United Nations Economic Commission for Latin America and the Caribbean

Inputs for the Background note for the preparatory meeting of the 2020 United Nations Conference to Support the Implementation of Sustainable Development Goal 14

22 November 2019

II. Activities, challenges and opportunities for the implementation of SDG 14

1. Status and trends

1.1 Status and trends of coastlines and marine waters in Latin America and the Caribbean

The coastline of Latin America and the Caribbean extends over 70,000 km and is where many of the region's largest human settlements are located (ECLAC, 2015b). In addition, fishing, tourism and port activity are heavily dependent on coastal ecosystem services. In 2012, Chile, Mexico and Peru combined accounted for just over 11% of the total global capture fisheries production and are among the 18 main producer countries that account for approximately 80% of global capture (FAO, 2014).

In Latin America and the Caribbean, shipping accounts for around 90% of trade in terms of volume and 80% in terms of value, and the region's ports handle 9% of global container throughput. The sector plays an important role in food security in small island developing States and also contributes significantly to the tourism sector in the Caribbean, where more than 45% of world cruise shipping takes place. The Caribbean Sea is also one of the world's great shipping routes, with over 14,000 ships per year inevitably passing through the Caribbean Sea on their way to or from the Panama Canal, and this traffic is predicted to double in 15 years. Furthermore, one third of world oil shipments passes through the Caribbean, with the attendant risks of spills (United Nations, 2013).

Despite their contribution to the economy and recognition in SDG 14, there is limited awareness on the state of the oceans and seas. The quality of nearshore marine waters is affected by the dumping of solid and liquid wastes by ships, abandoned fishing nets and ballast water discharges, river effluents containing runoff from agricultural chemicals, inadequate wastewater treatment, deforestation and coastal development (UNEP, 2016d; United Nations, 2016). Plastic, in particular, is one of the most polluting waste products dumped into seas. The United Nations Environment Programme (UNEP) estimates that in 2016 there were 46,000 pieces of floating plastic per square kilometer in the ocean. Its chemical composition, size and long life make it particularly dangerous for marine biota. Microplastics (particles of less than 5 mm in diameter) are the most dangerous for marine animals (GESAMP, 2015).

Furthermore, the transfer of invasive aquatic species through the exchange of ballast water is one of the four greatest threats shipping poses to the world's oceans and can cause severe environmental, economic and public-health impacts, including the spread and introduction of cholera (United Nations, 2013). Commercial vessel fleets are another source of pollution. Although there are instruments covering the disposal of plastic waste generated on-board ships (Annex V of the International Convention for the Prevention of Pollution from Ships and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and its 1996 Protocol), there are no known protocols or standard operating procedures on the day-to-day management of litter (GESAMP, 2016).

Source: Quadrennial report on regional progress and challenges in relation to the 2030 Agenda for Sustainable Development in Latin America and the Caribbean (United Nations, 2019).

1.2 The effects of climate change in the coastal areas of Latin America and the Caribbean

Several studies have shown the vulnerability of Latin American and Caribbean region to the impacts of climate change. ECLAC has analyzed the impacts of flooding of coastal areas as a result of the following factors of climate change: (1) rising sea levels (permanent flooding); and (2) extreme weather events that cause flooding as a result of a combination of high tides, sea levels and storm waves (temporary flooding). In evaluating this impact, the factors analyzed included the size of the affected area, the coastal population, highways, railway lines and ecosystems (see the document on the vulnerability of the coastal areas of Latin America and the Caribbean) (ECLAC, 2012). Also, other impacts were studied such as erosion of beaches as a result of changes in their equilibrium profile and in their form owing to changes in sea levels and wave action, and the impact on coral reefs of a 1ºC increase in sea surface temperature. These impacts were assessed determining the relationships existing between different agents and coastal effects.

The Intergovernmental Panel on Climate Change (IPCC) (2001 and 2007b) has analyzed the rise in average sea levels worldwide as one of the possible impacts of global warming. This exercise has provided projections of sea-level rises on the basis of different greenhouse gas (GHG) emission scenarios. Given the broad range of scenarios, recent research has sought responses using a variety of semi-empirical methods and has observed that average sea levels could rise by approximately 1 meter by the end of the twenty-first century. However, not only rising sea levels threats the world’s coasts. Variation in other coastal agents, such as swell and seawater surface temperature, may also embody significant risk and cause damage such as coastal erosion or coral bleaching. Coastal erosion is a global problem, since at least 70% of the world’s fine sediment beaches are receding.

