Rivera-Arriaga, E., & I. Azuz Adeath. 2019. Implementing the SDG14 in Mexico: Diagnosis and Ways Forward. *Revista Costas,* 1(1): 219-242. doi: 10.26359/costas.0112

Implementing the SDG14 in Mexico: Diagnosis and Ways Forward

Evelia Rivera-Arriaga[1] & Isaac A. Azuz-Adeath[2]

e-mail: evrivera@uacam.mx

[1] Instituto EPOMEX-UAC, Campus 6, Av. Héroe de Nacozary No. 280, Campeche, Cam., 24029, México;

[2] CETYS-Universidad, Calz. Cetys S/N, Rivera, 21259 Mexicali, B.C. México; isaac.azuz@cetys.mx

Submitted: November 2018

Reviewed: November 2018

Accepted: January 2019

Associate Editor: Marinez Scherer

Keywords: Coastal and marine management, sustainable development goal 14, Mexico.

Abstract

Sustainable Development Goal 14 (SDG14) set out specific targets for countries, developed and developing, to meet within a given time frame, with achievements monitored periodically to measure progress. To achieve the global transition to sustainable development, countries are now establishing an enabling environment of policies, institutions and governance – grounded in a sound evidence-based approach that takes into account the three dimensions of sustainability (economic, social and environmental) – with closely interwoven targets. Given the challenges that Mexico has to face for addressing SDG14- the country has to acknowledge the close interaction among all the SDGs among themselves, and the special conditions required as well as the implications for their imple-

mentation. This paper provides examples in each one of the relation-ships among all the SDG targets giving an assessment of the actions that Mexico is implementing to fulfil its international commitment towards the SDG14.

Resumen
El Objetivo de Desarrollo Sostenible 14 (SDG14) establece metas específicas para los países, desarrollados y en desarrollo, para cumplir dentro de un marco de tiempo determinado, con logros supervisados periódicamente con el objetivo de medir el progreso. Para lograr la transición global al desarrollo sostenible, los países están estableciendo un entorno propicio para las políticas, las instituciones y la gobernanza, fundamentados en un sólido enfoque basado en la evidencia que toma en cuenta las tres dimensiones de la sostenibilidad (económica, social y ambiental), en estrecha relación con objetivos entrelazados. Dados los desafíos que México tiene que enfrentar para abordar los SDG14, el país debe reconocer la estrecha interacción entre todos los ODS entre sí, y las condiciones especiales requeridas, así como las implicaciones para su implementación. Este documento proporciona ejemplos en cada una de las relaciones entre todas las metas de los ODS, en las que se realiza una evaluación de las acciones que México está implementando para cumplir con su compromiso internacional con los ODS14.
Palabras clave: manejo costero y marino, metas de desarrollo sustentable, México.

1. Introduction

The adoption of the 2030 Agenda for Sustainable Development, a critical issue for countries-member of the UN is to better understand the implications, linkages, costs and consequences for implementing the Sustainable Development Goals (SDG) one by one and as a complex net of inter-connected SDGs. This last factor makes necessary to comprehend that only through an integrated policy approach Mexico may be able to design and build strategies and actions in a cross-cutting fashion that involve different targets, antagonist policies, competitive sectors, potential or current conflicts, and may provide with suitable settlements and trade-offs among them (Le Blanc *et al.*, 2017; Becerra Pozos, 2017).

The SDG are the first global development push in history led by the Member States. They set out specific objectives for countries, developed and developing, to meet within a given time frame, with achievements monitored periodically to measure progress and ensure that no country is left behind. Sustainable Development Goal 14 (SDG14) is about the conservation and sustainable use of the oceans, seas and marine resources for sustainable development. According to UNEP (2017), the major challenge for the oceans and coastal zones is climate change that threats marine resources and ecosystems through acidification, increment of water temperature and in the number and intensity of hazardous events. Current problems as overfishing and marine pollution are exacerbated by climate change effects and put at risk recently created ocean protected areas. The cumulative economic impact of poor ocean management practices is estimated to be in the order of USD 200 billion per year (UNDP, 2012).

To achieve the global transition to sustainable development, countries are now establishing an enabling environment of policies, institutions and governance – grounded in a sound evidence-based approach that takes into account the three dimensions of sustainability (economic, social and environmental) – with closely interwoven targets. Given the challenges that Mexico has to face for addressing SDG's targets one by one -particularly SDG14- the country has to acknowledge the close interaction among all the SDGs among themselves, and the special conditions required as well

as the implications for their implementation. This paper provides examples in each one of the relation-ships among all the SDG targets giving an assessment of the actions that Mexico is implementing to fulfil its international commitment towards SDG14.

2. SDG 14 context

An estimated 3.1 billion people rely on oceans for almost 20% of their animal protein intake (through seafood) (FAO, 2016) and more than 500 million people are engaged in ocean-related livelihoods (UNDP, 2012). Moreover, 60% of the world's major marine ecosystems have been degraded or are being used unsustainably (UNEP, 2011). Since the 1980's an estimated 20% of global mangroves have been lost and 19% of coral reefs have disappeared (UNDP, 2012).

According to the Report of the Secretary General, Progress toward the Sustainable Development Goals (ECOSOC, 2017), and SDG14 (United Nations, 2018) addresses major challenges through several instruments and capacity building for tackling them owing to science and technology, but also with appropriate policies for achieving sustainability.

Nevertheless, major challenges have to be overcome towards 2030:

- Pollution and eutrophication at a global level follow increasing trends endangering coastal waters. The Transboundary Waters Assessment Programme[1] consists of five independent indicator-based assessment and the linkages between them, including their socioeconomic and governance-related features. The five water-category specific assessments cover 199 transboundary aquifers, 42 non-transboundary aquifers in small island developing states, 204 transboundary lakes and reservoirs, 286 transboundary river basins, 66 large marine ecosystems (and the Western Pacific Warm Pool), and the open ocean; a total of 756 international water systems. The assessed waters cover over 70% of the planet's oceans and landmass, and about 16% of the planet's landmass that is also underlain by transboundary aquifers. As a first global comparative assessment of transboundary waters resulted that 16 per cent of the ecosystems are in the "high" or "highest" risk categories for coastal eutrophication. They are located mainly in Western Europe, Southern and Eastern Asia, and the Gulf of Mexico (Fanning *et al.,* 2015; Mahon *et al.,* 2016; UNEP, 2016).
- Ocean acidification is closely linked to shifts in the carbonate chemistry of the waters, which can lead to a significant weakening of the shells and skeletons of many marine species (such as reef-building corals and shelled molluscs). The Biannual achievements report of the UK Ocean Acidification research programme[2] concluded in 2014 that major changes in marine macro-algae and sea grasses could be expected in the northeast Atlantic benthic flora over the next 100 years. Moreover, the pH decreases and warmer temperatures are the two main changes involve in the loss of kelp forests in southern Europe, and a reduction of coralline algae in boreal and Arctic regions. Future increases in non-native species can also be expected; e.g. Pacific seaweeds, more prone to extend their distributions across an ice-free Arctic. Acidification also includes important differences on a regional basis,

[1]http://www.geftwap.org/twap-project
[2]https://nerc.ukri.org/research/funded/programmes/oceanacidification/ukoa-summer2014report/

and vertically, within the water column affected by ocean physics, temperature and biological processes; as well as due to differences in species' responses to ocean acidification, the occurrence of additional stressors, and the potential for some evolutionary adaption to occur over the next 50-100 years. On the other hand, NOAA's Ocean Acidification Program[3] review the coastal acidification that includes local changes in water chemistry from freshwater river inputs and excess nutrient runoff from land. The ability of an ecosystem to cope with acidification is influenced by the amounts of local stressors it needs to contend with, such as high nutrient input or changes in temperature or salinity. By minimizing local stresses, some ecosystems may prove more resilient to ocean acidification (Makarow *et al.,* 2009; Gattuso *et al.*, 2014; Newton *et al.*, 2015; Birchenough *et al.*, 2017).

