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NACIONAL POLICY FOR THE OCEAN AND THE COASTAL SPACES

PNOEC



NACIONAL POLICY FOR THE OCEAN AND THE COASTAL SPACES

PNOEC

Colombian Ocean Commission

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NATIONAL POLICY FOR THE OCEAN AND
COASTAL SPACES PNOEC

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Presentation

Colombia is a country of immense riches, it has coasts in two oceans, its location in an equatorial zone and the influence of the Andes mountain range makes for multiple and varied environments where manifestations of life are exultant. Jungles, moors, corals, mangroves and perpetual snow are part of this diversity, landscapes and places with a number of resources. But without a doubt, the oceans are one of the main riches of the nation and the activities that take place there are transcendental. The challenge as a country is to achieve the fulfillment of two objectives that in the light of sustainability should not seem mutually exclusive: the economic development of human groups and the conservation of marine wealth and biodiversity.

Hence, the need to take advantage of the immensity of the ocean and its resources in the face of the commercial, industrial and scientific opportunities and dynamics of the Caribbean Sea and the Pacific Basin, which constitute strategic axes of development for the country and that project the Nation to the world.

In this way, the Colombian Ocean Commission (CCO) promotes sustainability, integral development, competitiveness of the ocean and its coasts, the reach of national maritime interests and the insertion in new international scenarios. All of these through the articulation, coordination and harmonization of State actions, which is why the new version of the National Oceanic and Coastal Spaces Policy (PNOEC) for the period 2016-2030 is presented, a document that projects the path of Colombia towards being a Medium Oceanic Power (MOP), through guidelines for cooperation and integration in marine affairs, economic development, sustainable use of resources, ordering of the marine-coastal territory, protection of biodiversity and the defense of sovereignty; always seeking the welfare of Colombians.

Finally, achieving the purpose of being a MOP requires comprehensive actions that commit the institution to work in a coordinated manner to strengthen productivity and take advantage of marine-coastal spaces in a sustainable manner, under a clear integral framework that avoids duplication of efforts, and that at the same time rewards the populations that live in the ocean environment in terms of well-being and quality of life.

In this way, Colombia will continue to take firm steps in the context of a peaceful country, in which new and diverse development opportunities are opened within the framework of an innovative policy, which also turns out to be the starting point of a paradigmatic change in approaches as traditionally the country has dealt with maritime affairs.



GR. (RETIRED) ÓSCAR NARANJO TRUJILLO
President of the Colombian Ocean Commission
Vice President of the Republic

Introduction

In 2000, by means of Decree 347, the Colombian Oceanography Commission was restructured, adopting the name of the Colombian Ocean Commission (CCO), which has as a function “to propose to the National Government a National Policy for Oceanic and Coastal Spaces, for their administration and sustainable development, carrying out the necessary inter-institutional and intersectoral coordination” (Decree 347, 2000). The above, considering the strategic dimension offered by the ocean and coastal spaces of the Colombian State and the need to take advantage of them in a sustainable manner.

In this way, within the framework of the COC since 2002, the Guidelines for the National Policy for the Ocean and Coastal Areas (LPNOEC) were designed, establishing itself as a starting point for the design and adoption of a State policy that allowed identifying the main problems and needs of the regions (Caribbean-Pacific); and suggested comprehensive strategies for the competitive and effective development of the country through them. This is how, since 2007, Colombia has had a policy instrument that responds to the need to take on the ocean from an integral, systemic and total perception, which has achieved international transcendence and recognition.

The document “*National Policy of the Ocean and Coastal Spaces (PNOEC)*” gathered national initiatives and realities embodied in the various sectoral policies related to marine, coastal and maritime issues and was concerned with generating guidelines related to the knowledge, use and exploitation of the resources of the country in its oceanic and coastal spaces, under the principles of sustainable development, inter-institutional and inter-sectoral work and respect for international maritime regulation, considering the need to progress in processes of protection of the marine environment.

Given the continuous evolution of global dynamics around maritime and oceanic issues, it is pertinent for the Colombian State and its entities to reformulate strategies in order to increase the country’s competitiveness through the development of its marine resources. Hence, during the years 2014, 2015 and 2016, the PNOEC has been updated. This process is a cooperative effort of several public and private entities led by the Executive Secretary of the Colombian Ocean Commission (SECCO) that allows to present the new PNOEC aimed at consolidating Colombia as a PMO.

With the above, the process of construction and coordination of the new PNOEC was focused on strengthening comprehensive strategies that minimize the problems of marine-coastal areas, while promoting the use, conservation of resources and sustainable use of the ocean, recognizing that they translate into a potential axis of economic, social and cultural development for the Country.

This new policy was projected with a vision to 2030, and will seek the promotion of the National Maritime Interests, the appropriation and recognition of the maritime territory, the sustainable use of the resources, the conservation of the environment, the ordering and governance of the territory, the permanent vigilance and control of the jurisdictional spaces, and the growth and competitiveness of the sectors that develop maritime activities, safeguarding the resource for current and future genera-

tions, increasing the quality of life of the inhabitants of coastal areas and promoting national development. This renewed approach also incorporates scenarios of multilateral participation and concepts such as “Blue Economy” and “Integral Maritime Security” as tools for managing this source of life and energy that represents the ocean.

The PNOEC presents a robust structure as it is considered as an element that allows the integral direction of the activities that revolve around the marine coastal zones; In this way, the conceptual and methodological formulation developed in the document is as follows:

Thematic Area: Area in which topics related to each other are identified or grouped.

Strategy: Refers to the development of a specific topic within the thematic area.

Line of Action: General guidelines that are developed within each strategy according to the needs and/or priorities that may arise.

That being said, the PNOEC has five (5) thematic areas: Integrity and Projection of the Maritime Territory, Economic Development, Strengthening of Marine-Coastal Governance, Sustainable Use of Marine Biodiversity and Culture, Education and Maritime Sciences; which in turn are divided into 21 specific strategies. The latter consider for their development and fulfillment lines of action, that with the articulation and participation of the public, private and academic sector, contribute to the sustainable development of the country.

Finally, this policy constitutes one of the instruments through which the development and strengthening of marine-coastal issues is projected in the short, medium and long term, considering thereby increasing the quality of life for the peoples that are settled in the coastal areas. The foregoing, with the integration of different strategies in face of the challenges of a dynamic and changing world, understanding that there are great opportunities for innovation and industrial growth, in which the country has great potential.



1 The Importance of an Ocean Policy

The interest of States in ocean affairs has increased considerably since the 1960s. Specific conditions such as the increase in economic flows, the search for new offshore energy resources, access and consolidation of protection mechanisms for marine resources in a sustainable manner, have been gaining importance on the relevant topics of the global agenda.

Figure A1, refers to the 2015 Report on maritime transport developed by the United Nations Conference on Trade and Development (UNCTAD), demonstrates a direct correlation between the World Gross Domestic Product, Maritime Transport and world Trade. (United Nations Conference on Trade and Development, 2015).

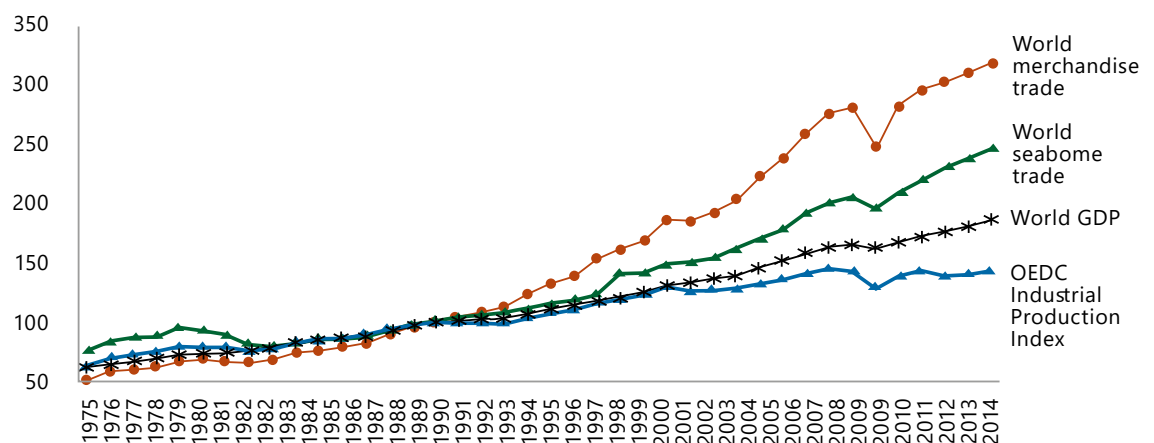


Figure A1. Index of Industrial Production of OECD Countries, World GDP, Maritime Transport and World Trade 1995 to 2014. Note: Maritime Transport Review 2015 UNCTAD.

The phenomenon of globalization as a dynamic element of this process led to the fact that maritime traffic routes nowadays constitute the main arteries of international trade, with a 90% participation.

Considering the above, the States have found it necessary to implement mechanisms, procedures and guidelines that are expeditious, unified and binding within the internal normative order, which are adjusted to the vision of *sustainable growth*.

From these special conditions it can be inferred that, at present, as never before in history, the coastal States are called to be preponderant actors in the international scenario; nevertheless, all this will depend on an adequate administration, direction, protection and projection of their coasts and maritime spaces.

