

ICZM NEWS

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Why Integrated Coastal Zone Management?

Integrated Coastal Zone Management (ICZM) is a partnership and consensus-building exercise that brings together all sectors to co-ordinate and integrate activities on the coast so as to achieve sustainable management of our coastal resources. It adopts the concept of co-management, where stakeholders share aspects of governance with the state.

ICZM is a

- Continuous and dynamic **process**
- **Integrates** policies, sectors and interests (multi-sectoral approach)
- **Participatory process** that demands good communication and co-ordination between governmental tiers – local and national - and communities (governance)
- Addresses all three dimensions of sustainability – socio/cultural, economic and environmental (multi-disciplinary approach)
- **Manages** human activities within the coastal zone, and addresses conflicts amongst different resource users and uses
- **Strategy** to adapt to impacts of climate change

Trinidad and Tobago has always relied on its coastal and ocean resources for economic prosperity primarily from oil and gas exploration, tourism and fisheries. Collectively, the country has a coastline length of 704 km and a total land area of about 5,128 km². The country's jurisdictional sovereignty and responsibility extends beyond the

terrestrial into the marine through its archipelagic waters, territorial sea and Exclusive Economic Zone (EEZ). The collective areal extent of these encompasses 77,502 km² of waters surrounding the islands. Trinidad and Tobago therefore has a land to sea ratio of 1:15, which indicates the importance of the marine and coastal sphere to the country.



The developmental pressures along the coast of Trinidad and Tobago have not been matched by regulation of the country's coastal assets. The degradation of coastal and marine ecosystems (coral reefs, mangrove swamps, seagrass beds, beaches), mainly from anthropogenic impacts such as pollution has made them more vulnerable to impacts from climate change, and other emerging issues like impacts from invasive alien species (IAS) and Sargassum blooms. Within the context of the "blue economy" there is the imperative need to safeguard Trinidad and Tobago's fisheries resources—a source of livelihood and nutrition for some of this country's most marginalised groups and communities. Several species of commercially important fish have been found to be fully exploited or overexploited. Fish and shell fish nursery habitats such as mangrove swamps and seagrass beds also need to be conserved and/ or restored to ensure food security (IMA, 2016).

There are a multiplicity of Acts that make provision for direct and indirect regulation of specific terrain, and habitats and natural resources but there is no comprehensive or cohesive management plan dealing with coastal areas. Institutional management is similarly fragmented with a plethora of agencies having concurrent responsibility for managing aspects of the resources of the coastal zone. If Trinidad and Tobago is to effectively stem wide-spread anthropogenic impacts on their coastal systems and adapt to the impacts of climate change, a coordinated set of enforceable policy actions that have targeted outcomes must be developed, therefore the need for ICZM.



Integrated Coastal Zone Management: An Update

In April 2012, a multi-sectoral Steering Committee was appointed by Cabinet to develop an Integrated Coastal Zone Management (ICZM) Policy Framework, Strategies and Action Plan for Trinidad and Tobago. In 2014, a draft ICZM Policy Framework was prepared and in 2018, Cabinet appointed an Inter-Ministerial ICZM Committee chaired by the Ministry of Planning and Development to finalize the ICZM Policy through a public consultative process and oversee its implementation.

Public Sector Consultation

In October 2018, the draft ICZM policy framework (2014) was provided to twenty-eight (28) Public Sector stakeholders requesting their review and submission of comments. Stakeholders were also asked to identify activities being carried out by their agency, which are aligned to the objectives and strategies of the draft policy.

By January 2019, a 71% response rate was obtained with submissions received from twenty (20) stakeholders. Two (2) working sessions were held on January 9th and 15th 2019, by an ICZM Sub-Committee which was formed to review the comments received from Public Sector stakeholders and to amend the draft policy. The amendments were discussed and agreed to at a Committee meeting on January 17th, 2019.

On January 30th 2019, the amended draft policy framework was presented at a Public Sector consultation hosted at the Multipurpose Hall, Ministry of Works and Transport. A total of thirty-five (35) persons participated at the consultation representing twenty-seven (27) organisations.

Public Consultations

During the period March-April 2019, the ICZM Committee hosted meetings with five (5) Regional Corporations to obtain support for the public consultations on the draft ICZM policy. Five public consultations were held between May 6th and June 3rd 2019 at the following venues: Mayaro Resource Centre, Waterloo Community Centre, Scarborough-Tobago, Sangre Grande Regional Corporation and the Chatham Community Centre.