- Overfishing reduces food production, impairs the functioning of ecosystems and reduces biodiversity. The 2009 FAO's Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing[4] (PSMA) entered into force on 5 June 2016. This is a milestone and will prove a key driver in the international community's fight against the scourge of IUU fishing. The PSMA, which creates binding obligations, sets standards for the inspection of foreign vessels that seek to enter the port of another State. Importantly, the measures allow a country to block ships it suspects of having engaged in illicit fishing and thereby prevent illegal catches from entering local and international markets. In addition, in July 2014 the adoption of the FAO's Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, puts an umbrella programme to support governments and non-state actors in their implementation of initiatives to strengthen small-scale fisheries communities, their food security, and their resilience (FAO, 2015). Finally, FAO has taken into account the above developments within the framework of its own Blue Growth Initiative (FAO, 2017) to accelerate its work in support of sustainable management of living aquatic resources, balancing their use and conservation in an economically, socially and environmentally responsible manner. In Latin America and the Caribbean -throughout the Atlantic and Pacific- marine ecosystem account for nearly 12 percent of global fish production and almost 4 percent of aquaculture production. Watersheds in Latin America and the Caribbean also account 20 percent of freshwater and houses almost 30 percent of the mangrove ecosystems of the planet. Their protection to achieve food security and nutrition, poverty alleviation and economic growth through a sustainable use is imperative for the welfare of future generations (FAO, 2017). Illicit fishing may account for up to 26 million tonnes of fish a year, or more than 15 percent of the world's total annual capture fisheries output. Besides economic damage, such practices can threaten local biodiversity and food security in many countries. And small-scale fisheries provide work to 90 percent of the people employed in capture fisheries (FAO, 2016).
- Marine protected areas (MPAs) are important mechanisms for safeguarding ocean life, when are properly managed and well resourced. For the OECD (2016), MPAs are one policy instrument available that have the potential to address

[3] https://oceanacidification.noaa.gov/OurChangingOcean.aspx
[4] http://www.fao.org/fileadmin/user_upload/legal/docs/037t-e.pdf

several of the pressures on marine biodiversity, in particular over-fishing and exploitation and habitat destruction. In addition to protecting rare and threatened species and their habitats and other areas of ecological importance, MPAs can help ensure the sustainable provision of multiple other ecosystem services that are fundamental for human well-being, including for fisheries, coastal protection (buffering against storms and erosion), tourism and recreation. In 2017, protected areas cover 13.2 per cent of the marine environment under national jurisdiction (up to 200 nautical miles from shore), 0.25 per cent of the marine environment beyond national jurisdiction and 5.3 per cent of the total global ocean area (ECOSOC, 2017). Brander *et al.* (2015) examine the net benefits of protecting marine habitats through expanding the coverage of no-take MPAs to 10% and 30% and find that the benefits exceed the costs, with ratios in the range of 3.17-19.77.

3. Legal and institutional frameworks for the conservation and sustainable use of the mexican seas

The three major regions of Mexico suffer from interconnectedness of the Caribbean Sea, Gulf of Mexico and the Pacific ecosystems, and is now acknowledged the transboundary issues affecting marine and coastal resources and habitats in Mexican waters, and the need for collaborative management of their shared resources.

Several international, regional and bi-national agreements have been adopted by Mexico to improve governance of ocean resources that are of relevance to the SDG14 (Table 1), such as the 1982 United Nations Convention on the Law of the Sea (UNCLOS); the 1992 Convention on Biological Diversity; the 1992 United Nations Framework Convention on Climate Change (UNFCC); the 1973/78 International Convention for the Prevention of Pollution from Ships (MARPOL), with its six annexes; the 1995 United Nations Fish Stocks Agreement (UNFSA) governing straddling and highly migratory stocks (Table 1).

Regional efforts require strong institutional capacity and commitment at national, regional, and subnational levels. In the Wider Caribbean Region (WCR) there are 26 regional organizations whose activities are relevant to the SDG14 targets (Fanning and Mahon, 2017). In Mexico there are fourteen national institutions under the Intergovernmental Commission for the Sustainable Management of the Coasts and Seas in Mexico (CIMARES in Spanish); and four international institutions; two for the US; two in Cuba; eight in Belize; and four in Guatemala (Figure 1) (Fanning and Mahon, 2017). Five Regional bodies of United Nations agencies; and non-governmental organizations, such as the Nature Conservancy (TNC), International Union for the Conservation of Nature (IUCN), World Wildlife Fund (WWF), and Conservation International (CI) all of which have programs related to SDG14 targets. With so many organisms dealing with different or overlapping issues, a coordinating mechanism for ocean governance is required in Mexico.

The scope of some organizations has country membership such as the Caribbean Community and Common Market (CARICOM) and associated agencies, others are specific like the Gulf and Caribbean Fisheries Institute which hosts an annual, well-attended conference and is one of the primary sources of fisheries information in the region; while others cover broader geography such as the Latin American Organization for Fisheries Development (OLDEPESCA). Fanning and Mahon (2017) found that the UN Agencies

Table 1. Country membership in global and regional marine agreements relevant to Mexico. (Source: modified from Fanning and Mahon, 2017).

			Mexico	United Sates	Guatemala	Belize	Cuba
Agreements		UNCLOS	B		B	B	B
		UNFSA	B	B	B	B	B
		UNFCC	B	B		B	
		CBD	B	B	B	B	B
		FAO compliance	B	B		B	
	MARPOL 73/78	Annex I/II	B	B	B	B	B
		Annex III		B	B	B	
		Annex IV			B	B	
		Annex V	B	B	B	B	B
		Annex VI		B		B	
		Protocol 87		B		B	
	CARTAGENA	Convention	B	B	B	B	B
		Oil Spill Protocol	B	B	B	B	B
		LBS Protocol		B	B	B	
		SPAW Protocol	C	B	B	B	
		CRFM	N	N	B	B	B
		ICCAT	B	B		B	
		OLDEPESCA	B	B	B	B	N
		OLSPESCA	N	N		B	N
		WECAFC	C	C	C	C	C
		IAC	B	B		B	

B= Binding
C= Cooperate by signing
N= Non-elegible

UNCLOS= UN Law of the Sea Convention
UNFSA= Un Fish Stock Agreement
UNFCCC= UN Framework Convention on Climate Change
CBD= Convention on Biological Diversity
FAO= Food and Agriculture Organization
LBS= Land Base Source
SPAW= Specially Protected Areas and Wildlife
CRFM= Caribbean Regional Fisheries Mechanism
ICCAT= International Convention for the Conservation of Atlantic Tunas
OLDEPESCA= Latin American Organization for Fisheries Development
OSPESCA= Organization for Central American Fisheries and Acuaculture Sector
WECAFC= Western central Atlantic Fisheries Commission
LAC= Inter-American Convention for the Protection and Conservation of Sea Turtles

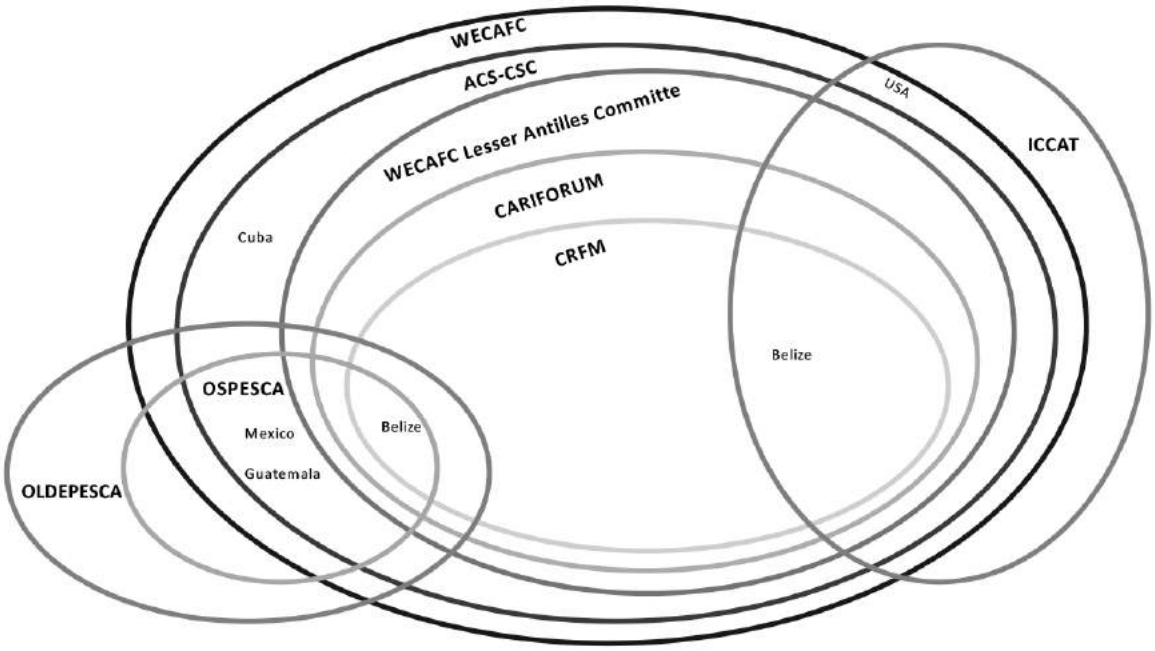


Figure 1. Institutional scale overlapping and nested fisheries-related organizations for Mexico and neighbour countries (Source: modified from Fanning and Mahon, 2017).

with specific mandates for the SDG14 in the WCR are the UN Environment-Caribbean Environmental Programme Regional Coordinating Unit which is the secretariat for the Cartagena Convention and its protocols; the FAO Western Central Atlantic Fisheries Commission, constituted under Article VI of the FAO Constitution; the Economic Commission for Latin America and the Caribbean (ECLAC) Sub regional Headquarters for the Caribbean; the Intergovernmental Oceanographic Commission Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE) which implements IOC's mandate in the WCR; the International Maritime Organization (IMO) has a Regional presence office that covers mainly CARICOM countries.