Walter Raleigh in the seventeenth century said: "whoever owns the sea owns the world", this idea takes on a special significance in our times, given that the States that have the strategic will to guarantee: security, the development of the economy, the protection of the environment and the information flows in the maritime field, will have at their reach the achievement of great levels of development.

International Context

Several nations have gone through this historical juncture, which implies giving a strategic direction to their maritime development, and for this purpose they have made progress in the preparation of base documents. Countries such as China, the United States, France and Portugal have developed ocean policies in which they recognize its significant contribution to sustainable development, linked to the promotion of maritime activities and socio-cultural development. In them, an integral approach is established to ensure the balance between economic activities and the conservation of resources. The orientation that some of the main maritime powers of the world have given to their ocean policies will be briefly explained below:

United States

In its interest to maintain an effective global presence, to protect their own interests, to maintain world peace and combat threats outside their territory, the United States has prioritized maritime issues in their foreign policy; mainly, it is oriented towards the construction of strategies that contribute to the stability of their economy through the free development of maritime trade and the continuous acquisition of energy and resources in regions such as the Middle East and Central Asia. In the same way, they have encouraged actions aimed at the protection and conservation of the ocean and coastal areas in favor of the economic activities that are generated there (The White House, 2013).

European Union

The Integrated Maritime Policy of the European Union (EU) seeks to strongly influence the issues of the ocean through sustainable sea governance, with the purpose of safeguarding the economic and social interests of the union. All this through the construction of synergies between the member countries, which articulate the policies already established in the maritime sphere, creating scenarios for multilateral dialogue between the parties in the search for consensus. (European Commission, 2015). With the development of an Integrated Maritime Policy, the EU seeks to face

the challenges that involve the processes of globalization, climate change, energy security, protection of the environment and maritime safety. (Council of the European Union, 2014).

China

Considering the global macroeconomic environment, the competition for international markets and the strategic projection of Asia-Pacific, since the beginning of the 21st century, the People's Republic of China emphasized the strengthening of naval power and the design of strategies aimed at the development of the maritime economy. To do this, they leaned on integrated and sectoral governance, implemented through programs and actions of various national agencies related to the ocean. This exercise covered important aspects such as: integrated ocean management, administration of the river-sea-land trinomial, based on the carrying capacity of the environment; waste reduction, recycling, the promotion of ocean culture and awareness of sea affairs. (State Environmental Protection Administration, 2006).

Therefore, four key factors for the maritime development of nations are glimpsed: the first is a commitment by the institutions of the States to an integrated action on ocean issues; the second, the establishment of global synergies for the projection and protection of the seas; the third is the strengthening of the Naval Power, since, as mentioned by the British historian Geoffrey Till, *"the sea is the center of the prosperity and security of all nations"*, so having the right means to exercising naval power is a paramount task. Finally, there is the development of science and technology, a key element for the progress of nations.

Considering the importance of having an ocean policy and the factors required for its execution, Colombia must take into account the following in order to position the country as PMO:

1. Commitment of State institutions for an integrated action on ocean issues, which is structured among others through the actions and tasks included in the PNOEC Plan of Action.
2. Integral territorial order for the improvement of the well-being of the inhabitants.
3. Establishment of global synergies in favor of an active presence in international scenarios involving the ocean issues (participation in related international organizations, development of research in Antarctica, support for global security missions, strengthening of regional mechanisms on the sea, among others).
4. Strengthening of the nation's Maritime Power (Maritime Interests and Naval Power), taking advantage of Colombia's excellent geostrategic position at the regional and global levels, to use the sea and coastal areas for the benefit of the country's development and the well-being of the society.
5. Promotion of the seas and maritime activities as an engine of national economic development integrated into the global dynamics of the blue economy.
6. Conservation and sustainable use of the biodiversity of the marine environment, directed towards sustainable development.
7. Strengthening of education programs on maritime issues, aimed at the development of science and technology at sea.



COOTRANSPINUNA LTDA



2 How are We in Terms of Maritime Development?

Colombia has 3,189 km of coastline, covering 12 departments and 49 municipalities, 4 archipelagos, at least 100 islands, 17 cays, 42 bays, 5 gulfs (Dimar, 2005), an extension of 2,860 km² of coral areas (INVEMAR, 2014) and in general, 928,660km² of maritime territory (CCO, 2015). Additionally, it has strategic ecosystems, such as coral reefs with 300,000 hectares and mangrove areas with 378,938 hectares in its maritime and insular coastal zones. A brief description of the socio-economic scenario of the Caribbean and Pacific region will be made below.

Caribbean Region

The Caribbean Region has a population of 10.2 million people, which represents more than one fifth (22%) of the country's population. The main economic activities take place in the main capitals of the region (Barranquilla, Cartagena, Santa Marta) that show a significant level of development; while the rest of the towns and municipalities present great economic challenges. The foregoing is reflected in the levels of education, human capital formation, poverty, access to housing, among others (National Planning Department, 2014).

One of the most striking features is the high incidence of poverty in terms of income inequality. 56.8% of households are considered poor in the region, according to the Quality of Life Survey (QLS), prepared by DANE in 2013. According to official figures, "the percentage of people below the poverty line in the region is greater than that in the departments located in the interior of the country" (DANE, 2013). There is a high percentage of illiteracy, where 10.4% of people over 15 years of age cannot read or write. With regard to basic public utilities, the inhabitants of remote areas usually lack coverage of some of them.

Despite this reality, the Colombian Caribbean contributes 15% to the national GDP, given that it has an enormous advantage because it is the gateway for the entry and exit of foreign trade. Its contri-

bution to the country's economy is abundant in non-renewable natural resources, inasmuch as it produces 90% of the country's coal, it contributes 72% of the gas that is offered to the national and foreign market, according to the Ministry of Commerce, Industry and Tourism. In addition, seven (7) of the country's port areas are located in the region, namely: Barranquilla (Atlántico), Cartagena (Bolívar), Ciénaga (Magdalena), Coveñas (Sucre), Puerto Bolívar (La Guajira), Santa Marta (Magdalena), where, in 2014, 89 million tons of cargo were mobilized, representing 90% of the country's total port cargo (Mouthon, 2014). In fact, in 2015, 20% of Colombian exports came from the productive sector of the Caribbean Region (Ministry of Commerce, Industry and Tourism, 2015), of which 59% of exports were energy mining products and 26% industrial products (García Lacouture, 2015).

In the Caribbean region, special mention should be made of the insular area of the San Andrés Archipelago, Providencia and Santa Catalina department, which has a unique variety of ecosystems integrated into the Seaflower Biosphere Reserve, as well as the categorization of a significant portion of its territory as a Protected Marine Area. Based on the information presented by the Government of San Andrés, the economy of the archipelago is based mainly on tourism, commerce and emerging sectors (telecommunications, outsourcing). Fishing and agriculture are activities carried out on a smaller scale. However, although tourism consolidates as a basis for the economy and has a free port, its contribution to GDP has not been greater than 0.1%.

The above, is presented as a large socioeconomic gap. According to the QLS, on the island of San Andrés, 42% of households are considered poor. Something very similar to what the Index of Unsatisfied Basic Needs (NBI) indicates, in which the population of the island has a 40.84% dissatisfaction in issues such as the provision of public utilities, a health system that does not operate adequately, low educational levels, with an illiteracy rate of 1.4%, and very few opportunities for higher education (National Administrative Department of Statistics & Bank of the Republic, 2015).

Pacific Region

The Colombian Pacific is made up of four departments: Valle del Cauca, Nariño, Chocó and Cauca. It has a population of 7.9 million, which represents 17% of the country's total population. This territory is characterized by its immense biodiversity, abundance of water, confluence of ethnic groups and privileged location in the Pacific basin.

This zone shows development in the main capitals of the departments, with the exception of Quibdó, capital of the department of Chocó. The departments within the region have a great business and economic activity. The coastal region has a great environmental diversity and the main economic activities are artisanal fishing, commerce, and mining (National Planning Department, 2014).

Given these conditions, the Colombian Pacific has dissimilar levels of development. Suffice it to mention that the level of poverty in these departments is 41%, being among the highest in the country. In terms of illiteracy, the rate for the Pacific region reaches a worrying 11.89%. According to the ECV, 85% of the population has unsatisfied basic needs, and the unemployment rate was 12.8% during the first semester of 2013 (DANE, 2013). Thus, the Pacific is perhaps the region of the country where the greatest number of social, economic and infrastructure challenges are presented.

This region ranks fourth in terms of contribution to national production, with a 13.4% share of national GDP, thanks to the development of activities such as mining, construction, transport, commerce, financial services, social services, manufacturing, which accounted for 73 percent of regional GDP in 2011. With respect to the growing tourism in the region, it should be noted that the Pacific Region

has marine ecosystems, mangrove ecosystems and protected areas, known in the world as large natural habitats.

From the Pacific area, the Malpelo Flora and Fauna Sanctuary, which is located approximately 500 kilometers from the port of Buenaventura, deserves special mention. It was declared a Natural Patrimony of Humanity in 2006 by UNESCO and today is the ninth largest marine protected area in the world (National Natural Parks, 2016).

Thematic Diagnosis

The diagnosis will be carried out below taking into account the thematic areas established in this policy, thus: Sovereignty and Territory Integrity, Economic Development, Strengthening of Governance, Sustainable Use of Biodiversity and Maritime Culture, Education and Maritime Science.