With the support of the Ministry of Planning and Development's Communications and Information Technology Divisions, the Committee launched its communication strategy for the public consultations on April 23rd, 2019. The objectives of the communication strategy were to increase awareness of ICZM, secure attendance at the five (5) public consultations and obtain public comments on the draft policy framework. The communications strategy comprised of a social media campaign, television interviews, a series of email blasts to stakeholder groups and the distribution of flyers with the support of the regional corporations.

A total of sixty-eight (68) persons participated in the public consultations including members of various organisations such as village councils, fishing associations, environmental groups as well as members of the private sector. Over the period April-June 2019, the Committee's website (www.iczm.gov.tt) received 336 visitors of which 175 visitors were from Trinidad and Tobago, and the draft ICZM policy framework received 175 views. The ICZM policy was finalised in June 2019 based on feedback received via email and at consultations.



Fostering a Blue Economy

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The Blue Economy is defined as ‘the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, while preserving the health of the marine and coastal environment’ (World Bank, 2016). For coastal developing states in the Caribbean, the ocean roles as an important generator of subsistence and income is magnified. Trinidad and Tobago has always relied on its coastal and ocean resources for economic prosperity primarily from oil and gas exploration, tourism and fisheries. According to an analysis of the contribution of Trinidad and Tobago’s coastal zone to the national economy undertaken as part of the feasibility studies for a climate-resilient coastal zone management program, the estimate of GDP (2015) immediately on the coastline was US\$2.14 billion and within the broader coastal zone (up to the Exclusive Economic Zone (EEZ)) was US\$22.5 billion; 81% of total GDP.

It is estimated by the Central Statistical Office that almost 80% of all socio-economic activities and 70% of Trinidad and Tobago’s population are located along the coast. Approximately 8% of all public and private infrastructure by value is located immediately on the coastline, while 89% of the total value of physical assets lies within the broader coastal zone inclusive of the EEZ. We have collectively 704 km of coastline and about 15 times more sea than land; which indicates the importance of the ocean sphere to the country. Our economic policies including our National 2030 Vision (Vision 2030, National Development Strategy 2016-2030), aimed at diversifying the economy, has focused on investments in the tourism, agriculture, aquaculture and the maritime sectors, all of which require a healthy oceans. Strengthening a national awareness of the role played by the oceans and their existence, and the need to develop an integrated coastal and ocean policy through advocacy and education, formal and informal, and at all levels, is the gateway to the future (Behnam, 2014).

Despite signalling its intention to conserve and sustainably use the oceans and their resources, Trinidad and Tobago still faces challenges in the management and sustainable use of its coastal and ocean space and resources. The IMA’s State of the Marine Environment Report 2016 provided a scientifically grounded understanding of the condition of Trinidad and Tobago’s coastal and ocean ecosystems, habitats and species which is extremely

important for its development and sustainability. The degradation of coastal and ocean ecosystems (coral reefs, mangrove swamps, seagrass beds, beaches), mainly from anthropogenic impacts such as pollution, has made them more vulnerable to impacts from climate change, and other emerging issues like impacts from invasive alien species (IAS) and Sargassum blooms. Within the context of the “blue economy” this report has also shown the imperative need to safeguard Trinidad and Tobago’s fisheries resources – a source of livelihood and nutrition for some of this country’s most marginalised groups and communities. Several species of commercially important fish have been found to be fully exploited or overexploited and fish and shell fish nursery habitats also need to be conserved and/ or restored to ensure food security.



To address the degradation highlighted in the 2016 report, Cabinet has approved an action plan for implementing the Integrated Coastal Zone Management Policy Framework, which was developed by a multi-sectoral steering committee in 2014 chaired by the IMA, to mitigate negative impacts on the coastal and ocean environment. In 2017, Cabinet established an Inter-Ministerial Committee to guide the implementation of this action plan. The government has recognized the urgency in arresting further degradation of the coastal and ocean environment and this Inter-Ministerial Committee is tasked with developing indicators, and for overseeing

the monitoring and reporting of these indicators so as to see tangible changes in the ocean's health.