In Mexico there are 62 institutions devoted to research oceans and coasts that comprehend 28 universities, 6 research centres, 2 colleges, and 24 technological institutes; and some of them are associated with government ministries at national and state levels. In addition, by presidential mandate in 2006 the National Commission for the Coordination of Oceanographic Research (CONACIO in Spanish) was created, to propose, analyse and coordinate governmental actions and activities, as well as research institutions related to marine and coastal topics. At the same time, there is a National Oceanographic Research Programme, which aim is the sustainable use of marine resources and ecosystems (DOF, 2016), tailored by the CIMARES and CONACIO.

CIMARES is a coordination organ that was established to tailor and implementation of national policies for the planning and sustainable development of seas and coasts of Mexico. It joints 14 Ministries (Government, Foreign Affairs, Environment; Energy, Economy; Agriculture Livestock and Fisheries, Communi-

cations and Transportation; and Territorial Planning. CIMARES framed its work in the National Ocean and Coasts Policy with 19 general strategies, 62 action lines and 27 targets for 2018, that are follow up by four working groups: 1) Processes and ecological land planning; 2) Economy and competitiveness; 3) International Agenda; and 4) Ocean Health. CIMARES is the core of the ocean and coastal governance in Mexico, co-responsible of the SDG14 implementation.

The other part of the co-responsibility corresponds to the Inter-governmental Commission for Climate Change (CICC); which is entitled to designing and implementing national policies for mitigation and adaptation for climate change in a cross-cutting fashion. CICC foster the fulfilment of international and national commitments to the UNFCCC and the National Special Programme for Climate Change.

Despite both coordination commissions, oceans and coasts are poorly represented and some key aspects are overwhelmed by land issues. Nevertheless, Mexico has got several programs and projects for the oceans. These are the regional and sub-regional projects gathered by authors from government reports for the Gulf of Mexico and the Mexican Pacific Ocean that are relevant to SDG14 implementation and monitoring:

- The Gulf of Mexico Large Marine Ecosystem, project which is focused on an ecosystem approach to transboundary living marine resources in the Gulf of Mexico through a strategic action programme.
- Binational Red Tide Program, began in 2002 as part of the Governors' Alliance, an agreement between the States bordering the Gulf of Mexico (Texas, Alabama, Mississippi, Florida, Louisiana, Veracruz, Tamaulipas, Yucatán, Campeche, Tabasco). This program is an initiative of the Health Service agencies of Veracruz, with national and international participation of institutions from both countries. National Institutions (Veracruz Aquarium, National Ecology Institute and Veracruz Health Services Agency (COFEPRIS-Veracruz State Lab). Participating local institutions: Ministry of Navy, Veracruz Reef System National Park, Port Administration (API), Ministry of Civil Protection of the State of Veracruz. Foreign institutions: EPA (Environmental Protection Agency), NOAA (National Oceanic and Atmospheric Administration) NDBC (National Data Buoy Centre), NASA (National Aeronautics and Space Administration), Florida Marine Research Institute, University of South Florida and Institute for Marine Remote Sensing, FIO (Institute of Oceanography State of Florida). The main goal is to establish a binational alliance to improve science as well as detection and follow-up techniques for harmful algae blooms in the Gulf of Mexico.
- Mexico-United States (MEXUS) Joint Contingency Plan - The MEXUS Plan is a binational agreement maintained by the United States Coast Guard (CG-MER-2) and the Mexican Navy (SEMAR S3). It covers oil spills in the Mexico border region which at least threaten the other country. The Plan has two regional annexes.
- MEXUS Plan's Gulf Geographic (MEXUS-GULF) Annex - The Gulf regional annex concerns binational response to oil spills in the US-Mexico maritime border region of the Gulf of Mexico. The USCG 8th District, Incident Management Branch maintains the annex.
- MEXUS Plan's Pacific Geographic (MEXUS-PAC) Annex - The Pacific regional annex concerns binational response to oil spill in the US-Mexico maritime border region on the Pacific coast. The USCG 11th District, Incident Management Branch maintains the annex.
- The US, Mexico and the Colorado River: a binational program on water use and habitat restoration
- The Binational Agreement between Mexico and Guatemala on the Protection and Enhancement of the Environment in the Border Zone

- The Binational Agreement between Mexico and Belize on the Protection and Enhancement of the Environment in the Border Zone
- The Binational Agreement between Mexico and Cuba on the strengthen better fisheries and aquaculture practices in the Gulf of Mexico
- Institutional National Fisheries (INAPESCA) Programme 2013-2018, which focus on research for fisheries and aquaculture, as well as the design of the National Fisheries and Aquaculture Acts, fisheries national plan, tailor training activities, among others.
- The National Natural Protected Areas Programme 2014-2018 established objectives and goals for the conservation and creation of new protected areas
- The Clean Beaches, Water and Safe Environment National Programme of the Water Mexican Ministry that target water treated and no-treated discharges to the coastal zone and the implementation of the Blue Flag certification
- National Contingency Programme for Oil Spills and Potentially Harmful Substances in the Mexican Marine Zones
- The Integrated Management of the Mesoamerican Coral Reef System for the use and sustainable use of the fresh shared watershed at the border reef zone implemented by the Central American Environment and Development Commission and the Global Environmental Fund
- Annex 1. Fiscal Collaboration Administrative Agreement between the Tax Ministry and each Mexican coastal municipality for the sustainable use, conservation and surveillance of the federal coastal and marine zones.

The institutional complexity in the Mexican marine zones underscores the need for regional cooperation and coordination. The need for an overarching coordinating mechanism for ocean governance in each one of the marine regions in Mexico is urgent. Promoting ocean governance at the regional level is critical for the appropriate implementation of the SDG14; governance that may be under the CIMARES umbrella and that would provide the required coordination effort at local level through integrated coastal zone management.

4. Current major marine and coastal activities of coastal mexican states and municipalities

Mexican coastal border line is 11.600 kilometres with a continental platform of 388.000 km^2; 15.670 km^2 of estuaries and 5.083 km^2 of islands. Mexico's territorial sea embraces nearly 231.000 km^2 and its exclusive economic zone compiles and area of 3.150 thousand km^2 (PNMC, 2015). High biodiversity is due to the surrounding presence of the Pacific Ocean, the Gulf of Mexico, the Sea of Cortes and the Caribbean Sea.

According to INEGI (2018) nearly 15 percent of the national population of Mexico, lives in the coastal fringe, accounting more than 4.3 million people; while there are 13.4 million people living in coastal municipalities. Economic development in the coastal zones of Mexico depends mainly from the service and commerce sectors that account from 2.8 percent to 7.6 percent of the national GDP due to tourism related activities (i.e. Acapulco, Guerrero or Cancun, Quintana Roo, Mexico). It is important to clarify that oil and gas activities account directly to the national GDP, despite the origin of the hydrocarbon.

