Foundation
24. Holistic Restoration Foundation
25. Hunters Association of Trinidad and Tobago
26. IGDS WGWN Children Water Camps Programme
27. Inter-religion organisation of Trinidad and Tobago
28. L'anse Fromager Ecological and Environmental Protection Organisation
29. Life Empowerment Center T&T
30. Living Water Community
31. Manzanilla Conservation Eco-Tourism Group
32. Maracas Valley Action Committee
33. Media Association of Trinidad and Tobago
34. National Youth Council of Trinidad and Tobago
35. Nature Seekers
36. Network of NGOS for the Advancement of Women
37. Papa Bois Conservation
38. Plastikeep
39. Pointe-a-Pierre Wildfowl Trust
40. Project for Educational Excellence (PEDEX)
41. Protectors of the Environment (POE)
42. Quarry Association of Trinidad and Tobago
43. Rotaract Club of St. Augustine
44. Rotary Clubs of Maraval Trinidad and Tobago
45. Save our Sea Turtles Tobago
46. Scarborough and Environs Action Group
47. Scarborough Upper Lions Club
48. Sheep and Goat Farmers Association
49. South-West Development Center
50. Speyside Eco Marine Park Rangers (SEMPR)
51. Sustain Trinidad and Tobago
52. The Garden Club of Trinidad
53. The Lily Foundation for Human Development
54. The Tropical Re-Leaf Foundation
55. The Trust for Sustainable Livelihoods
56. Tobago Agricultural Society
57. Tobago Organization for Youth Empowerment
58. Trinidad and Tobago Agri-Business Association (TTABA)
59. Trinidad and Tobago Field Naturalist Club

60. Trinidad and Tobago Green Building Council
61. Turtle Village Trust
62. Urbanisme
63. Wildlife and Environmental Protection of Trinidad and Tobago - WEPTT
64. YMCA Trinidad and Tobago
65. YoPro Trinidad and Tobago
66. Young Professionals of Moruga Development

Private Sector

1. American Chambers of Commerce
2. Anthony P Scott & Co Ltd
3. Associated Brands Industries Ltd
4. Bermudez Biscuit Company
5. Blue Mountain Waters
6. Blue Waters Product Limited
7. Canning's Foods Limited
8. Carib Brewery
9. Coca - Cola
10. DESALCOTT
11. House of Angostura
12. Kiss Baking Company Limited
13. Nestle Trinidad and Tobago
14. Oasis One Brand Limited
15. S.M. Jaleel and Company
16. Seven Seas Water
17. Solo Beverage Company
18. The Power Generation Company of Trinidad and Tobago Limited
19. Tobago Bottlers Limited
20. Trinidad and Tobago Chamber of Industry & Commerce
21. Trinidad and Tobago Manufacturing Association
22. Unilever