The ICZM Policy Framework was developed through a participatory, consensus-building process that engaged a range of stakeholders – government agencies, the business sector, the energy sector, fishers and the general public, among others. The resulting policy framework identified eleven objectives and associated strategies to achieve these objectives. It covers five integrated thematic areas, namely:

1. Coastal development;
2. The conservation and restoration of marine ecosystems and resources;
3. Sustaining livelihoods;
4. Vulnerability to climate change; and
5. Pollution

The following has been identified as priority areas in efforts to build sustainable blue economies in the country/region;

1. Sustainable and inclusive growth and development
2. Reducing the risk of over-exploitation particularly with regards to methods of extraction and usage of the ocean resources
3. Enhancing the welfare of coastal communities in terms of economic opportunity and social protection

4. Ensuring resilience to natural disasters and the impacts of climate change.
5. Research driven decision-making to enhance conservation and sustainable use of oceans
6. Knowledge-transfer regarding innovative technology, and capacity building initiative

Given the importance of the ocean sphere to the country's economic growth and prosperity, the following actions are required:

1. The Blue Economy has to be formally recognised as an important economic driver, and be included in the national accounting / statistical system
2. A blue economy strategy that incorporates new growth sectors (mariculture, renewable energy, mining) while expanding existing ones in a sustainable manner is required
3. Creating an enabling environment- appropriate policies, legislation, incentives and infrastructure that would facilitate the transition to the blue economy (CDB, 2018)
4. Sustainable management of our oceans that is inclusive, and a participatory process
5. A global approach that aids domestic implementation



The EMA's role in regulating coastal development

Environmental Management Authority

The World Bank defines the coastal zone as 'the interface where the land meets the ocean encompassing shoreline environments as well as adjacent coastal waters'.

Threats to this zone include influences such as natural coastal processes, climate change and sea level rise, as well as anthropogenic or man-made activities.

Coastal resources provide numerous goods and services that are vital to sustainable development in Small Island Developing States (SIDS) such as Trinidad and Tobago. Wetlands for example, provide coastal stabilisation and defence, floodwater storage, fish and wildlife habitats and recreation to name a few. This environment is also a source of income for many and also plays a vital role in recreation.

Coastal environments are unique in that they include a range of habitats that may respond negatively to different stressors. Coral reefs for instance, are negatively impacted by increased sediment and nutrient loads from coastal development activities. In this regard, proper management of the coastal zone is tantamount to our survival as a SIDS.



*Coastal Revetment, Manzanilla
Photo credit: N. Gour, 2019*

Development in the coastal zone takes different forms such as, land reclamation, establishment of structures such as breakwaters, seawalls and jetties, construction of buildings/facilities and ports.

The Environmental Management Authority (EMA), under the Environmental Management (EM) Act Chapter 35:05, is charged with the responsibility of maintaining the delicate balance between environmental management and development.

More specifically, to ensure that human activities are conducted in a regulated manner, subsidiary legislation has been enacted to regulate certain types of development, including coastal development.

This is executed primarily through the Certificate of Environmental Clearance (CEC) process, which is governed by the CEC Rules and the CEC (Designated Activities) Order (as amended).

Before embarking on any new activity, modifying/expanding existing structures and processes, or abandoning projects altogether, persons should consult with these Rules, which clearly lists 44 Designated Activities, which require regulation. Designated Activities 12 (Land reclamation), 13 (Coastal or offshore construction or modification and dredging activities) and 34 (Establishment of infrastructure for marine transport) are some examples that are specific to the coastal zone. However, there are other Designated Activities that may be related to coastal development. Activity 8, for instance, speaks to clearing, excavation, grading and land filling, Activity 11, to the establishment of hotels, guesthouses etc. and Activity 33, the establishment of roadways.

Each CEC application is assessed according to the nature, scale and location of the proposed project, to determine the significance of the anticipated impacts on the receiving environment. For example, an application for the expansion of a marine terminal may require different considerations when compared to an offshore structure such as an artificial reef.

An Environmental Impact Assessment (EIA) is also needed if a project is likely to cause significant adverse environmental impacts.

According to Section 35 (2) of the Environmental Management Act, Chapter 35:05, (EM Act) 'no person shall proceed with any activity which the Minister has designated as requiring a certificate unless such person



*Coastal Roadway, Mosquito Creek, San Fernando
Photo Credit: A. Jones, 2018*

the avenues identified above.