There are some key regional level activities linked to SDG14 in each one of the five Mexican marine regions (Figure 2):

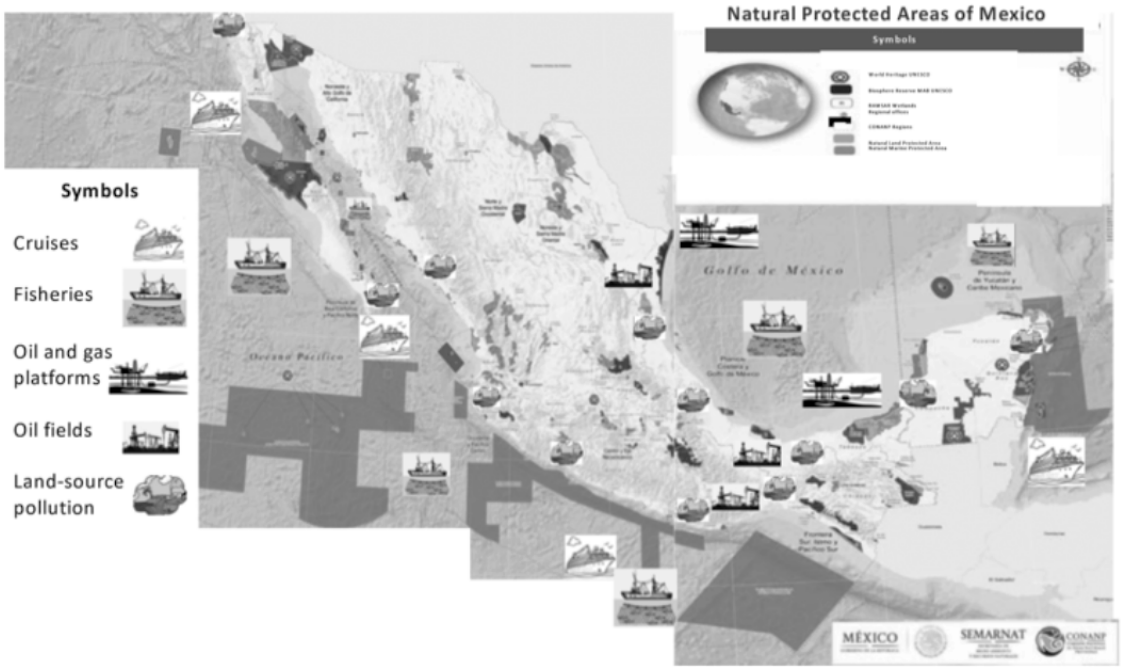


Figure 2. Current major activities of coastal Mexican States and Municipalities in the five regional seas of Mexico related to SDG14 (modified from CONANP/SEMARNAT, 2018)

- Gulf of Mexico: Oil and gas exploration and extraction activities; fisheries and sewage discharges
- Caribbean Sea: Tourism and cruise activities, conservation areas
- Cortes Sea: Tourism and cruise activities, fisheries and aquaculture activities, and conservation areas
- North Pacific: Fisheries and aquaculture activities, tourism and cruise activities, and conservation areas
- South Pacific: Oil and gas exploration and extraction activities; tourism, fisheries and sewage discharges, and conservation areas

The major activities relating to SDG14 targets carried out by the Mexican institution are related to key business themes such as a) marine biodiversity, b) ocean acidification, c) environmental investments, d) spills, e) sustainable sourcing, and f) water discharge to oceans (Table 2).

SDG14 targets ought to be addressed by multiple factors from inside and outside the ocean realm. Therefore, it is important to take those factors into consideration for identifying actions and strategies to achieve those SDG14 targets. This is a complex picture for the majority of the Mexican coastal states, with high and increasing exposure to hazards, dependence on coastal and marine resources, combined with tourism-dependent economy, with limited diversification and competitiveness with other sectors, that transpire a vulnerable region both environmentally and structurally, composed by 150 climate change vulnerable and poor coastal municipalities (CONAPO, 2018).

Marine pollution (target 14.1) is a major issue in coastal zones in Mexico. Local settlements in Mexico depend on municipal governments which are entitled to provide water treatment to every discharge pouring to underground, rivers, and marine waters. From 157

Table 2. SDG14 targets addressed by Mexican Bi-National and National initiatives.

SGD14 Targets	Topic	Mexican Initiatives
14.1	Marine pollution	Binational Red Tide Program
		The MEXUS Plan
		MEXUSGULF
		MEXUSPAC
		The Clean Beaches, Water and Safe Environment National Programme
		National Contingency Programme for Oil Spills and Potentially Harmful Substances in the Mexican Marine Zones
	Land remediation	Annex 1. Fiscal Collaboration Administrative Agreement
14.2	Marine Biodiversity	The Gulf of Mexico Large Marine Ecosystem
		The US, Mexico and the Colorado River
		Binational Agreement between Mexico and Guatemala
		Binational Agreement between Mexico and Belize
14.3	Ocean acidification	No programme
14.4	Overfishing	Binational Agreement between Mexico and Cuba
		Institutional National Fisheries (INAPESCA) Programme
14.5	Conservation of marine zones	National Natural Protected Areas Programme
		The Integrated Management of the Mesoamerican Coral Reef System
14.6	Fisheries Subsidies	Mexico subsidize fisheries and fishery items
14.7	Economic Benefits to SIDS	Does not Apply
14.a	Increase scientific capacity	CONACIO National Oceanographic Research Programme
14.b	Small-scale fisheries access to markets	Institutional National Fisheries (INAPESCA) Programme
14.c	Implementation of UNCLOS	Navy Ministry; Environmental Ministry

coastal municipalities, only 105 have a water treatment plant; and their treatment capacity is only 47% of the total discharge (CONAGUA, 2017) (Table 3 and figure 3).

Table 3. Water treatment plants per coastal Mexican state (Source: CONAGUA, 2017).

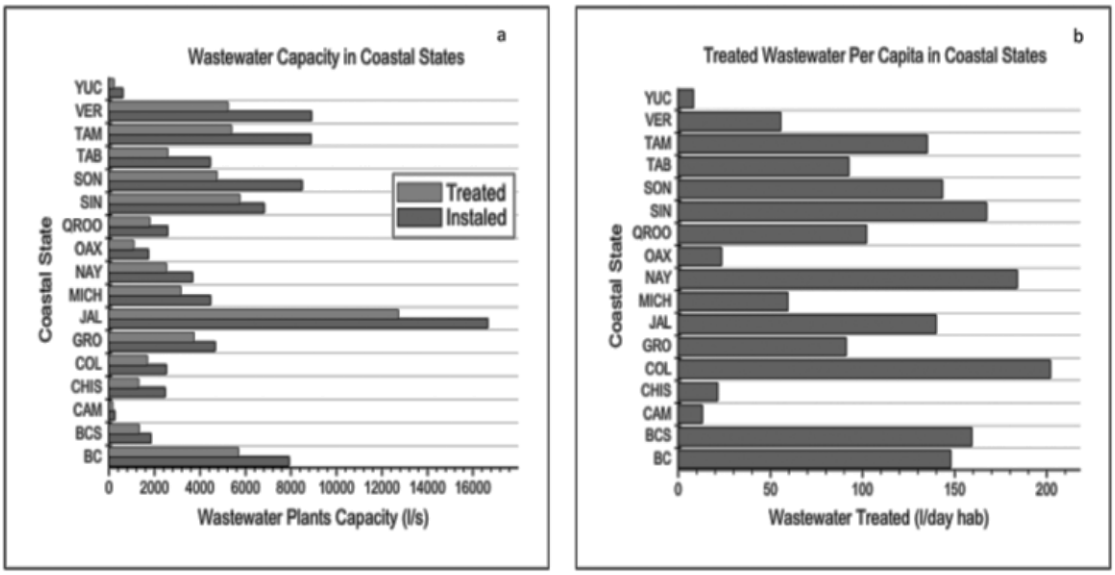
Coastal State	Wastewater Treatment Capacity (l/s)	Wastewater Treated (l/s)	Total Population (2015)	Wastewater Treated per capita (l/day hab)
BC	7,907.10	5,669.90	3,315,766	147.74
BCS	1,826.87	1,312.37	712,029	159.25
CAM	240.00	134.30	899,931	12.89
CHIS	2,454.10	1,285.40	5,217,908	21.28
COL	2,511.40	1,661.90	711,235	201.89
GRO	4,650.27	3,721.46	3,533,251	91.00
JAL	16,652.90	12,701.15	7,844,830	139.89
MICH	4,446.50	3,146.60	4,584,471	59.30
NAY	3,658.60	2,510.30	1,181,050	183.64
OAX	1,722.11	1,071.20	3,967,889	23.33
QROO	2,580.50	1,774.15	1,501,562	102.08
SIN	6,803.73	5,738.20	2,966,321	167.14
SON	8,483.22	4,725.06	2,850,330	143.23
TAB	4,437.93	2,565.43	2,395,272	92.54
TAM	8,872.75	5,372.45	3,441,698	134.87
VER	8,897.16	5,218.05	8,112,505	55.57
YUC	597.39	198.73	2,097,175	8.19

Note: BC= Baja California; BCS=Baja California Sur; CAM= Campeche; CHIS= Chiapas; COL= Colima; GRO= Guerrero; JAL= Jalisco; MICH= Michoacán, NAY= Nayarit; OAX= Oaxaca; QROO= Quintana Roo; SIN= Sinaloa; SON= Sonora; TAB= Tabasco; TAM= Tamaulipas; VER= Veracruz; YUC= Yucatán

5. Assessing the implementation of the SDG14

It has been stress out the importance of implementing the 2030 Agenda for Sustainable Development and the SDGs targets. Mexico has recognized this but is still far from building the required capacities for such an endeavour, since donor agencies should support authorities and NGOs' activities for this purpose, and promote resilience, increasing the win-win situations in the economic, social and environmental spheres.