Beaches

The erosion of beaches as a result of climate change will impact two of their key functions: tourism and coastal protection. Use of beaches for tourism purposes is at high risk, basically because of the loss of usable surface area, in the eastern and southern Caribbean and along the east coast of Brazil. Certain areas of Argentina, Chile, Peru, Ecuador and Mexico are also considered to be at high risk in this regard.

Coastal defense is at significant risk owing the landward retreat of beaches in Brazil, northern Argentina, and virtually all of the Caribbean. On the Pacific coast, high risks are estimated for Ecuador, Peru and certain parts of Chile, Mexico and Central America.

Port infrastructure

Port structure operability will be threatened by climate-driven changes in navigability and access, and by the breaching of port defense structures owing to variations in swell and sea levels. The ports facing the greatest risk of economic losses due to access problems are, initially: Buenos Aires, San Antonio (Chile), Río Grande (Brazil) and Manzanillo (Mexico). The impact of breaching is measured in terms of port operating hours lost. The results show a sharp increase in breaching owing to larger swell in the mid-twenty-first century (if maritime defense structures remain unchanged) in southern Brazil, the north-eastern region of Mexico and southern Chile. The areas worst affected by breaching caused by higher average sea levels are northern Brazil and the entire Caribbean coast, with increases of up to 25%. The degree of security currently offered by maritime defense structures in the region will be heavily reduced throughout the Latin American and Caribbean region.

Flooding of ecosystems and populated areas

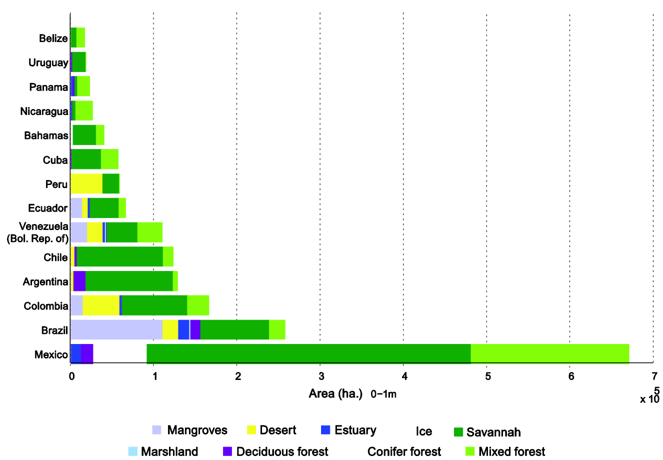
Another of the risks assessed is permanent flooding caused by higher sea levels. The main conclusion is that the entire coast of Latin America and the Caribbean may be affected to a greater or lesser extent, with the resulting impacts on populations and ecosystems.

The figure shows the area of ecosystems affected by country for a rise of over 1 meter in average sea levels. Mexico, Brazil and Colombia are the countries worst affected. Particularly worrying is the large area of mangroves under threat in Brazil. Brazil also has the largest at-risk population up to the 1-metre and 2-metre marks, followed by Peru, Cuba and Mexico.

Information on vulnerability and socioeconomic and ecological risk associated with climate-driven sea level rises and other coastal agents is being compiled for all the Latin American and Caribbean countries, in the framework of the regional study under way on the effects of climate change on the region's coasts. This study also seeks to identify cities and areas which should be taken into account in the planning of adaptation strategies so that the necessary investments may be made, based on regional and local studies.

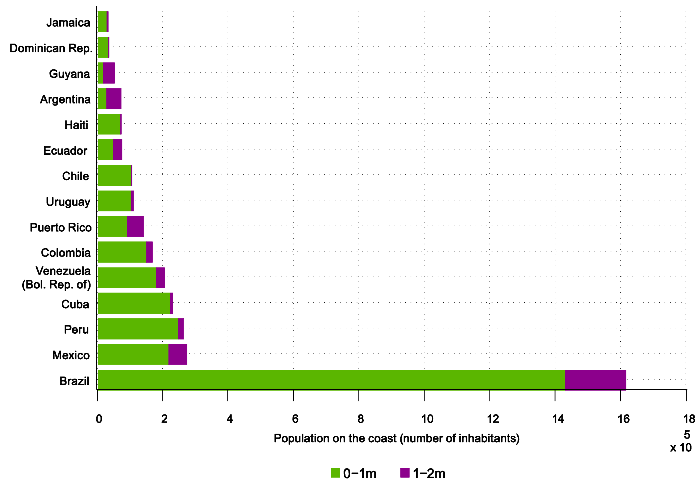
LATIN AMERICA AND THE CARIBBEAN: AREA AFFECTED BY AN AVERAGE SEA LEVEL RISE OF OVER 1 METRE