2.1. Diagnosis Territory Integrity and Projection

2.1.1. International Affairs

Colombia has had an important participation in the international scene regarding ocean issues, mainly since the second half of the 20th century. With the participation of the naval component in the Korean War between 1950 and 1953, the country demonstrated its intention to contribute to the solution of global problems and preserve democratic values. In the same way, and in order to maintain security in the region, in the year 1960 the country was part of the first "Operation UNITAS", using the means and capabilities of the National Navy (ARC); since then, the ARC "has participated in an uninterrupted manner in that operation, conserving a tradition of international accompaniment in the planning of exercises aimed at the development of the Naval Forces and the defense of the American continent" (Navy of the Republic of Colombia, 2014).

In the decade of the sixties, and thanks to the development of new technologies, the issues of the sea have been becoming more relevant worldwide. This is how, since the year 1968, the UNESCO Intergovernmental Oceanographic Commission (IOC) has been working to identify and protect marine biodiversity, it investigates and observes the effects of climate change on the oceans, coordinates warning systems against tsunamis and proposed to the countries of the Caribbean Basin to carry out a program of marine scientific research, which was called the Cooperative Research Program of the Caribbean and Adjacent Regions (CICAR) (UNESCO, 1979).

The country demonstrated then the need to create an effective mechanism of coordination at the national level, in order to execute a "Plan of research and development of the sea" in accordance with national interests. In this way, the Colombian Oceanography Commission was created in 1969, with the aim of integrating the country into the study of the seas worldwide, especially in the fields of scientific research and the transfer of marine technology. Since joining the IOC, Colombia has been an active member, constituting the COC as the focal point of this international organization. The work developed with the IOC has been vital to strengthen cooperation mechanisms in maritime issues, thanks to the outstanding performance in the development of marine scientific research and in the development of a National Policy of the Ocean and Coastal Spaces, which is recognized by UNESCO (Intergovernmental Oceanographic Commission, 2007).

De la misma manera, y de la mano de la evolución de los temas del mar a nivel internacional, el país ha participado en diversos programas globales relacionados con los Océanos, tales como el Instituto Cooperativo para Aplicaciones e Investigaciones Climáticas (CICAR) y Estudio Regional del Fenómeno El Niño (ERFEN); Proyectos y Programas de la Década Internacional para la Exploración Oceánica (IDOE); el Programa de las Naciones Unidas para el Desarrollo (PNUD); Programa de las Naciones Unidas para el Medio Ambiente (PNUMA); Organización Marítima Internacional (OMI); Organización Hidrográfica Internacional (OHI); Organización Meteorológica Mundial (OMM); Organización Internacional del Trabajo (OIT) y la Comisión Permanente del Pacífico Sur (CPPS) (Dirección General Marítima, 2016).

In the same way, and in line with the evolution of sea issues at the international level, the country has participated in various global programs related to the Oceans, such as the Cooperative Institute for Climate Applications and Research (CICAR) and Regional Study of the El Niño Phenomenon (ERFEN); Projects and Programs of the International Decade for Oceanic Exploration (IDOE); the United Nations Development Program (UNDP); United Nations Environment Program (UNEP); International Maritime Organization (IMO); International Hydrographic Organization (OHI); World Meteorological Organization (WMO); International Labor Organization (ILO) and the Permanent Commission of the South Pacific (CPPS) (General Maritime Directorate, 2016).

In this regard, it is necessary to highlight the issues related to the IMO and the CPPS. In relation to the IMO, Colombia has ratified thirteen international instruments of this organization, concerning the safety of human life at sea, the protection of the marine environment, maritime protection, the facilitation of maritime transport, the training and titling of the people of sea and the schemes of civil responsibility and compensation related to pollution of the marine environment.

Regarding the CPPS, the programs of ERFEN¹ and the Regional Oceans Observation Alliance of the Southeast Pacific (GRASP Alliance) are articulated. The CPPS acquires relevance for the country by being a regional maritime system, of strategic, political and operational alliances in the Southeast Pacific, consolidating the presence and interests of the coastal countries in this geographical area (General Secretariat South Pacific Permanent Commission, 2012).

Additionally, since the 1970s, the country has focused its actions on the protection of the marine environment by adhering to the International Convention for the Prevention of Pollution from Ships (MARPOL) of 1973, and its Protocol of 1978. In the eighties, thanks to the work developed by the COCand with the aim of promoting marine issues in the region, through Law 76 of 1988, the Government signed an Agreement with the United Nations Organization for Science, Education and Culture (UNESCO), through which the establishment of the Headquarters of the IOC Subcommittee for the Caribbean and Adjacent Regions (IOCARIBE) was approved, in the city of Cartagena. From this office, the topics related to scientific research, data collection and the consolidation of international cooperation among the countries of the region are strengthened.

In the nineties, environmental issues were strengthened, which led to the development of the aspects related to the 1992 Rio de Janeiro Summit, the Framework Convention on Climate Change, the Basel Convention for transboundary hazardous wastes, the Convention Relative to the Inter-American Information Association for Global Change, and the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region and its Protocol on Areas of Wild Fauna and Flora specially protected.

1 The Protocol on the Program for the Regional Study of the El Niño Phenomenon in the Southeast Pacific-ERFEN, was signed by the member states of the CPPS: Chile, Colombia, Ecuador and Peru, on November 6, 1992 in Callao, Peru; and which aims to: predict oceanic-atmospheric changes, with sufficient anticipation to allow adaptation or emergency policies against variations in fishing, agricultural and industrial performance and marketing decisions, management of hydrobiological resources and others.

On the other hand, all the experience acquired in different maritime scenarios globally has contributed substantially to the realization of joint and combined actions in the ocean affairs. Proof of this is the strengthening of naval cooperation, with the signing of agreements with organizations and institutions in Argentina, Brazil, Chile, Costa Rica, Ecuador, El Salvador, the United States, France, Guatemala, Mexico, the Dominican Republic, Panama, Peru, Venezuela, among others.

The above, has led to the strengthening of bilateral relations and the insertion of the country on maritime cooperation initiatives, such as: planning and execution of the "BRACOLPER" operation, which has allowed to preserve and protect the main ecosystem in the world for more than 40 years; participation in the world's largest naval exercises operation: Rim of the Pacific (RIMPAC); participation in the operation Panamax designed since 2008 to protect and secure the Panama canal, strategic point for world trade; participation in operation Atalanta, in the year 2015, in order to protect vessels of the United Nations of the World Food Program and combat piracy (Republic of Colombia Army, 2014).

However, in terms of the seas, the task is just beginning. Much remains to be done in order to develop the country maritimately, taking into account an international perspective. The ocean represents approximately 70% of the land surface of the earth, which is why it becomes a main focus of attention in research, conservation, security, progress and legislation.

2.1.2. Antarctic Affairs

Antarctica includes the territories that lie between the 60th parallel and the most extreme point south of the planet; It has an area of approximately 14,500,000 square kilometers and is home to approximately 80% of the earth's freshwater reserves. Likewise, it is cataloged as one of the main regulators of the global climate where all the oceans converge, from the waters that border the Colombian Pacific, to the Caribbean Sea that contributes its waters to the Atlantic Ocean. In this sense, the importance of consolidating an effective presence in the southern continent lies in understanding the connections that the country has with this territory (National Technical Committee for Antarctic Affairs, 2015).

Since the early 1980s, Colombia showed interest in the White Continent. This is evidenced by the participation of Colombians in different expeditions to the Antarctic, which in the framework of international cooperation, managed to embark on journeys undertaken by countries such as Chile, China, Ecuador, the United States, France, India and Peru. Thanks to this and the experience gained, it was generated that from institutions such as the COC and the Colombian Academy of Exact, Physical and Natural Sciences (ACCEFYN), a series of recommendations were made to the National Government aimed at promoting the insertion of the country in that important area of the planet. It is necessary to project national interests with futuristic mentality and not eradicating definitively the Mediterranean vocation that has characterized us through history, without being aware of the possibilities we have in time and space (Vargas, 2003).

It is then, that within the Government, the importance of the white continent (Senate of the Republic, 1990) was glimpsed, and through Law 67 of 1988, Colombia ratified the Antarctic Treaty of December 1, 1959, and thereby manifested to the world the interest of contributing to the maintenance of peace, the exclusive use of that continent for peaceful purposes and the promotion of scientific research and international cooperation.

As a consequence, and through Decree 1690 of 1990, the National Commission for Antarctic Affairs (CN AA) was created as advisory body of the National Government for this matter. In the same way,

the COCand the ACCEFYN were designated as the entities in charge of the planning and coordination of the programs and projects of Colombia in the Antarctic Continent.

Under that framework and until the beginning of the 20th century, the country oriented activities in the Antarctic towards international cooperation. This was evidenced in the continuous participation in international meetings concerning the STA and in scientific expeditions from other countries.

In 2009, within the CCO, through Resolution No. 001 the National Technical Committee for Antarctic Affairs (CTN AA) was created. From that moment, the themes of the White Continent took a new direction in the country, since the challenge of preparing, articulating and projecting the national institutionalism was assumed to have a more significant role in the STA.

This is how the Antarctic Scientific Agenda of Colombia 2014-2035 was built in 2013, which is the road-map for the planning, development and evaluation of scientific research and technological innovation of the country in Antarctica. Within the thematic areas of the Agenda are: maritime transport and the naval industry; development of knowledge in geography, hydrography, oceanography and cartography; maritime security; relations between South America and Antarctica; biodiversity of Antarctic organisms; marine, coastal and continental ecosystems; climate change and climate evolution; adaptations to the Antarctic environment and the environment and other initiatives.