According to Fanning and Mahon (2017), implementation success can only be reached by taking a multidimensional and integrated approach for recognizing the relationships and synergies to be found between SDG14 and the remain 16 SDGs and the 2030 Agenda. This is a major opportunity and at the same time a huge challenge that may provide the chance to gauge the starting point and the equilibrium point, as well as



Figures 3. Wastewater treatment capacity in Mexican coastal states.
Source: Azuz-Adeath authorship with data form CONAGUA, 2017).

the means, processes and capacities for which Mexico needs to set out towards this new national, regional and local vision of ocean sustainable development. La Blanc *et al.* (2017) identified interrelationships that exist among SDG14 targets with other SDG areas, providing a framework for describing policy issues related to those SDG14 targets, which can be used to assess on one hand, the state of knowledge for different linkages for policy and scientific point of view; and on the other hand, the implementation capacity that exist in Mexico for SDG14.

Table 4 gives a picture of important linkages among the ten SDG14 targets. The used symbols in this table should be taken as illustrative but not definitive of the complex dimensionality of the interactions among targets when viewed through Mexico's social, economic and environmental realities. This table shows strong interdependences among the ten targets themselves, mostly representing the areas where Mexico has tailor policies or implemented actions, and some other areas where there are not actions or those are variable depending on the coastal and ocean case/region. In this type of analysis, Le Blanc *et al.* (2017) consider that some of these targets are at the "receiving end" of the interactive matrix, since they are affected by many other targets; such as target 14.2 (sustainable management of marine ecosystems), and 14.4 (restoration of fish stocks); while 14.a (science and technology), and 14.c (implementation of international law) have the potential to impact all the other targets.

An important point is that some of the linkages are not absolute positive or negative; rather, they depend on the circumstances and vary according to location and scale, and the results from actions upon a specific target, may have a different output across stakeholders (Le Blanc *et al.*, 2017). For example, fishery subsidies impact access to resources of artisanal fishermen in different ways depending on the type of fishery, local

Table 4. Linkages among SDG14 targets assessing Mexico's actions.
Source: modified from Le Blanc *et al.* (2017).

To targets/ From targets	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.a	14.b	14.c
14.1				-	+			+	-	-
14.2	-				+			+	+	#
14.3		-		-	#			-	-	-
14.4		+				#		+	+	
14.5		+		+				+	-	#
14.6				-	-			-	-	+
14.7										-
14.a		+	-	+	+	+			+	+
14.b	+	+		+	-	-		+		+
14.c	-	+	-	+	#	#		#	#	

+ positive link/implemented actions
- negativve link/no actions
variable link/depend on the case

political momentum, and allocation. Another example is the impact small-scale fishermen suffered from increasing the protected marine areas in the Sea of Cortes due to the vaquita marina protection activities.

All SDGs cover a wide range of issues which exhibit close interrelationships. The assessment of the interaction between each one of the SDG14 targets, with the other SDGs is crucial for their implementation. Most of the action-type targets have impacts on the recipients of the action, and those can be affected either positive or negatively by numerous policies, contexts, scales and budget. Nevertheless, in all cases, depending on the direction and follow-up of the measure, in real life, the outcome would be.

The interaction between SDG 14.1 (reduction of marine pollution) with ten other SDGs (2, 3, 6, 8, 9, 11, 12, 13, 15, and 16) that can be translated into diverse links, at three different geographic scopes (local, regional and national). Pollution of coastal and marine waters makes seafood improper for human consumption; discarding fisheries and aquaculture products. Some examples from Mexico can be located in Guerrero, Veracruz, and Tabasco. Some of the show pollution prevention such as the improvement of the water treatment and pipeline system in Campeche city, whereas some other show sources of pollution to the coastal and marine zones due to different urban, agricultural and industrial activities. The Campeche and Tabasco oil fields activities pollute oceans with by products and waste as well as oil spills. Mexico has been working to ensuring access to sanitation to coastal communities; however, major coastal urban settlements were originated during the colonial period without considering a sanitary system. Local Mexican governments have been building pipelines to collect wastewaters to drive them to water treatment plants. Nevertheless, many of these plants are out of service mainly due to poor maintenance and budget short cuts.

At global level ocean is strongly affected by multiple drivers (Le Blanc *et al.*, 2017). However, large areas of scarce human contact remain in Mexico, particularly at the coastal natural protected areas where healthy coastal and marine ecosystems are coping with transboundary pollution impacts, such as land-based source non-point and point pollution. In general, pollution has cumulatively or multiplicative effects that are exacerbated by ocean acidification, ocean warming, shifting currents, reduced mixing and decreasing oxygen levels in the water column; all these threats are willing to increase due to climate change effects (United Nations, 2016).

The interactions between SDG 14.3 (ocean acidification) with six SDGs (2, 4, 8, 9, 11 and 13) state the importance of acidification. For example, SDG 14.3 aims to minimize and address the effects of ocean acidification. Acidification levels have increased nearly 26% since the 19th century, and the saturation of carbonate in the seawater column varies by depth and region, being lower in deep cold waters where cold-water coral reefs in the northern Mexican Pacific are vulnerable to acidification. On the other hand, ocean acidification combined with warmer temperature, result in stratification and de-oxygenation of subsurface waters that can convey to important physiological failures and marine habitat changes (CBD, 2016).

Considerations made by the Mexican climate change policy are directed to mitigate greenhouse gases (GHGs) from different sources. However, it does not address the cumulative effect of carbon in marine environments, and the possibility to seek to increase the adaptive capacity of the marine system as a whole. Therefore, a number of issues were left out such as deep water corals, include a) minimizing impact of other anthropogenic stressors on the system, b) maximizing the likelihood of survival of the species and its associated biota at other sites globally; and c) identifying and protecting future refugia internationally (Le Blanc *et al.,* 2017).

The complex interactions between SDG 14.4 (Fisheries) with eight SDGs (1, 2, 3, 8, 12, 13, 16 and 17) show interrelationships of SFG14.4 with other targets; especially with poverty, trade, sustainability, food security, market, and wellbeing impacts are felt at local, regional, national and global economies, consumption and production patterns, as well as employment and livelihood levels. For Le Blanc *et al.* (2017) this is a multi-dimensional problematique that require an integrated focus for policy and evaluation purposes for Mexico's implementation performance.

An effective regulation of sustainable fishing practices and the implementation of science-based management actions are important to restore fish stocks. But law enforcement and surveillance is crucial for the prevention of the depletion of fish stocks and avoid overfishing; which remains a cause of concern. These fishing activities may also contribute to damage marine habitats, and together with by-catch are causing negative effects to non-target species (CBD, 2014). Mexico has been investing in science assessments, management, control and surveillance, but it is clearly not enough yet.

Fisheries legal framework reform to increase their sustainability is urgent to reduce the negative impact on the environment and related resources; and at the same time increase the economic growth and job creation in coastal Mexican zones. However, the highest priority for fisheries authorities is still maximizing catches and profitability. Implementation and enforcement of catches based on scientific knowledge, as well as effort limits are key to successful management of the fisheries sector (Melnychuk et al., 2017). An additional point is the lack of information about the effects of climate change on fisheries in Mexico, which is important to be addressed as soon as possible.

Interactions between SDG 14.5 with eight SDGs (1, 2, 3, 8, 12, 13, 16 and 17) is resulting in the conservation of at least 10 per cent of coastal and marine areas by 2020, as specified by Target 11 of the Aichi-Nagoya

Protocol within the Biodiversity Convention. Mexico surpasses this target when at the 13th Conference of the Parties to the Convention on Biological Diversity (CBD COP13) it was announced the pledge to establish three new marine Biosphere Reserves that conserve important habitats in both the Pacific and Caribbean, including large parts of the Meso-American Barrier Reef and deep water zones in the Gulf of Mexico. The pledge increased marine protection in Mexico to 23%, more than double the 10% target to a total of 70 million hectares. Additionally, five new Safeguard Zones – where no exploration or extraction of hydrocarbons will be allowed – were established, including all of Mexico's Ramsar sites and mangrove forests. The new marine protected areas include the Mexican-Caribbean Biosphere Reserve (5.75 million hectares, representing 50 per cent of the Mesoamerican Coral Barrier System); the Deep Mexican Pacific (59.7 million hectares); as well as a group of 21 islands and 97 islets (1.16 million hectares) and surrounding sea areas through multiple-use zoning, which includes protection of fishing grounds for local fishermen and habitats for marine mammals and seabirds. An example of protection of coastal areas benefiting terrestrial ecosystems is Los Petenes Biosphere Reserve in Campeche.