(Hectares)



LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES): POPULATION AFFECTED BY AN AVERAGE SEA LEVEL RISE OF 0 TO 1 METRE AND OF 1 TO 2 METRES

(Number of persons)



Source: The effects of climate change in the coastal areas of Latin America and the Caribbean (ECLAC, 2015

2. *Challenges and Opportunities*

2.1 The need for further research and to address data gaps

Since analyses of the costs and impacts of marine litter from tourism have been limited to small, localized studies, further research is needed. Infrastructure development in coastal areas (ports and tourism and production facilities) has degraded or destroyed ecosystems such as mangroves and seagrasses that act as natural barriers by filtering out harmful pollutants, absorbing nutrients from runoff and trapping sediments to increase the clarity and quality of marine waters. Mangroves and coral reefs also provide important protection services from extreme events and climate change (ECLAC, 2018c). Accordingly, governments should identify the areas of greatest risk and the most comprehensive and cost-effective adaptation strategies (UNEP, 2016d).

Regarding the effects of climate change on the region's coastal areas there is a great shortage of data on the southern hemisphere in general, and on Latin America and the Caribbean, in particular. IPCC reports have conducted global analyses of such variables as salinity and surface water temperature, but not yet of swell or meteorological tides. A great effort has been made to address the information shortage in the region by analyzing existing data and generating new, high spatial and temporal resolution databases on swell and tides. This effort pursues two specific aims: to assess the repercussions of climate change on the coasts of the Latin American and Caribbean region and to help forge a better understanding of some the major marine dynamics at work around the continent.

Recent research has also looked at the influence of various climate variables on the coasts of Latin America and the Caribbean (CEPAL, 2011 and 2012). El Niño and la Niña, for example, have major impacts on the region’s coastal activities, as does the Atlantic multidecadal oscillation (AMO), particularly in Argentina and the southern part of Brazil.

Data on the long-term trends of these phenomena and on climate in Latin America and the Caribbean feed into an assessment of impacts on the region’s coasts. This, may be integrated with ecological and socioeconomic vulnerability data to assess risk patterns in different countries. The risks arising from the early stages of climate change concern beaches, port infrastructure, and coastal ecosystems and populations are expressed as a difference over the 2010 risk assessment.

2.2 Protection and conservation measures

Like terrestrial ecosystems, marine ecosystems also require protection by balancing the sustainable use and conservation of biodiversity and habitats. The region has greatly increased the extent of protected areas, surpassing the target of protecting 10% of marine and coastal areas set in Aichi Biodiversity Target 11. However, the global average for the coverage of marine protected areas in exclusive economic zones is above 15%, but the average is lower in the, with Mexico being the only exception; furthermore, the situation varies greatly from country to country.

It is also necessary to develop more scientific information, improved data and best practices. The development and implementation of area-based management tools should be combined with other appropriate conservation and management measures, taking into account the need to avoid negative impacts in other areas (United Nations, 2017b).

III. Scaling up ocean action based on science and innovation

III.1 Alternative coastal defense measures based on natural solutions

Flood risk in coastal areas has increased by 23% in recent years (Small and Nicholls, 2003), owing to human settlement, growing economic activities and the resurgence of climatic hazards. Examples of this are the recent tropical cyclones Franklin, Harvey, Irma, Katia, Jose and Maria, which devastated large swathes of the Caribbean islands and coasts of Mexico and Florida between August and September 2017, underscoring the vulnerability of coastal areas. This, coupled with the mean sea-level rise projected by the Intergovernmental Panel on Climate Change (IPCC), will contribute to a growing risk of flooding in the future. Historically, conventional solutions have been used to overcome flood risk, such as building artificial dykes or enlarging or raising the crest elevation of infrastructure (Morris and others, 2018), all of which are rigid solutions that are not readily adapted to changing climatic conditions and are environmentally unsustainable.

Growing public concern for sustainable development, together with evidence of the multiple services ecosystems can provide, have led to the proposal of alternative coastal defense measures based on natural solutions, such as conserving existing ecosystems or planting mangrove forests, building artificial coral reefs (Clark and Edwards, 1999 and 1995) or restoring destroyed reefs. The role of these ecosystems in protecting the coast from flooding and erosion has been amply demonstrated (Ferrario and others, 2014). They also have the advantage of being flexible solutions that are easily adapted to long-term changes, such as sea-level rise, with conservation costs much lower than the cost of building artificial defense structures.