Within the framework of the XXXVI Antarctic Treaty Consultative Meeting (ATCM), held in Brussels, Belgium, from May 20 to 29, 2013, our Country presented the document "IP 104", announcing to the other members of the Antarctic Treaty, the intention of conducting the First Scientific Expedition of Colombia to Antarctica. In the same way, in the month of December of that year, during the XIII Conference of the Antarctic Hydrographic Commission, representatives of the General Maritime Directorate (DIMAR) expressed the interest of contributing to the Antarctic maritime security, through the contribution to other countries in the acquisition of bathymetric information and elaboration of nautical cartography, receiving the support of the countries participating in the meeting

All of the above was part of the Colombian Antarctic Program (PAC), a document that guides the actions that the country has to undertake on the White Continent, with the purpose of potentializing research, positioning the country in the Antarctic scenario, protecting, conserving and maintaining peace in this area of the planet, exchanging scientific information, and seeking the transfer of technical knowledge.



Scientific Expeditions to the White Continent

The first Scientific Expedition of Colombia in the Antarctic "Caldas Expedition" was carried out during the austral summer 2014-2015, named in honor of our hero Francisco José de Caldas, scientist, military and geographer of the 19th century. The expedition was developed on board of the ship of the National Navy ARC "20 DE JULIO" which was designed and built by the shipyards of the Corporation of Science and Technology for the Development of the Naval, Maritime and Fluvial Industries (COTECMAR) in the city of Cartagena. DIMAR adapted said vessel as a research platform, through the construction and installation of an oceanographic laboratory, the installation of a bathymetric echo sounder and the construction and installation of a platform for the maneuver of launching scientific equipment.

More than 100 Colombians participated in the expedition among the ship's crew, scientists and coordinators. 9 research projects were developed covering 4 thematic areas of the Antarctic Scientific Agenda, which allowed the country to have the first data to carry out studies on biodiversity and Antarctic organisms; marine, coastal and continental ecosystems; climate change and climate evolution, and adaptations to the Antarctic environment; oceanography, hydrography, and engineering. Likewise, we contributed to the knowledge of the geographical area of the Strait of Gerlache in the Antarctic Peninsula, where until now there was no detailed information on the ocean floor. In addition, the planning and development activities of the "Caldas Expedition" received the support of the Antarctic programs of Ecuador, Peru, Argentina, Brazil and especially of Chile, which through its Navy, supported the expedition operationally through accompaniment of naval officers, offering navigation training in the Antarctic, meteorology, diving in polar waters and provision of nautical cartography.

Based on the success and positive results of the I Expedition, the COCand the ARC then coordinated the development for the austral summer 2015-2016, the second Scientific Expedition of Colombia to Antarctica "Almirante Lemaître", in recognition of one of the members of the first contingent of Naval Officers of the ARC, who forged the foundations of national maritime education through the Naval Academy of Cadets "Almirante Padilla", raising the pillars for scientific research to be developed today in Antarctica.

The second Expedition was made thanks to the international cooperation ties established with countries such as Argentina, Chile, Ecuador and Italy; Likewise, it counted with the participation of 14 national institutions, which contributed with 24 researchers, who developed 16 projects framed in 10 lines of research embodied in the Antarctic Scientific Agenda. The Colombian scientific delegation of the "Almirante Lemaître Expedition" is the first of its kind, since simultaneous presence was made in more than four geographical locations in the South Pole: Antarctic Peninsula, South Shetland Archipelago, Weddell Sea and Ross Sea.

This is how the Scientific Expeditions from Colombia to Antarctica are going on in their agenda, and for 2016 there are more than 30 research projects, proposed by 24 national institutions that have participated in training processes to achieve that more than 50 high-profile Colombian expeditionaries can acquire the necessary information on the white continent.

Finally, the continuity of these scientific, technical and administrative activities is fundamental to achieve the objective of the country and its interests in the Antarctica. Bearing in mind that there are direct relationships between the processes of conservation and environmental protection developed by Colombia and those promulgated by the Antarctic Treaty, especially based on the ecosystem approach to understand anthropic impacts on issues such as climate change, the management of non-native species, the management of specially protected species, the spatial planning of protected areas and the monitoring-surveillance of ecosystems. In this way, the country recognizes that scientific investigation

and environmental monitoring are fundamental bases for making decisions on the planning and ordering of the territory, particularly the marine and coastal one.

2.1.3. Security and Defense

One of the main institutions responsible for the security and defense of the national maritime territory is the ARC, through the effective use of naval power. The capacities for the fulfillment of its functions are related to the current state of the naval material, as well as to the conditions of operability, interoperability, level of training, doctrine development and status of modernization processes.

The analysis of the capabilities within the Navy must contemplate two features involved: the operational one, established by the type of missions and tasks to be executed; and the geographic one, indicated by the scenario where the missions are developed, it can be maritime, fluvial and terrestrial.

Thus, the Navy, through its 2030 Development Plan, plans to expand its means and capabilities to continue fulfilling missions and roles in national security and defense, maritime security, technological development and sustainable use of ocean resources, and to the conservation of the environment (Navy of the Republic of Colombia, 2012)

Three strategic plans to increase the naval force have been defined as a result. The first corresponds to the Orion Phase I and II Plan, which is concerned with strengthening the capabilities of the institution; the second is the Puente (Bridge) Plan, through which it seeks to complete the means to guarantee effective coverage and sustainability of the maritime environment with a 2020 horizon. The third corresponds to the Faro (Lighthouse) Plan, whose objective is to renew strategic naval material until 2030.

This has led to advances in the modernization of frigates and submarines, the acquisition of patrol and other boats, among other naval equipment. In accordance with the progress of the means promoted in each of the phases of implementation of the Plan, it has been possible to exercise sovereignty and protect maritime operations, through the strengthening of surface offensive capabilities, antisubmarine warfare, defense of platforms, protection of fixed bases and maritime interdiction.

For its part, Dimar actively contributes to strengthening the country's maritime power within a strategy of being influential at the regional level. To this end, it is responsible for guaranteeing comprehensive maritime security, the protection of human life at sea, the promotion of maritime activities, the strengthening of the merchant marine, the scientific and technological development of the Nation and the exercise of authority. in the maritime and coastal territory (General Maritime Directorate, 2016).

In this order of ideas, it is necessary to highlight the importance that integral maritimesecurity² has acquired, a strategy that leads to thinking about the reduction of risks in the development of maritime activities, considering actions related to new navigational aids, monitoring systems, program of generation of the Colombian nautical cartography, and acquisition of equipment for the Surveillance, Control and Maritime Traffic System, among others (General Maritime Directorate, 2014), in addition to the work that is carried out with the people of the sea when granting certifications, titles or licenses on specific activities within the sector. In this regard, for 2015, 18 recognized education and training cen-

² For joint management between authority and users, aimed at minimizing the risk to man and the environment, derived from the development of maritime activities; with a transversal approach that includes aspects such as infrastructure, standards, knowledge, suitability and clarity in processes and procedures, and topics such as nautical safety, safety of human life at sea, protection of the marine environment, safety of sea people, maritime protection, and legal security in maritime terms.

ters were reported, 16,580 people were trained in training centers and 2,623 certificates of sufficiency issued (Maritime General Directorate, 2016).

With the foregoing, it is projected that the National Navy should continue to improve and strengthen its capabilities for the effective development of its actions, while the DIMAR will continue to potentiate its actions at all levels for carrying out safe and successful maritime activities, which also increase the national and international commercial flow.

2.2. Economic Development Diagnosis

2.2.1. Ports

Until the entry into force of Law 1 of 1991 in Colombia, the Colombian port system suffered from a number of equivocal decisions that led to unsustainability in the handling of cargo terminals by the State, at a time when the world was open to commercial exchange. The national port system constituted one of the main impediments for the country to accede to the globalized model and international markets.

At the end of the 1980s, Colombian ports surpassed 50% of idle time and only obtained cargo movement volumes estimated between 50-60 tons per hour (in the ports with the highest yield), generating economic losses to the finances of the State and cost overruns to the mobilized cargo, diminishing the competitiveness of the national production.

The new Statute of Maritime Ports of 1991 allowed a turning point to the National Port Policy, through the combination of public goods with private capital, through the concession model. Thus, the ports embarked on a stage that to date has been convenient for the country, where the Colombian maritime terminals have become regional referents and have international recognition in quality.