Beside the environmental benefits that marine protected areas may produce, there are also socio-economic benefits that remain under debate. Some Mexican initiatives for marine protection had conveyed to conflicts due to fishing areas loss, legal restrictions and tight fishing regulations, such as non-take areas; and very low probabilities to provide an alternative livelihood, especially those with a high economic dependence on the fishery. Social and economic costs are shorter term results when compared to spill over potential benefits such as increment of total catches and larger sized fish catches that take longer time to come to pass. Le Blanc *et al.* (2017) considered that protection of coastal and marine areas may impact the livelihoods and resilience of local communities, such as the case of Mexico with the recent creation of a Marine Sanctuary for the Vaquita porpoise in the Northwestern Pacific of Mexico that has affected dramatically artisanal fishermen; and the Marine Park of Contoy Island in Qroo, that has affected inequality locally through changing access to resources. On the other hand, environmental education has increased support for conservation through the Intercultural Center for the Study of Deserts and Oceans (CEDO) that takes an ecosystem approach for the conservation of the Vaquita and the Totoaba, whose primary habitat is encompassed in the upper Gulf of California/Colorado River Delta Biosphere Reserve.

Benefits from marine protected areas depend on the local context and how they are designed and managed (FAO, 2011). Very few examples of protected areas in Mexico are co-managed or community-based managed; most of marine protected areas are managed by the federal government which have little contact with local communities in terms of transparency and accountability, inclusion and participation. Conservation goals are not necessarily shared locally, with an absence on community empowerment to manage their own resources. Moreover, addressing conservation and poverty reduction results through protected areas is very difficult in Mexico. The same is true when facing climate change effects because conservation outcomes may have different needs from those required for poverty reduction and coastal wellbeing outcomes (Le Blanc et al., 2017).

Interactions between SDG 14.6 (fisheries subsidies) with seven SDGs (1, 2, 4, 8, 10, 12, and 16) call for the prohibition of fisheries subsidies by 2020. In Mexico subsidies were created as an incentive for artisanal fishermen to foster equality in the fishery sector. However, the National Fisheries Commission (CONAPESCA) lacks capacity for operation regulations monitoring and enforcement, which lead to corruption and unsustainable practices, illegal fishing and overfishing. In

addition, there are numerous social and political issues with the fisheries sector in Mexico; especially regarding subsidies. The federal government has used subsidies as a political tool for elections, policy support, social pressure, etc.

Fishery subsidies are entangled with numerous policy-relevant issues related to other targets under SDG14. For a number of factors, industrial fisheries in Mexico does not conform a wealthy sector, and the highest percentage of fishermen work at artisanal fleets around the country. So despite the common knowledge that fishery subsidies tend to favour large scale fishers, in Mexico is the opposite because they are supporting artisanal fishers.

Subsidies in Mexico have impacts on target species even when there are illegal captures of species, such as the cucumber, a very lucrative species for the Asian market; therefore, interest groups are in favour of subsidies and present opposition to increasing marine protection efforts. On the other hand, subsidies do not have the effect on lowering artificially the prices of fish or seafood in general. Markets respond to higher demands specially during religious festivities in Mexico; and prices escalate discouraging consumption patterns but necessarily for sustainable reasons. Yet, the subsidies sustain jobs, but not necessarily reduce poverty nor contribute to food security.

Interactions between SDG 14.a (increase scientific and technology capacity and transfer) with six SDGs (2, 3, 4, 5, 7 and 9) enhance regional and international cooperation between Mexico, the USA and Cuba for ocean problems have resulted in positive impacts in relation to marine biotechnology that can have on a blue economy. The ultimate goal is to achieve blue economy in Mexico´s oceans, which are spaces where "spatial planning integrates conservation, sustainable use, oil and mineral wealth extraction, bioprospecting, sustainable energy production and marine transport. The Blue Economy breaks the mould of the 'brown' development model where the oceans [are] perceived as [available for] free resource extraction and waste dumping, with costs externalised from economic calculations. The Blue Economy will incorporate ocean values and services into economic calculations. The Blue Economy will incorporate ocean values and services into economic modelling and decision-making processes... [it will provide] a sustainable development of and the sharing benefits from marine resources; offering scope for re-investment in human development and the alleviation of crippling national debt burdens" (UN, 2013).

A country such as Mexico with a developing economy, science, technology and innovation are essential for the sustainable use of ocean and coastal resources. Nevertheless, numerous gaps exist in ocean and coastal-related knowledge, including its interactions with human systems (UN, 2016, 2017); as well as its developing capacity for creating innovation systems; its increasing scientific knowledge; and its research capacity for identifying opportunities associated to marine resources. Yet, decision-making processes are supported by the best knowledge available and there have been improvements in education at all levels and in a cross-cutting fashion among sectors.

In Mexico access for small-scale artisanal fisheries to marine resources and markets have earlier been related to subsidies. A number of factors in the past decades have resulted in the depletion of industrial fisheries and the emergence of artisanal fisheries all along the coasts of Mexico. Their importance is not only due to the continuous increment in their number, but in the dynamism and labour-intense sector that encompasses all activities along the value chain, from pre-harvest to product process and sale (FAO, 2005, 2016b).

In Mexico artisanal fisheries employs both men and women with higher participation of women in seafood processing and trading operations which is important for gender equality. However, small scale fisheries produce low returns for households and face other problems such as alcoholism that combined with other eco-

nomic deprivations results in poverty (FAO, 2016b). On other SDG target such as food security, Mexicans living in the coastal zone consume more fish and seafood that those living in central parts of the country where people eat fish once a month (40.1%) or very few times per year (21.9%) and these results are based on people's perception about the high cost and do not like the taste (Brújula de Compra PROFECO, 2007). Therefore, artisanal fisheries do not contribute to food security despite the rich protein source, nor alleviate poverty since people consider seafood out of their budget.

The interactions between SDG 14.b (access to resources and markets for small-scale fishers) with six SDGs (1, 2, 4, 5, 10, and 17) shows the relation between resources and markets for small scale fishers. Mexico has made progress since 1990 in reforming the policies governing the fisheries sector. However, a reform is required if the sector is to enter and remain on a sustainable route generating long-term economic and social benefits for the country. A key area for reform identified by the OECD (2006) is controlling the artisanal fisheries, better targeting of support programmes, and strengthening institutional arrangements to more effectively undertake management and enforcement.

The OECD (2006) states that artisanal fisheries is used as a social safety net that increase resource conflict, stock degradation and rural poverty in the coastal regions. There is an important link between rural development and fisheries policies that ought to be acknowledged for mutual support; and the latest may contribute to the solution for development concerns. A first step is to make a census to find out the actual size of the small-scale fleet, target species, fisheries fields, fisheries gears, uses, and costumes. At the same time governance arrangements as well as organization in cooperatives and their empowerment are key for implementing co-management initiatives for area-based fisheries (such as oysters, crabs, lobsters, and octopus).

Subsidies to the sector have been important aids to develop the sector improving short-term economic returns in some fisheries and supporting poorer fishing communities. However, many of the programmes have negative impact on sustainability and economic development of the fisheries sector, and manipulating the market eroding flexibility and resilience. According to the OECD (2006) the majority of Mexico's financial transfers are directed towards direct payments and cost-reducing transfers and this should be reduced and better targeted. Small-scale fishery activities generate low economic returns for households that depend on those activities; and fishing communities face income poverty due to a number of inequalities (FAO, 2014), including the depletion of fish stocks.

For small-scale fisheries in Mexico to access resources and access to markets presents challenges that require a myriad of actions. FAO (2014) consider that improving access to markets and resources may result from empowering the sector's operators, strengthening cooperatives and promote collective actions in small-scale fisheries, implementing policies and sector development programmes, including improving refrigeration infrastructure that foster business activity and increase incomes, alleviating pressure on fisheries; and improving access to education and training. The Aid for Trade initiative may provide the opportunities for value-addition strategies for small scale fisheries (Le Blanc *et al.*, 2017).