Cuba's barrier reefs, along with its mangroves, play a key role in reducing coastal flood risk. After having analyzed the two ecosystems independently, a calculation was made of benefit they provide in terms of land area, people and built capital. The presence of existing coral reefs provides an annual benefit of 65% less flooded area, 87% fewer people affected and 90% less built capital lost.

The contribution of mangroves is 30% less flooded area, 35% fewer people affected and 34% less built capital lost. The greatest socioeconomic benefits are found in densely populated areas, especially the Havana area, Varadero and Manzanillo. While many hectares all along the Cuban coast receive protection from ecosystems, not all these areas contain exposed assets that increase the value of the country's corals and mangroves. This highlights the need for a multilevel study. While aggregate results at country level can be used to make an initial valuation and provide a rough indication of the value of nature's services, a more detailed level is required to discern and pinpoint hotspots where the greatest ecosystem benefits are concentrated.

Source: The effects of climate change in the coastal areas of Latin America and the Caribbean: Evaluation of systems for protecting corals and mangroves in Cuba (ECLAC, 2018)

III.2 Recommendations for scaling up action on biodiversity conservation and sustainable use measures

These recommendations are based on an expert meeting (marine & terrestrial) from the LAC biodiversity knowledge community, organized by ECLAC and IDDRI (Institut du développement durable et des relations internationales, Paris, France) to analyze biodiversity conservation and sustainable use measures, seeking to identify lessons from positive experiences, as well as setbacks, to allow a better understanding of conditions that enable change in favor of biodiversity and propose ways to enhance the implementation of post-2020 biodiversity goals, and from Gelcich et al. 2015. Maritime Studies 14:5. Alternative strategies for scaling up marine coastal biodiversity conservation in Chile. Review. Springer Open Journal.

- In general, the conservation and use of marine resources (oceanic and coastal) is fragmented into different authorities.
- Planning, execution, monitoring and evaluation of programs implies a high level of coordination of inter-institutional integration.
- Some of these institutions have an approach oriented towards productive development and others towards the conservation of biodiversity, so the orientation towards sustainable development is not facilitated.
- An important contribution to the short and medium-term management and vision necessary for sustainability is to increase dialogue and inter-institutional planning.
- Although marine protected areas are a very important for biodiversity conservation and sustainability, other policies such as territorial user rights (TURFs), that bring multi-level governance that have proved to have good results in some LAC countries, e.g. Chile, Mexico and Brazil, are necessary to achieve SDG 14, especially 14.4, 14.a and 14.b.
- Is an essential priority to involve new actors, especially rural communities, artisanal fishermen, productive sectors, in conservation measures and sustainable use of biodiversity.

- Examples: no-take areas inside an extractive reserve, an area with territorial user rights, municipality conservations areas.
- To develop economic incentives that allow to maintain their livelihoods, provide decent work and the conservation of biodiversity, thinking in the user of conservation.
- Understand that innovation in governance needs adaptive development. Conservation policies are usually created without having enough knowledge about how to apply and monitore them. Also, rarely the knowledge generated by stakeholders is systematized, not only in the field, but also in the different public sectors that are learning to coordinate and integrate sustainable use issues, which is essential to have the possibility of scaling up pilot projects.
- The need to foster and develop frames to make norms and rules that consider multi-level governance systems. In theory, with such approaches, the links between social and ecological systems can be better addressed and major investments made towards developing innovative locally relevant management strategies to achieve sustainability.
- Future scientific research should put special emphasis on the “co-production” of knowledge through collaborative demonstration-scale experimental trials or learning platforms, integrating scientific, local and bureaucratic knowledge systems.
- Scaling up these approaches will require an understanding of biodiversity response, the development of financing strategies, which must be tailored to local realities, an understanding of the demand for biodiversity credits and fishers’ behavioral responses. New interdisciplinary approaches will be critical to solve these emerging research frontiers (Gelcich et al. 2015) .
- Sustainable biodiversity products could be integrated and add value to products within emerging (e.g., traceable seafood products with biodiversity benefits). But access to markets are one the most difficult barriers for local communities to be addressed. Therefore, the need of bottom up and top down polices that need to be mixed.