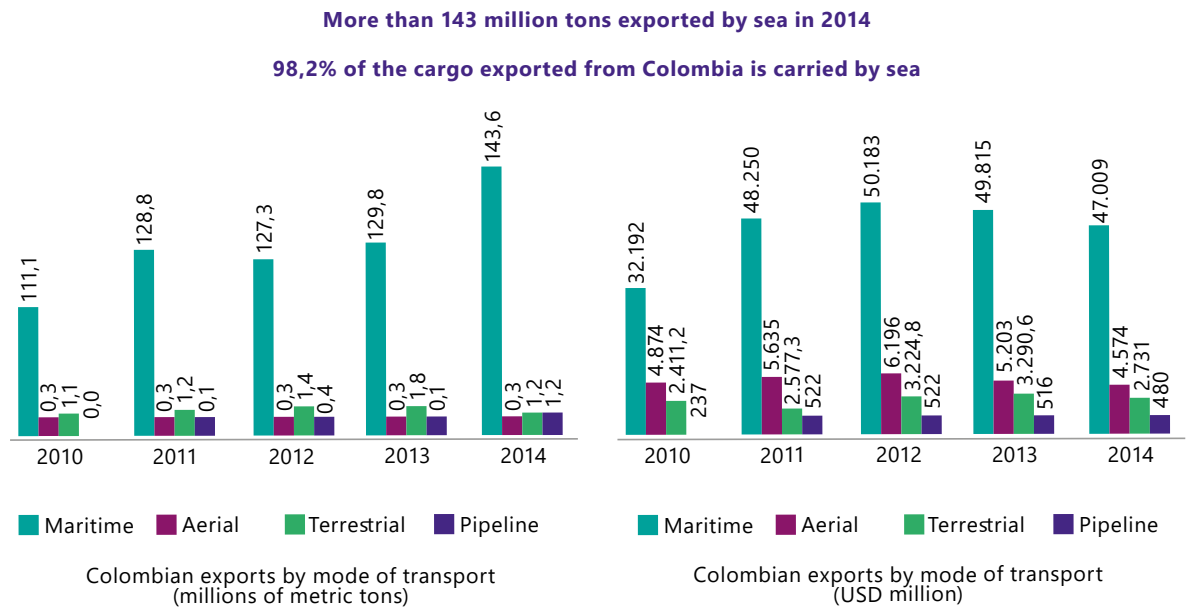


Figura A2. Tons exported by sea in 2014. Note: Export Portal-Colombia Trade, 2015.

Currently, the country has approximately 85 port concessions that include maritime and river ports. "In the period from January to December 2015, the Colombian port areas mobilized more than 198.6 million tons, obtaining a growth of (5.5%) in relation to the same period of 2014" (Superintendence of Ports and Transport, 2016), which demonstrates capacity and efficiency to assume the challenge represented by the connection of these port terminals with around 3700 maritime routes through which world trade moves.

Figura A3. Evolution of port traffic (Units in tons). Note: Superintendence of Ports and Transportation, 2016.

Tráfico portuario	2013	2014	2015	Var % 2013-2014	Var % 2014-2015
Exports	134'143.312	133'957,730	127'976,635	-0.1	-4.5
Import	31'497,870	34'152.025	33'227.196	8.4	-2.7
Foreign Trade	165'641.181	168'109.756	161'203,821	1.5	-4.1
Cabotage	853,016	595,396	669,918	-30.2	12.5
River	41,399	18,065	381,511	-56.4	2011.9
Mobilizations on board	914	79.264	115	8.572,2	-99,9
Not defined	11.779	300	0	-97,5	-100,0
Transshipment	520.713	418.419	1'169.702	-19,6	179,6
International transit	15'976.292	18'343.439	20'899.002	14,8	13,9
Transitory	136.711	131.018	120.869	-4,2	-7,7
Products (blank)	15.716	571.679	14'191.163	3.537,6	2.382,4
Total	183'197.721	188'267.335	198'636.101	2,8	5,5

In this regard, the country is getting ready with 7 new projects for the Caribbean and the Pacific; Among them are the investments for: hydrocarbon ports, loading and unloading of liquid bulk, international cruise ship dock, liquefied gas ports, among others, and in Urabá with the port concession for the mobilization of clean grennels (Logistics Magazine, 2015).

However, freight trade by sea is characterized by its high dynamism. The decisions and actions that are taken for the development of the port sector, need to be constantly examined for their update and integration into the global context.

Likewise, important levels of investment must be sought for infrastructure and modernization that allow Colombia to consolidate itself as an influential and competitive actor worldwide.

2.2.2. Merchant Navy

The first merchant marine company was formed in 1944 with the National Navigation Company, which provided high-end navigation services. Subsequently, the Flota Gran Colombiana was founded through an association between Colombia, Venezuela and Ecuador, which became a pillar of Colombian foreign trade, guaranteeing the transportation of national products and freight stability. However, the inadequate administration, added to other factors of international trade, lead to the end of this company and the Colombian merchant marine.

Unfortunately for the country, today it does not have a merchant marine constituted. This situation offers multiple disadvantages from a strategic point of view, which is why it should become a priority for the country.

The formation of a Merchant Marine is crucial for the development of the national economy and gives us the ability to influence decision-making within the international maritime community, not only contributing to reducing freight costs, but it also constitutes a strategic reserve of the country's navy.

2.2.3. Naval Industry

The shipbuilding sector in Colombia has made great strides in the last decades, however, it is pertinent to implement policies that facilitate its positioning, development and consolidation. It is necessary to recognize that production costs, resulting from the imposition of tariffs, customs restrictions and other factors, have undermined the competitiveness of the sector.

With the creation of COTECMAR, the country has progressed in the construction of ships and naval devices. Currently, this corporation exports its goods and services to different countries in the region. However, the modifications in fiscal and customs matters are urgent to make this national industry competitive.

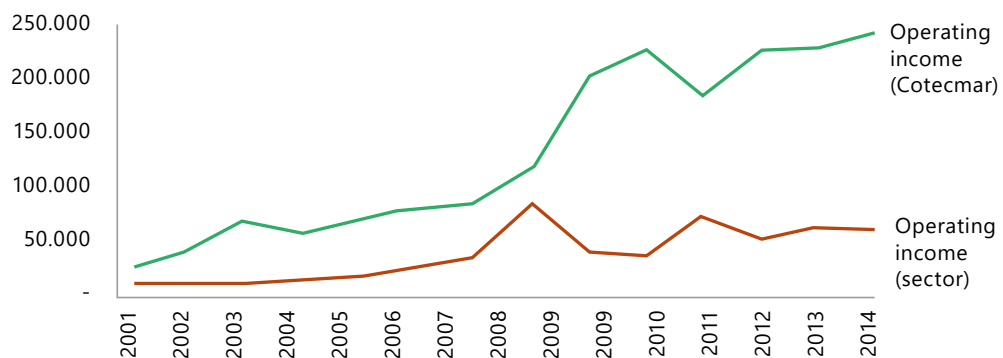


Figura A4. Operating income of the Colombian shipyard sector in millions of current pesos. Note: presentation PES DIPRO-ARC 2015 Program.

As a strategy to strengthen this industry, the national government currently plans to invest USD 4,440 million to develop the Strategic Surface Platform (PES) program, which projects the construction of a frigate-like vessel for 2025. It is expected that this project will make it possible to invigorate multiple sectors of the national industry associated with shipbuilding activity and promote economic development, innovation, entrepreneurship, technology transfer and the generation of knowledge.

In conclusion, to continue with the growth and progress of the maritime industry in Colombia, it is necessary to implement the strategies required for the development of the shipyard sector.

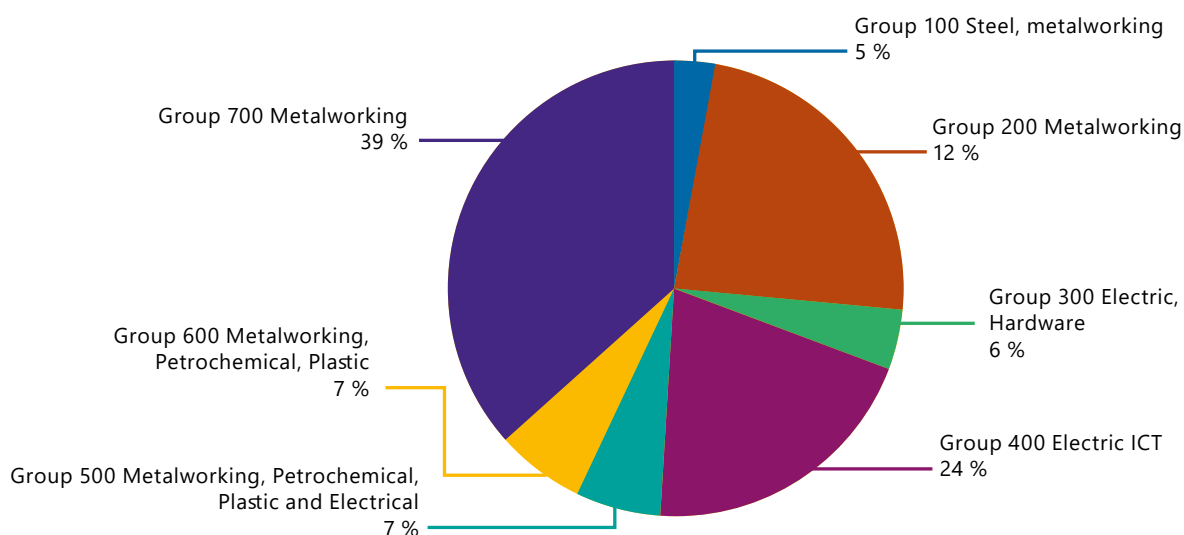


Figura A5. Sectores beneficiados con el programa PES. Nota: Presentación Programa PES DIPRO-ARC, 2015.

2.2.4. Fisheries and Aquaculture

Fishing is an activity that has developed in the country since ancient times; making part of the food security of the coastal and adjacent populations of the river basins. As an industrial activity it was developed in the two Colombian littorals (Pereira, 1993).

The history of aquaculture goes back to the 50s of the 20th century, when universities and guilds started working in freshwater for the reproduction of native species and the cultivation of other exotic species, such as carps and tilapia. The process was strengthened with the implementation of joint actions between the Integrated Rural Development Program (DRI), the National Institute of Fisheries and Aquaculture (INPA) and certain District Secretariats of Agriculture (FAO & Incoder, 2011).