SDG14c target enhance the implementation of UNCLOS which provides the legal framework for the conservation and sustainable use of oceans and their resources. The Political Constitution of 1917 of the United Mexican States (Articles 27, 42, and 48) define the components that make up Mexico's national territory, oceans included. Article 27 consider that the ownership of the lands and waters within the boundaries of the national territory is vested originally in the Nation; and it is also the owners of all natural resources of the continental shelf and the submarine shelf of the

islands; and the space above the national territory to the extent and within the terms fixed by international law. In those cases to which the two preceding paragraphs refer, ownership by the Nation is inalienable and imprescriptible according to Mexican laws, may not be undertaken except through concessions granted by the Federal Executive, in accordance with rules and conditions established by law. In part, Article 27 states that the national territory belongs to Mexico as a nation and is under the control of the federal government for the benefit of society and the equitable distribution of public wealth. These principles are applied also to the territorial seas and therefore ultimately to the outer continental shelf.

On the other hand, Article 42 states that the national territory comprises the integral parts of the Federation, the islands' including the reefs and keys in adjacent seas, the continental shelf and submarine shelf of the islands' keys, and reefs, the waters of the territorial seas to the extent and under terms fixed by international law and domestic maritime law. And Article 48 commands that the islands, keys, and reefs of the adjacent seas which belong to the national territory, the continental shelf, the submarine shelf of the islands, keys, and reefs, the inland marine waters, and the space above the national territory shall depend directly on the Federal government, with the exception of those islands over which the States have up to the present exercised jurisdiction.

Mexican law has an advanced legal system regulating its maritime zones. Under these articles, Mexico has absolute control over the outer continental shelf (OCS) as it is also stated by the 1982 Law of the Sea Convention (UNCLOS). Nevertheless, Mexico does not have ownership rights of the OCS; rather, Mexico simply has the right to explore and exploit resources located in the OCS. The mere fact that Mexico has included this legal regime in its Constitution, shows the importance of maritime law to the Mexican people. Moreover, Article 27, 42, and 48 mirror many of the most important principles set forth in UNCLOS (Heaton, 2013).

6. Conclusions

The institutional management dimension of the ocean at international level for Mexico and neighbours as well as the interlinks with domestic institutions in charge of ocean matters is very complex and modulate the progress in every SDG14 target area. The national goals are:

- to prevent and reduce marine pollution as well as other environmental impacts for the coasts and the ocean;
- to increment the social and economic benefits of marine and coastal ecosystems;
- the sustainable management of marine and coastal ecosystems. Assessments on the implementation gaps of international law and regional organizations activities is critical issue that should be done as soon as possible. Fuller implementation of current legal frameworks could go a long way towards the SDG14 (García *et al.,* 2014).

It has been clear that there are strong interrelationships between SDG14 and each one of all the other targets. Some of them may be able to build synergies that may be impacted by their progress or the lack of it. However, as the examples in the tables show, Mexico's actions are variable and depend on the context, scope, design, budget, institutional capacity and implementation in the corresponding area. As tables showed, some of the SDG14 targets are at the receiving end of the interlinkages, and are affected by a number of the other targets. Moreover, it is important to acknowledge that target 14.a benefits many of the other SDG14 targets.

The map of the interlinkages is very complex (Figure 4), since SDG14 targets had to be analysed at individual level due to limited or abundant connections among the targets. The SDG14 targets have between 6 and 10 interactions with other SDGs, so far SDG14.1 presents ten interactions; SDG14.3 and SDG14.4 have eight linkages; SDG14.6 and SDG 14.5 have seven; and SDG14.2, 14.a and 14.b have six interactions. The SDGs receiving more linkages with SDG 14 targets were SDG1 with five, SDG2 with eight, SDG4 and SDG8 with six, and SDG16 with five; showing their importance within the SDG system.

A result of the assessment of the Mexican efforts to address SDG14 targets is that the linkages go in both directions: progressing on some of the SDGs that will impact the oceans and coasts, and by the form of management that may impact the SDGs. Mexico does not have specific regulations to address land nor marine-sources pollution. National planning misses the integrated watershed management for preventing coastal waters pollution, specially from organic municipal runoffs and solid waste. Surveillance and monitoring capacity is limited, and regulations are most of the time not enforced. Therefore, SDG14 implementation is not a one-way path, here there are evidence that all actions implemented will have potential benefits but also negative impacts, and the implications of any action should be taken into consideration. SDG14 requires an integrated approach that may have a bigger picture considering multi-sectorial vision within a dynamic synergy. Challenges posed by agricultural runoffs causing pollution loads and contributing to ocean acidification; or the tipping points and cascading effects of climate change require a wider approach.

At the same time, it is important to acknowledge that some linkages may involve trade-offs and may not

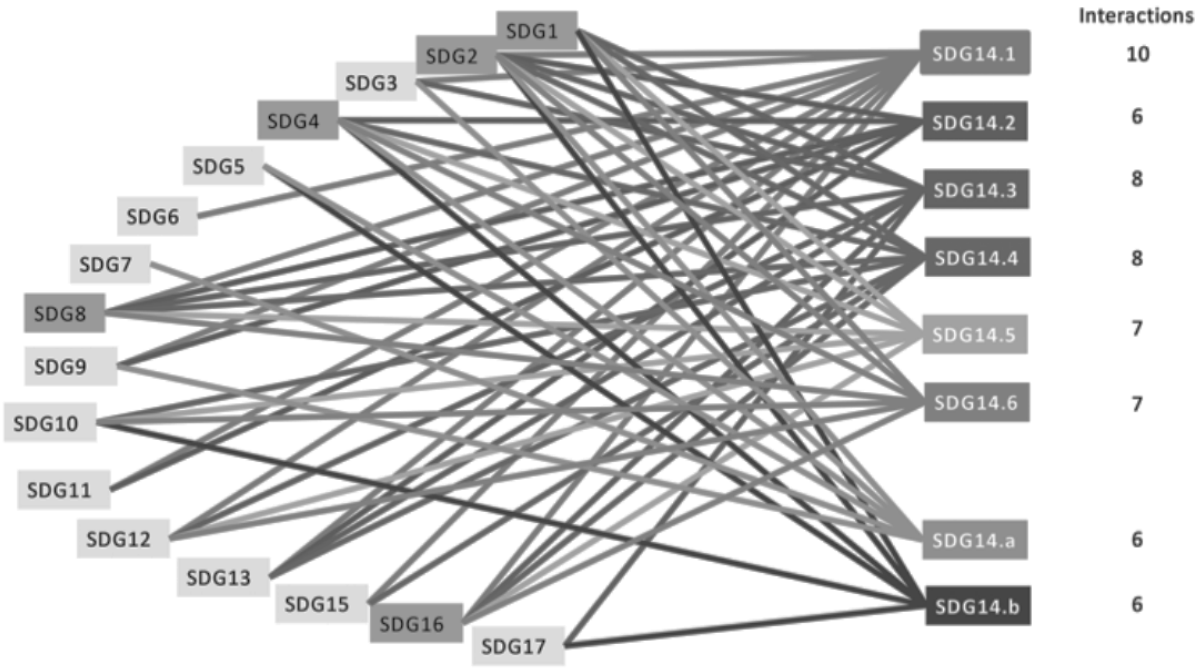


Figure 5. Interlinkages between SDG14 targets and all the other SDGs. Self made graph.

develop a win-win situation, this is the case of poverty, climate change and healthy oceans. Sustainability in Mexico is far from be reached especially for fisheries; and institutional capacity is very limited in implementing and enforcing conservation measures in large marine portions.

The level of complexity showed in the tables (4-10) and figure 3 require a good translation for policy-makers that may feel overwhelmed. However, to simplify would result in making the same mistakes that have been done in the past. To acknowledge that conservation and oceans health is related to a number of social, economic and environmental factors is the correct way to evaluate any connection; and therefore, the integrated management approach is the only way to proceed.

A form to do this is to start with mapping the scientific knowledge about oceans and coasts are there and related each one to each ocean-related target in the agenda, identify gaps and studies that require actualization and database building, monitoring and further analysis. With this mapping it would be easy to evaluate the governmental institutional capacity as well as local governance capacity for each target and with a preliminary diagnosis, proceed to address each target and link.

7. References

Becerra-Pozos L. 2017. Una experiencia de diálogo e incidencia de las OSC en la aprobación e implementación de la Agenda 2030 para el Desarrollo Sostenible. In: Baños Rivas, L.E. y N. Saltalamacchia Ziccardi (comp.) Participación de las Organizaciones de la Sociedad Civil en la Agenda Multilateral de México. Inst. Matías Romero, Sría. Rel. Exteriores, Gobierno de México. 259-279 p.

Birchenough S, Williamson P. and Turley C. 2017. Future of the sea: Ocean acidification. Government of United Kingdom, Office for Science, London. 19 p.