It is also important to note that the EMA is one of many agencies regulating coastal development. Apart from adherence to the EM Act, developers are also required to apply for and receive approvals from other regulatory agencies, prior to the commencement of project activities. Such agencies include, but are not limited to the Town and Country Planning Division of the Ministry of Planning and Development (TCPD) and the Commissioner of State Lands of the Ministry of Agriculture, Land and Fisheries (CoSL).

applies for and receives a certificate from the Authority'. Proceeding without same is a breach of the EM Act, and can result in fines and/or the conduct of remediation works to mitigate negative impacts related to the project.

The CEC process not only allows for the assessment of all potential impacts and implementation of systems to minimise these impacts but also facilitates proper planning and design prior to the commencement of any work. Unfortunately, there have been instances where developers have executed work without conducting a proper assessment of the environment. This may have resulted in the failure of the structures and the need for subsequent remedial works.

One such example is the establishment of a seawall without considering the appropriateness of the structure for the particular environment. Failure of the seawall could result in long-term implications, including; jeopardising property, disruption of existing site services, incurring additional expenses related to remediation, and establishing a new coastal structure.

The CEC process is a transparent, accountable and facilitative one. There are several avenues for developers to interact with the EMA to obtain more detailed information on the requirement to obtain a CEC. These include obtaining information from the EMA's website, liaising with the staff at the EMA's Information Centre located at #8 Elizabeth Street, St. Clair, Port-of-Spain, or scheduling pre-application meetings with technical staff to discuss a specific project.

All applications for CECs are stored in a National Register of Certificates of Environmental Clearance at the EMA's Information Centre, and are available for public viewing. Although the CEC Rules form the over-arching permitting regime in this context, coastal developments are also regulated by the EMA under the Water Pollution Rules, 2001, (as amended), Air Pollution Rules, 2014 and the Noise Pollution Control Rules, 2001. More information on these processes can be obtained from the EMA through

Apart from the regulation of coastal development through legislation, the EMA is also involved in management of the coastal zone at a policy development level. This includes participation in various inter-agency committees such as the Integrated Coastal Zone Management Committee (ICZM), and the Land Reclamation Committee (LRC). These fora facilitate a broader approach to coastal zone management and contribute to policy development and implementation at a national level.

Bearing in mind the ecological, socio-cultural and economic benefits of coastal environments and their sensitivity to the effects of human activity, it is imperative that developers adhere to laws, regulations, policies and guidelines, to ensure proper management and sustainable use of coastal environments and their resources.

Planning with the environment in mind not only benefits the environment but is profitable to the investor. In addition to short-term benefits such as saving time, effort and money, environmentally responsible planning and development allows for long-term benefits, such as the promotion of the concept of sustainable development - development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.



Paria Main Road, North Coast, Trinidad © EMA, 2019

Blue Carbon Ecosystems

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Coastal wetlands, particularly tidal marshes, seagrass beds and mangrove forests, sequester and store carbon within biomass and soils. Commonly referred to as coastal “blue carbon” ecosystems because of their relevance to the global carbon cycle, these ecosystems provide climate mitigation benefits and a range of other ecosystem services that support coastal livelihoods and adaptation to climate change. The ecosystem services include habitat and food chain support for many species of commercial fish, nutrient recycling, shoreline stabilization, storm protection and flood control.

Globally, these ecosystems are threatened. At current conversion rates 30–40% of tidal marshes and seagrasses, and nearly 100% of mangroves could be lost in the next 100 years. If this occurs the cost to humanity is estimated to be between USD 6 and 42 billion annually (Pendleton et al., 2012).

In Trinidad, the majority of mangrove forests are found on the sheltered west coast (Gulf of Paria); which is the coastline that is occupied by more than 70% of the population and that has experienced the most intense development activities within the past five decades. Mangroves have been cleared for housing, industries, agriculture, roads and ports. Turtlegrass dominated seagrass communities in Trinidad and Tobago are also exhibiting negative changes. Dense turtlegrass once found in St Peter’s Bay and William’s Bay in Chaguaramas and in La Guira Bay, Tobago have disappeared. Poor water quality due to coastal construction, reclamation and sedimentation from hillside development has been the main factor responsible for loss of these beds.