The process to grow *Panaeus vannamei* shrimp in marine waters began in the late 1970s, but it was slowed down by the emergence of the Taura disease and the syndromes of the white spot and the yellow head. These circumstances ended the crops in Pacific waters.

The Food and Agriculture Organization of the United Nations (FAO) and the Colombian Rural Development Institute (INCODER) have reports from the beginning of the 21st century and up to the present on advanced research for the cultivation of the *Lutjanus gattatus* lunarejo snapper, hand in hand with the Universidad del Pacífico and the National Aquaculture and Fisheries Authority (AUNAP). It is worth noting that a similar process has been carried out with the *Lutjanus argentiventris* yellow snapper. In the Caribbean Zone, progress has been made in projects for the development of marine cages of cobia *Rhachycentrum canadum*, given that it is a species of rapid growth and with high international demand. In addition, trials have been carried out with the *Crassostrea rizophorae* oyster.

“In spite of the experiences of marine aquaculture previously noted, the greatest water development of the country occurs in the continental waters of departments such as Huila and Meta, where the cultivation of tilapia is predominant, reaching volumes of more than 60 thousand tons (AUNAP, 2013)”.

In Colombia, fishing as a productive sector had a participation of 0.17% of GDP for 2012, however, the behavior has maintained a decreasing trend, since its contribution in 2004 was 0.22%. Although the impact of this activity on GDP is not highly representative, its participation in employment is. According to the information collected by the DANE household survey, for 2013 the population group that was linked to the fishing and aquaculture sector corresponded to 1,439,778 people.

The importation of fishery and aquaculture products has increased over the course of 2004-2013, as it went from US \$ 33,174,000 to US \$ 224,910,000 in that period.

Exports of fishery products are dominated by tuna. According to the Fedesarrollo studies of 2013, the pelagic resource of tuna that reached a volume of almost 50 thousand tons this year reached a representation between 70% and 80% of the total catch, which is captured both in the Atlantic Ocean as in the Pacific, predominating the latter.

Without including the figures of tuna catches, the fishing production in Colombia is to a greater extent the marine one, which contributed 34,352.2 tons to the total of 40,375.0 tons that were produced for 2013. Statistics indicate that the largest fishing landings of marine production are carried out on the Pacific coast, as 30,908 tons were caught there in 2013.

It should be noted that there are multiple infrastructure deficiencies in the country that limit the development of the production and marketing of the products of the fishing industry. One of them is the limited number of disembarkation points, fishing piers and collection centers.

Now, in relation to the fishing fleet, the registry of vessels in operation in the country suggests that the fleet in charge of extraction with a patent and operating permit has an average age of 32 years, which translates into difficulties for the development of competitiveness in this productive activity.

2.2.5. Tourism

Tourism as an economic sector is the one that generates the most employment in the country, as it occupies more than a quarter of the total working population. According to the DANE, the *trading, hotels and restaurants* activities, concentrated the greatest number of employed people in the period January-March 2016, with 28.2% of the employed population, with a growth of 2.8% compared to the same period of 2015 (National Administrative Department of Statistics, 2016).

Additionally, it makes a significant economic contribution considering the collection of foreign currency by the receiving tourism. In this regard, the performance has been appropriate, since the goal of foreign currency income for the four-year period 2010-2014 (US \$ 4,000 million) was exceeded with the figure of US \$ 4,980 million in 2014. In this context, the objective was to reach US \$ 6,000 million by 2018. With this contribution to the balance of payments, the sector is consolidated as the third largest generator of foreign currency, and responsible for more than 50% of exports of services (Portafolio, 2015).

Tourism has had a constant growth behavior for more than ten years. The figures consolidated by Pro-Colombia indicate that in 2015 the arrival of a total of 3,250,386 people was recorded, understood as the sum of the arrival of non-resident foreigners in Colombia, the total of Colombians living abroad and the number of travelers who arrived on cruise ships (ProColombia, 2015). In 2014, a total of 2,879,543 passengers arrived in Colombia, evidencing a year-on-year growth of 12.8%. It should be noted that non-resident foreigners went to five main cities of the country, of which two are coastal destinations: Cartagena 256,805, and San Andrés 88,330 (ProColombia, 2015).

Now, when investigating the dynamics of domestic tourism, it is necessary to clarify that among the ten highest-circulation highway departments there are three in the coast, Córdoba (5th), Bolívar (8th) and Sucre (9) (Ministry of Transportation). Commerce, Industry and Tourism, 2015).

Currently, the country has diversified its offer in tourism modalities, notably nautical, ecotourism and cruises.

Nautical Tourism

In this field, the country offers infrastructure and nautical activities on the Caribbean and Pacific coasts. In the former, for example, there is a mooring capacity for 895 consolidated vessels through 22 facilities subdivided into 10 marinas, 6 dry marinas and 6 dockyard shipyard marinas (MAV). Unlike, in the Pacific there is a deficiency in the facilities of nautical services, because there does not operate any marina and no dockyards shipyards marinas have been built. The infrastructure is restricted to two dry marinas in Bahía Solano and two more in Buenaventura, which corresponds to 6.06% of the Colombian supply (Ministry of Commerce, Industry and Tourism, 2013).

The situation is critical, given that, the other countries with littoral in the Pacific have been interested in getting involved in the market, this is the case of Mexico where the number of berths increases 10% per year, and Costa Rica, Panama and Ecuador, countries that have created four, three and three marinas respectively. Hence, the competitiveness of the country is not in accordance with the other parts of the nautical tourism market.

Ecotourism

In 2015, the number of areas of the National Parks system with ecotourism vocation reached 969,792, up 6% on the previous year. It is important to note that the two most visited National Natural Parks (PNN) in the country are: the Corales del Rosario Park with 448,479 visitors (47%) and the Tayrona Park with 333,935 (35%) (Ministry of Commerce, Industry and Tourism, 2015). However, despite having a positive trend of visits to these areas, foreigners who entered them continue to be few; In 2015 there were only 96,259 people, a scarce 4.2% of the total number of foreign tourists who entered the country in said year.

In the Pacific zone, the PNNs are visited in a minimal proportion compared to those of the Caribbean. The total number of people who visited the Utria PNN in 2015 was 2,888, while the Gorgona PNN received 1,489 people, and the Malpelo Fauna and Flora Sanctuary barely 427.

Cruises

The coastal and insular cities of the country have developed their tourism potential through the inclusion in the cruise market. Some international cruise lines have selected the ports of the Colombian Caribbean in their routes, impacting favorably on the consumption and income of foreign currency. Confidence in the country is manifested in the total increase of travelers by cruise ships, with a report for 2015 of 192 cruises and a total of 272,206 passengers (ProColombia, 2015).

In this activity, Cartagena is the port of greatest affluence, since it received 263,908 travelers in the same year, followed by Santa Marta (15,091) and San Andrés (2,149). It is also highlighted that the Colombian Pacific has increased its international attractiveness, since it was possible for the Italian Silver-sea line to include in its itinerary visits to the coasts of Utria and Bahía Solano.

Finally, it is necessary to indicate that, although substantial progress has been made in the development of coastal marine tourism, there are still diverse needs that prevent increasing the country's competitiveness at the regional level. With respect to nautical tourism, the greatest disadvantage is the lack of infrastructure that makes it possible to take advantage of the navigation routes that connect the Caribbean with the Pacific and those that travel from and to the center and north and the continent. With regard to ecotourism, the main deficiencies are access to areas, administration and security. Regarding cruises, the greatest challenge is given by the improvement of the port infrastructure, one that allows to adequately attend the arrival of travelers.

2.2.6. Hydrocarbons

The exploitation of hydrocarbons in Colombia has its origin in the "De Mares" and "Barco" concessions, granted in 1905, whose production was the only one of the oil industry until 1941. When the middle of the century approached, the State decided to prepare to receive the first concession and created the state company Ecopetrol, which assumed the direction of the industry since 1951 (ECOPETROL, 2014).

At the beginning of the 21st century, the situation of the hydrocarbon sector changed drastically; According to the investigations of the Bank of the Republic (2012), it was perceived as inappropriate for a single institution to meet the functions of operator-regulator, while being a competitor in the market. Based on this, it was sought to separate the business functions from the regulatory ones, for which the National Hydrocarbons Agency (ANH) was created as an institution on which fell the functions of managing the nation's oil resources and assigning hydrocarbon areas for exploration and exploitation.

This new context allowed the country to attract more Foreign Direct Investment (FDI) and increase the participation of private companies in oil activities. The evidence of this turnaround lies in the doubling of the participation of the oil sector in total FDI, given that for 2003 it represented 16% of total Foreign Direct Investment, while for 2013 it was 30%.

The hydrocarbon sector has maintained a good performance within the Colombian economy; its share of GDP has increased a little more than two percentage points between 2007 and 2014, going from 3.4% to 5.5% in the mentioned period. The progressive increase is due to the fact that the annual growth of the sector exceeded the growth rate of the GDP: 7.1% compared to 4.8%, respectively. In this way, a greater production of hydrocarbons materialized, and, consequently, more exports than those registered previously. For 2014, this economic sector accounted for 55% of the country's total exports, which meant an increase of more than four times compared to the beginning of the century, when the sector contributed barely 12% of exports. It is important to point out that most of the exports of crude oil and fuels have been possible thanks to the infrastructure of maritime terminals, among which those of Coveñas and Cartagena stand out.