Brander L, Baulcomb A, Cado van der Lelij JA, Eppink F, McVittie A, Nijsten L. and van Beukering P. 2015. The Benefits to People of Expanding of Marine Protected Areas, IVM Institute for Environmental Studies, Amsterdam. http://assets.wnf.nl/downloads/mpa_rapport_volledig.pdf (Accessed on May the 17th, 2018)

Brújula de Compra PROFECO, 2007. https://www.profeco.gob.mx/encuesta/brujula/pdf-2007/El%20consumo%20de%20pescados%20y%20mariscos.pdf (Accessed on May the 31st, 2018)

Cisneros-Montemayor AM, Sanjurjo E, Munro GR, Hernández-Trejo V. & Rashid Sumaila U. 2016. Strategies and rationale for fishery subsidy reform. *Marine Policy*, 69: 229-236. https://doi.org/10.1016/j.marpol.2015.10.001

CONAGUA. 2017. Inventario de plantas de tratamiento de aguas residuals (PTAR) (2016). https://agua.org.mx/biblioteca/catalogo-plantas-tratamiento-aguas-residuales-ptar-2016/ (Accessed don June the 20th, 2018)

CONAPO. 2018. Estadísticas poblacionales de México https://www.gob.mx/conapo (Accessed on May the 22nd, 2018)

Convention on Biological Diversity (CBD). 2014, Global Biodiversity Outlook: A mid-term assessment of progress towards the implementation of the Strategic Plan for Biodiversity 2011-2020, Montreal.

ECOSOC. 2017. Progress towards the sustainable development Goals. Report of the Secretary-General E/2017/66* http://www.un.org/ga/search/view_doc.asp?symbol=E/2017/66&Lang=E (Accessed on May the 16th, 2018)

Espinosa-Romero MJ, Torre J, Zepeda JA, Vergara-Solana FJ. & Fulton S. 2017. Civil society contributions to the implementation of the small-scale fisheries guidelines in Mexico. MARE Publication Series, vol. 14.

DOF. 2016. Programa Nacional de Investigación Oceanográfica, 05/07/2016 http://www.diputados.gob.mx/LeyesBiblio/dof/2016/jul/DOF_05jul16.pdf (Accessed on May the 17th, 2018)

Fanning L, Mahon R, Baldwin K. & Douglas S. 2015. Transboundary Waters Assessment Programme (TWAP) Assessment of Governance Arrangements for the Ocean, Volume 1: Transboundary Large Marine Ecosystems. IOC-UNESCO, Paris. IOC Technical Series, 119: 80 pp.

Fanning L, & Mahon R. 2017. Implementing the Ocean SDG in the Wider Caribbean: state of play and possible ways forward, IASS, IDDRI, TMG

FAO. 2005. Increasing the contribution of small-scale fisheries to poverty alleviation and food security. FAO Technical Guidelines for Responsible Fisheries. No. 10. Rome, FAO. 79 p.

FAO. 2011. Fisheries management. 4. Marine protected areas and fisheries. FAO Technical Guidelines for Responsible Fisheries. No. 4, (Suppl. 4) Rome, FAO. 198p

FAO. 2015. Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, Rome, 23 pp. http://www.fao.org/3/i4356es/I4356ES.pdf (Accessed on May the 17th, 2018)

FAO. 2016a. The State of the World Fisheries and Aquaculture, contributing to food security and nutrition for all. Rome, 200 pp. ISBN 978-92-5-109185-2 http://www.fao.org/3/a-i5555e.pdf (Accessed on May the 17th, 2018)

FAO. 2016b. Technical and Socio-economic characteristics of small-scale coastal fishing communities, and opportunities for poverty alleviation and empowerment. FAO Fisheries and Aquaculture Circular. FAO Rome.

FAO. 2017. FAO Regional Office for Latin America and the Caribbean. Note on the High-Level International Meeting on the Global Blue Growth Initiative for Latin America and the Caribbean, Mexico City, 27-28, November, 2017. http://www.fao.org/americas/eventos/ver/en/c/1041590/ (Accessed on May the 17th, 2018)

Gattuso JP, Brewer PG, Hoegh-Guldberg O, Kleypas JA, Pörtner HO, & Schmidt DN. 2014. Cross-chapter box on ocean acidification. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 129-131.

Heaton SW. 2013. Mexico's attempt to extend its continental shelf beyond 200 nautical miles serves as a model for the international community. Mexican Law Review, vol. 5(2) http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1870-05782013000100008 (Accessed on June 8th, 2018).

INEGI. 2015. Estadísticas Nacionales http://www.inegi.org.mx/ (Accessed on May the 22nd, 2018)

Le Blanc D., Freire C. & Vierros M. 2017. Mapping the linkages between oceans and other sustainable development goals: A preliminary exploration. Working Paper No. 149 UNDESA, Coastal Environmental Policy and Humanities Initiative, ST/ESA/2017/DWP/149, 34 p.

Mahon R, Fanning L, Akrofi J, Bertule M, DeStefano L, Forslund A, Glennie P, Heileman S, Talaue McManus L, Nijsten GJ, Rast W. & Uusimaa K. 2016. Comparison of Governance Assessments Conducted by the Transboundary Waters Assessment Programme Components. United Nations Environment Programme, Nairobi. x- 46 pp.

Makarow M, Ceulemans R. & Horn L. 2009. Impacts of ocean acidification. European Science Foundation, *Science Policy Briefing,* 37:1-12.

Melnychuk MC, Peterson M, Elliott M. & Hilborn, R. 2017. Fisheries management impacts on target species status. P*roceedings of the National Academy of Sciences*, 114(1): 178-183.

Moreno A, Bourillón L, Flores E. & Fulton, S. 2017. Fostering fisheries management efficiency through collaboration networks: the case of the Kanan Kay Alliance in the Mexican Caribbean. *Bull. Of Marine Science,* 93(1): 233-247. https://doi.org/10.5343/bms.2015.1085

Newton JA, Feely RA, Jewett EB, Williamson P. & Mathis J. 2015. Global Ocean Acidification Observing Network: Requirements and Governance Plan. Second Edition, GOA-ON, http://www.goa-on.org/docs/GOA-ON_plan_print.pdf.

OECD. 2006. Agricultural and fisheries policies in Mexico: Recent achievements, continuing the Reforma agenda. Multilingual summaries, Summary in English. https://www.oecd.org/tad/39098498.pdf (Accessed on June the 8th, 2018)

OECD. 2017. Marine Protected Areas: Economics, Management and Effective Policy Mixes, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264276208-en (Accessed on May the 17th, 2018)

Política Nacional de Mares y Costas de México (PNMC), Gestión integral de las regiones más dinámicas del territorio nacional. 2015. SEMARNAT, 81 p. http://www.biodiversidad.gob.mx/pais/mares/pdf/A4_PNMC_actualizada_dic2015.pdf (Accessed on May the 22nd, 2018)

Ramírez-Rodríguez M. 2011. Data collection on the small-scale fisheries of Mexico. *ICES Jour. Of Marine Science*, 68(8):1611-1614, https://doi.org/10.1093/icesjms/fsr089

United Nations. 2013. Blue Economy Concept Paper. https://sustainabledevelopment.un.org/content/documents/2978BEconcept.pdf (Accessed on the 4th June, 2018)

United Nations. 2016. United Nations Multi-Country Sustainable Development Framework in the Caribbean. https://www.unicef.org/about/execboard/files/UNDAF-MSDFCaribbean. (Accessed on the 31st May, 2018)

United Nations. 2016. The First Global Integrated Marine Assessment: World Ocean Assessment I, by the Group of Experts of the Regular Process, New York.

United Nations. 2017. Secretary-General's note for the conference on the implementation of Sustainable Development Goal (SDG 14), "Conserve and sustainably use the oceans, seas and marine resources for sustainable development.", New York, January.

United Nations. 2018. Sustainable Development Goals. Goal 14: Conserve and sustainable use the oceans, seas and marine resources. https://www.un.org/sustainabledevelopment/oceans/ (Accessed on January the 15th, 2018)

UNEP. 2011. Towards a Green Economy: pathways to sustainable development and poverty eradication (a synthesis for policy makers), United Nations Environment Programme, Nairobi. https://sustainabledevelopment.un.org/content/documents/126GER_synthesis_en.pdf (Accessed on May the 17th, 2018)

UNEP. 2016. Transboundary water systems – status and trends: Crosscutting analysis. United Nations Environmental Programme, Nairobi. 54 p.

UNDP. 2012. Catalysing Ocean Finance Volume I Transforming Markets to Restore and Protect the Global Ocean, United Nations Development Programme, New York. http://www.undp.org/content/undp/en/home/librarypage/environment-energy/water_governance/ocean_and_coastalareagovernance/catalysing-ocean-finance.html (Accessed on the 17th May, 2018)