As coastal wetlands are destroyed, their ecosystem services are lost. Wetlands destruction also leads to carbon dioxide emissions from oxidization of organic sediments and biomass, which contributes significantly to global warming. Vegetated coastal ecosystems typically reside over organic-rich sediments that may be several meters deep and effectively ‘lock up’ carbon due to low-oxygen conditions and other factors that inhibit decomposition below the surface (Donato et al., 2011). On a per area basis, these carbon stocks can exceed those of terrestrial ecosystems, including forests, several times over.

When coastal habitats are degraded or converted to other land uses, the carbon found in the sediment is destabilized or exposed to oxygen, and subsequent increased microbial activity releases large amounts of GHGs to the atmosphere or water column (Lovelock, 2012; Kipkorir et al., 2014). Eventually, the majority of carbon in disturbed coastal ecosystems can be released to the atmosphere (in the form of carbon dioxide, methane or other carbon species). The timeframe in which this may occur could be highly variable and dependent on the specific land use and nature of the sediment.

In addition to degradation from human impacts, coastal wetlands will be impacted by sea level rise. Projections are available over coming decades for rising sea level and changes in climate and weather. These changes are expected to alter the position, area, structure and health of most coastal communities including mangroves. Mangroves migrate landwards as a natural response to rising sea level relative to the mangrove surface. This landward migration can be obstructed by seawalls and other development in a process known as “coastal squeeze”. It can result in decreasing extents of coastal ecosystems and the loss of carbon sequestration and other services they provide.

Removing barriers to wetland migration or conserving undisturbed wetlands and protecting space for their migration is a way of maintaining functioning coastal wetlands and carbon stocks. Management interventions to prevent migration will result in degradation of their natural form and degradation of their carbon sequestration capacity. Therefore, maintaining fixed flood defenses will, with rising sea levels, undoubtedly result in the loss of intertidal wetlands. To counteract this, policies that take into consideration landward retreat of flood defenses and re-flooding of drained wetland areas to restore wetlands and provide capacity for wetland migration need to be enacted.

It is clear that policies encouraging the sustainable management of coastal ecosystems could significantly reduce carbon emissions from the land-use sector, in addition to sustaining the well-recognized ecosystem services of coastal habitats. While Trinidad and Tobago

has a National Wetland Policy that speaks to wetland conservation, wetland management has to be considered in a holistic landscape / land-use planning framework.

The draft Integrated Coastal Zone Policy Framework for Trinidad and Tobago focuses on a more holistic, coordinated approach to management and highlights the needs for establishing building setbacks from coastal wetlands and other critical coastal landforms.



The swell effect on South-West Trinidad

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Tides are the changes in sea level caused by the combined effects of the gravitational forces by the Moon and Sun, and the rotation of the Earth. There are two main types of tides - spring and neap. A Spring tide is a tide with the greatest difference between high and low tide; sea water levels that occurs with the new or full moon phases and usually last a week. Sometimes we get higher than normal spring tides which are called King tides. A neap tide has the smallest difference between the high and low tide; sea water levels that occur during the first and last quarter moon phases.

During the year we also experience summer swells (May-October) and winter swells (November-April) with the winter swells being the larger of the two. Swells are large waves that form from a combination of strong winds for a long period of time and over a large distance of ocean - referred to as the fetch. Swells are usually generated by changes in meteorological conditions in the North Atlantic Ocean. After they are generated, they propagate away from the force of the wind. Usually this trajectory is from the North-East but on occasion the trajectory may be from the North North East. With the more north-aligned trajectory, the swells enter the Dragon's mouth and travel southward through the Gulf of Paria creating greater impact on the coastlines of Trinidad and Tobago.

This event (king tides and winter swells) was experienced in late October 2019 affecting the Leeward coast of Tobago and the South-West of Trinidad and resulting in coastal flooding and coastal erosion. In South-West Trinidad large swells overtopped natural protective features of the beach such as the berm and reached as far as 250 m inland, entering some resident's houses at Icacos and flooded roadways at Bonasse village, Cedros. In addition to natural coastal protection, man-made coastal intervention (seawall) was also overtopped by the large swells at Mosquito creek flooding part of the road. Some areas along the South-West were severely affected with the swells removing up to 30m of land at Corral Point. This area is used for agriculture, and coastal erosion directly impacts the farmers.

Although tides are natural phenomena, coastal management can be improved with informed decision-making and policy formation based on scientific data. If coastal protection measures are required, it is always best to utilize solutions that work with nature



Cap De Ville, South West Trinidad
Photo credit: Coastal Protection Unit, 2019

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