Offshore

The offshore hydrocarbon industry has progressively developed in the country, the Colombian maritime space offers concrete possibilities for the exploitation of oil and gas. This extraction alternative is being promoted by the national government, due to the need to expand hydrocarbon reserves.

The total execution of seismic, hydrocarbon exploration tool, varied in 2015 in proportion to the fall in oil prices; In any case, the statistics also suggest that offshore seismic activity has increased year after year. In 2011 offshore seismic activity totaled 4,000 km, while 2015 estimates revealed 26,000 km explored, indicating an increase of 550%.

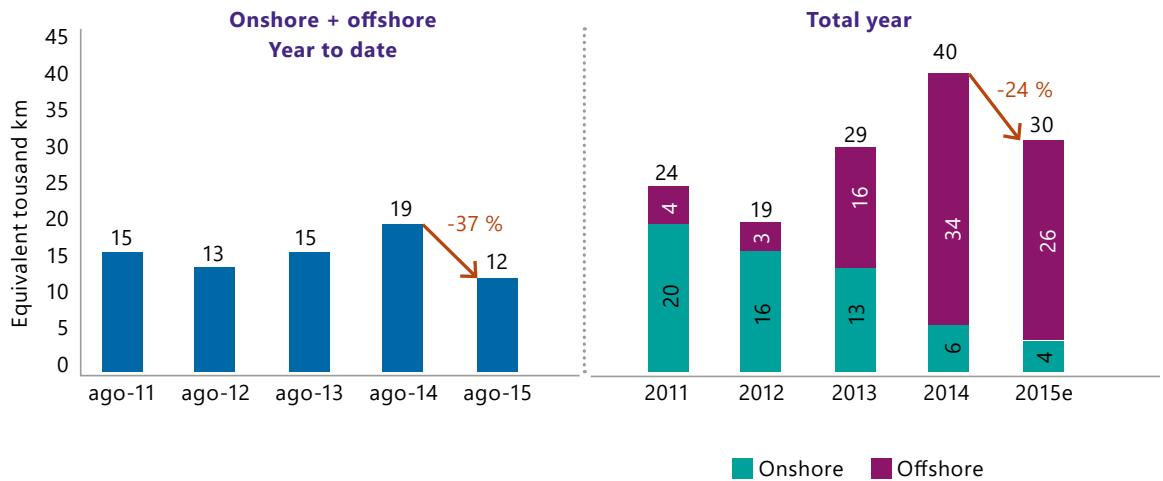


Figura A6. Seismic executed 2011-2015. Note: Colombian Petroleum Association, (2015). Petroleum Exploration and Production Trends 2015. Economic Report No. 7. Bogotá.

This work has resulted in the drilling of 16 offshore exploration wells from 2004 to 2014, with a committed investment of US \$ 1.338 billion, according to the reports of the National Hydrocarbons Agency (ANH). All this has been achieved through the participation of private companies such as Anadarko, Repsol, Shell, Petrobras, Statoil, ExxonMobil and Ecopetrol.

When analyzing the Colombian energy sector, we observe the great impact on foreign investment, exports and employment of qualified labor that activities linked to the exploration and production of hydrocarbons have. Likewise, it has been seen that in the development of these productive activities there are problems that limit the development of the sector in the country. This is why a synthesis of the difficulties is made, in order to highlight those related to the maritime and coastal spaces.

With respect to infrastructure, there are clear weaknesses in different fields. In the case of the offshore industry, there are no logistics centers in coastal cities that facilitate exploration and production activities. It is therefore necessary that adequate spaces be created in urban centers to provide logistical support for all types of activities related to the industry, such as: wharfing of all types of offshore vessels, heliports, fuel and water supply, solid and liquid waste management, as well as having offices, warehouses and customs. Cities such as Cartagena and Barranquilla are emerging as those that will assume the task of guaranteeing integral solutions for the offshore industry in the Caribbean.

2.2.7. Non-Conventional Renewable Energy Sources

The Mining Energy Planning Unit has analyzed the sources that provide national energy consumption, noting that fossil fuels account for the largest share, which account for 78% of the energy basket. The remaining 22% corresponds to energy generated by non-conventional renewable sources. Since the production of the latter decreases their cost progressively, as the development of technology in the sector progresses and resources are available for its use, the national interest for this type of sources increases. Their current status is illustrated in the following table:

Apéndice B1. Projects registered in the UPME by type of technology. Note: Mining Energy Planning Unit, 2015.

Type of Projects	Capacity (MW)	Projects Number
Hydraulic	3.104,95	94
Thermal	677,88	14
Wind	674,00	5
Solar	85,00	5
Geothermal	50,00	1
Total	4.591,83	119

Hydroelectric Power

Electric power generation in Colombia is based on the use of three resources, mainly water, gas, and coal. It is noteworthy in this context that the participation of hydraulic is 70%, according to the statistics of 2014. An equivalent claim suggests that there is an installed electrical capacity of 15GW, where the hydraulic component produces 10 GW.

When investigating the potential for hydroelectric energy production, the Hydroelectric Atlas of Colombia of 2015 provides information to be considered. The study of the hydrographic composition of the country shows that the potential is concentrated predominantly in three hydrographic areas, namely: the Magdalena-Cauca area, which has 40% of the potential, that is, it is able to generate 22,221.788 Kw; the Orinoco, with 24% or 13,702,954 Kw; and the Amazonas area, which has 21% of the potential or 11,974,183 Kw, (Table 3). In short, the Atlas refers for Colombia a total hydroelectric potential of 56,187 MW (Pontifica Universidad Javeriana & Mining Energy Planning Unit & Agustín Codazzi Geographic Institute, *et al.*, 2015).

Wind Power

The availability of the wind resource in Colombia is not the most optimal, because it is located in precise regions of the country. The potential measurements have resulted in the identification of usable resources in "the department of La Guajira, the Caribbean region, in the department of Santander, Norte de Santander, and in some niches of Risaralda, Tolima, Valle del Cauca, Huila and Boyacá "(Energy Mining Planning Unit, 2015).

Of the above, La Guajira stands out, since it is considered one of the best spaces in South America. There are the greatest trade wind regimes in the country, that maintain average speeds of 9 m / s, at 80 m height with an east-west direction. This potential corresponds to an installable capacity of 18 GW electric (Energy Mining Planning Unit, 2005).

Solar Energy

The available information on the solar resource indicates that the irradiation in Colombia is higher than the world average of 3.9 kWh/ m²/ d, since in the country there is a potential of 4.5 kWh /m²/ d. This advantage is derived from its equatorial location, since this implies the absence of seasons that may affect the constant irradiation.

The Atlas of Colombian Solar Radiation indicates that solar energy is available in greater proportion in the San Andres and Providencia Islands, La Guajira and in the Atlantic Coast, in comparison with other regions of the country, since, in these there are multiannual radiation levels of 2,190 kWh / m²/year and 1.825 kWh/m²/year, respectively.

At this time, there are no favorable conditions for the development of solar energy projects due to the high costs of the technology.

2.2.8. Marine Bioprospecting

It is "the exploration, classification and systematic and sustainable research of biodiversity, to identify and obtain new biochemical compounds, genes, proteins, microorganisms and other derived products, which have a current or potential economic value and can be commercially exploited." (Ministry of the Environment, 2014), which are usually to create a new product of biological origin, such as a medicine or a cosmetic.

In 2003, the National Continental and Marine Bioprospecting Plan was drawn up, which has sought solid political management and a national regulatory framework. "Due to the need to generate legislation on intellectual property rights, access to genetic resources, support for the strengthening of germplasm banks and assurance of their quality" (Melgarejo, 2003; 2). Additionally, this framework is made for research on biological diversity, as well as for the import and export of its samples.

That said, the management of bioprospecting is emerging as a process that "involves three stages or axes: research, transform into product and commercialize" (INVEMAR, 20013). For this, the country must join the work of the academic, business sectors at the national or international, community and governmental levels, insofar as it includes a large number of industries such as pharmaceuticals, medicinal botany, agricultural, cosmetics and biotechnology.

In the research part, the Administrative Department of Science, Technology and Innovation (COL-CIENCIAS) has played a relevant role in the approval of research projects in the country. Although the projects on marine and coastal issues present a low figure, in that period, there is a growing percentage of research for the development of bio-inputs, biological control and waste treatment, which sought to acquire greater knowledge of biological and genetic resources for the development of technologies friendly to natural resources.

For its part, in 2014, according to the report of the Institute of Marine and Coastal Research, "José Benito Vives de Andrés" (INVEMAR), research on marine bioprospecting in the country has had continuity and in fact has been deepened especially in the Colombian Caribbean, where there have been potential results in several areas of bioprospecting (INVEMAR, 2015). The foregoing allows us to emphasize the axis of transformation and commercialization of bio-inputs, for not only being limited to the characterization of resources, but also opening up to the commercialization of bio prospected products in international markets.

Bioprospecting in the world generates benefits that can be specifically reflected in the profits of the industries involved. To illustrate, the pharmaceutical industry generates around US \$ 75 billion per year, medicinal botany, around US \$ 20; the personal care and cosmetics industry, US \$ 2.8 billion, and other industries related to other types of biotechnology products, more than US \$ 60 billion per year (Kerry and Laird, 1999. Quoted by INVEMAR, 2003).