IV. Development of Partnerships

IV.1 Partnerships on marine litter

Successful examples include the increasing bans of plastic bags, the launch of the voluntary Global Partnership on Marine Litter at the United Nations Conference on Sustainable Development (Rio+20) in 2012, and the UNEP Regional Seas Programme which includes three initiatives in the region: the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, the Convention on the Protection of the Marine Environment and the Coastal Area of the South-East Pacific, and the Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Areas of the Northeast Pacific (UNEP, 2018a). Action plans on marine litter have been implemented under the first two conventions and one is being drafted with respect to the third.

Source: Quadrennial report on regional progress and challenges in relation to the 2030 Agenda for Sustainable Development in Latin America and the Caribbean (United Nations, 2019)

IV.2 Interim Coordination Mechanism of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+)

The Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+) constitute two of the 66 large marine ecosystems (LMEs) that have been proposed by the National Oceanic and Atmospheric Administration (NOAA) and the Global Environment Facility (GEF). These are considered as meaningful geospatial units for the implementation of an ecosystem-based management (EBM) approach and for an ecosystem approach to fisheries (EAF).

The CLME+ region is shared by 26 States and 18 Overseas Territories. The CLME+ region fall within the area of the Western Central Atlantic Fisheries Commission (WECAFC), as well as most of the area of the Cartagena Convention for the Protection of the Marine Environment of the Wider Caribbean Region. The marine area (4.4 million km2) of the CLME+ region is a major contributor to regional socio-economic development.

In 2013, countries within the CLME+ region adopted a 10-year Strategic Action Programme for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME + SAP). The CLME+ SAP consists of 6 Strategies and 76 Actions and is aimed at contributing to the achievement of the long-term vision for the CLME+ region, which is "a healthy marine environment in the CLME+ that provides benefits and livelihoods for the well-being of the people of the region" and at reversing the degradation of the marine environment.

In 2016, in line with the CLME+ SAP Strategy 2, Action 2.1 (A), an interim arrangement was put in place to facilitate, support and strengthen the coordination of actions for sustainable fisheries through a Memorandum of Understanding signed by three regional fisheries bodies: The Food and Agriculture Organization of the United Nations (FAO) on behalf of the Western Central Atlantic Fishery Commission (FAO-WECAFC), the Caribbean Regional Fisheries Mechanism (CRFM) and the Central American Fisheries and Aquaculture Organization (OSPESCA). Under the Strategy 3, it also called for the establishment of a coordination mechanism amongst organizations with a mandate to promote sustainable fisheries and for the protection of marine environment in the CLME+ region.

In 2017, through a Memorandum of Understanding, the Interim Coordination Mechanism was created, and its objectives are to enhance regional coordination and collaboration, support oversight and integration of actions for sustainable fisheries and the protection and sustainable use of the marine environment. The Interim Coordination Mechanism is also aimed at promoting the up-scaling of actions by all sectors of society towards the achievement of the long-term vision of the CLME+SAP in support of sustainable ocean-based economies.1 In fact, the following year, in 2018, it was created a "People Managing oceans – Civil Society Action Programme for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+C-SAP) 2018-2030".2 The objectives of the CLME+ C-SAP is to contribute to strengthening the role, participation and ownership of civil society actors in the implementation of the CLME+SAP.3

There are currently 8 members forming part of the Interim Coordination Mechanism: the United Nations Environment Programme (UN Environment), represented by its Caribbean Regional Coordinating Unit based in Jamaica; The Food and Agriculture Organization of the United Nations (FAO) on behalf of the

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[1] Memorandum of Understanding establishing the Interim Coordination Mechanism for the Sustainable Management, Use and Protection of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems.

[2] Please see: https://canari.org/wp-content/uploads/2017/08/csap-booklet-english.pdf

[3] Ibid.

Western Central Atlantic Fishery Commission (WECAFC); The Intergovernmental Oceanographic Commission of the United Nations Educational Scientific, and Cultural Organization (UNESCO -IOC); The Organization of Eastern Caribbean States (OECS); The Caribbean Regional Fisheries Mechanism (CRFM); the Central American Fisheries and Aquaculture Organization (OSPESCA); the Central American Commission for Environment and Development (CCAD); and the Caribbean Community (CARICOM) represented by its Secretariat.

The region has other Large Marine Ecosystem partnerships for multi-country collaboration, supported by the Global Environmental Facility, including the Ecuador Mainland Marine and Coastal Protected Areas Network; the Caribbean Regional Oceanscape Project. The Caribbean and North Brazil Shelf Large Marine Ecosystems is the only one with an established an interim coordination mechanism with 8 regional and international organizations that have agreed to work together towards the improved management and sustainable use of marine resources