Additionally, it is necessary to highlight that PROCOLOMBIA has carried out business development processes, where it has regulated the commercialization abroad of bio-trade in the large, medium and

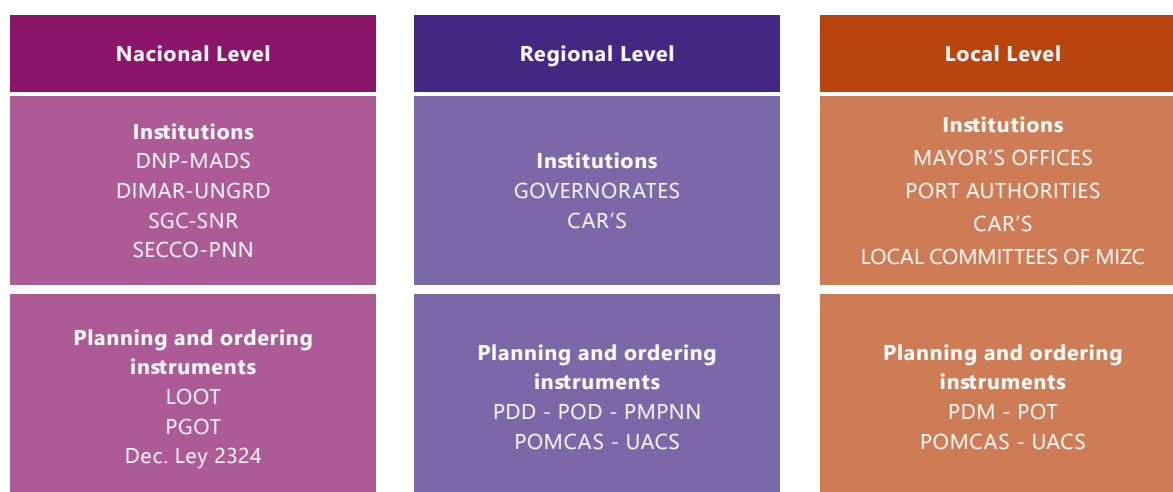
small Colombian companies, allowing to take advantage of the comparative advantages of the country in relation to its biodiversity and promoting commercial activities with companies interested in sustainable business.

2.3. Marine Coastal Governance Diagnosis

Marine-coastal governance refers to the processes and institutions through which coastal areas and oceans are managed by public authorities, in partnership with communities, industry, NGOs and other national, sub-national actors, as well as from policies and programs, uses and customs and culture, in order to improve the socio-economic conditions of the communities that depend on these areas and their living resources” (Global Environment Fund & Organization of Nations Unit for Industrial Development- UNIDO, 2001). Understanding that it is a process that works in two ways that allows the interaction between the ruler and the governed without becoming a completely social process, since it requires the exercise of governability, because, the collective management through a legitimate government with a capacity for action and execution (Botero & Milanés, 2015), in this way governability does not depart from Governance but, on the contrary, the latter contains the former.

The coastal dynamics in its ecological or anthropogenic aspects is accelerated and implies at the same time punctual and dynamic actions that allow responding to the needs of the inhabitants of the coastal zones, and that in turn allow the development of processes of use, transformation and occupation of the territory, generating opportunities to improve productivity and competitiveness, under the concept of sustainable development. Thus, the governance of the oceanic spaces and the coastal areas of the Nation, acquire a renewed preponderance by becoming one of the main tools for territorial development.

In this regard, in Colombia there are three levels for maritime governance: national, regional and local, organized by various standards, especially by productive sectors, in the same way as the ministerial cabinet is organized. Some actors of the coastal marine territory and the planning and territorial ordering instruments that flow in the coastal marine zone of the country are shown below.



Apéndice B2. Governance for the ordering and planning of marine and coastal areas of Colombia. Note: Prepared by the authors.

It can be inferred that the country requires the coordinated action of the institutions to develop and materialize governance in matters of coastal marine territory management; Especially in aspects such as coastal erosion, adaptation to climate change or to extreme events, mining exploitation, fishing, marine spatial planning, coastal management, among others, that enhance institutionalism and give clarity to roles that must be fulfilled by the different actors that converge in the coastal zone.

2.3.1. Marine Contamination

According to the diagnosis and evaluation of the quality of the marine and coastal waters of the Colombian Caribbean and Pacific (Vivas, *et al.*, 2014), the marine pollution of the country is closely related to the increase in the populations that inhabit the coastal zones. Terrestrial sources are the main contributors of pollutants to the sea and among these are domestic, municipal, industrial, port waste and runoff water, urban and agricultural waste, which come from the hydrographic basins with which they are related.

Domestic wastewater (ARD): Contains fixed, dissolved and suspended solids, in addition to organic matter and microorganisms of fecal origin that increase the Biochemical Oxygen Demand (BOD₅); therefore, they are important when determining the quality of seawater (Institute of Hydrology, Meteorology and Environmental Studies, 2010).

It is estimated that the population settled in Colombian coastal areas, close to 4.8 million inhabitants (National Administrative Department of Statistics, 2013), produced approximately 724,000 m³ / d of ARD, of which 34% is discharged directly to the bodies of surface water without prior treatment. The impacts generated by them depend basically on the treatment system used by the municipalities, as well as on the sewage coverage that is available (Vivas, *et al.*, 2014).

With respect to the pollutant load generated in 2013 by the coastal municipalities of the country, it was estimated at 30,886 t / year of organic matter (BOD₅) and 61,771 t / year of DQO. In addition, 7,413 t / year of Nitrogen were generated; 494 t / year of Phosphates; 30,886 t / year of Total Suspended Solids and 1,2E +20 NMP / year of Total Coliforms. Of these, the Caribbean coast contributed 71% and the Pacific coast 29%, being Cartagena de Indias the one that generated the most organic matter (3.473t / year of BOD₅, 6.947 t / year of COD, 833 of Nitrogen, 55, 58 tn / year of Phosphorus, 3.473 t / year of Total Suspended Solids and 1.4E +19 NMP / year of Total Coliforms). They are followed by Tumaco, Buenaventura and Santa Marta (Vivas, *et al.*, 2012).

River discharges: In Colombia, the most populated cities are located in mountainous areas in the interior of the country, some others on the banks of the main rivers. By 2012, 40 of the main rivers that flow into the Colombian coastal area released a total of 16,027 m³ / s of water loaded with different types of waste and polluting substances (Vivas, *et al.*, 2014). As a whole, these rivers delivered to the sea 227,209 t / year of dissolved inorganic nitrogen, 22,649 t / year of dissolved inorganic phosphorus, 97.7 million t / year of suspended solids, 415 t / year of petroleum hydrocarbons and 4.67 x 10²¹ t / year of microorganisms, indicators of fecal contamination.

This contamination is related to domestic wastewater discharges, which are characterized by having high concentrations of heat-tolerant coliforms, which can produce gastrointestinal diseases such as cholera and hepatitis when using these waters for recreation or by ingestion of contaminated food. These values exceed the values defined by national legislation for human contact waters and can generate diseases in invertebrate communities such as sponges and corals.

2.3.2. Extreme Events

Tsunami

Of the risks and threats of marine origin Tsunamis are perhaps the most dangerous on the planet. They consist of a series of waves with very long length and period, which are usually generated by disturbances associated with earthquakes that occur under or near the ocean floor. These waves can reach large dimensions and travel throughout the ocean basin losing little energy. They propagate as normal gravity waves with a typical period of between 10 to 60 minutes. When approaching shallow waters, the tsunami waves amplify and increase in height, flooding low areas; and where the local submarine topography causes extreme amplification of the waves, they can break and cause important damages (Intergovernmental Oceanographic Commission, 2013).

The tsunami threat to Colombia indicates that this type of event is more likely to occur in the Pacific coast. Historically, two seisms are known to have happened in the subduction zone that generated tsunamis on the Pacific coast, the first in 1906 where a wave of approximately five meters affected the coast between Bajo Baudó (Colombia) and Esmeraldas (Ecuador), with a total of 1000 victims. The second event occurred in 1979, originating a tsunami of more than three meters that reached the coast between Tumaco and Guapi, which caused the disappearance of the township of San Juan de la Costa. Damage caused by the earthquake was also reported in different towns of Nariño and Cauca, leaving more than 450 people dead and hundreds of missing persons. Even so, there is great uncertainty in the region to determine the threat to the Caribbean coasts, this is due to the lack of studies that allow understanding the relative movement and the possible coupling zones of the Caribbean and South American plates.

Taking into account the location of the coastal municipalities in the Pacific, the departments of Chocó, Valle del Cauca, Cauca and Nariño and their insular areas Gorgona, Gorgonilla and Malpelo, are exposed to tsunamis, especially the port infrastructure of Buenaventura and Tumaco in the Pacific, being these the focal points of the exports and imports that enter the country by sea.

In the Caribbean, the exposed departments are Antioquia, Atlántico, Bolívar, Córdoba, La Guajira, Magdalena and Sucre, San Andrés Archipelago, Providencia and Santa Catalina, including the keys of Quitasueño, Serranilla, Serrana, Bajo Nuevo, Roncador, Albuquerque and East-Southeast. Bearing in mind that the Caribbean coast has important poles of development in the region and strategic cities for the economy of Colombia, such as Santa Marta, Barranquilla and Cartagena, the main points of tourism development in the country, it should be considered that a tsunami could severely affect the national economy.

Under the above conditions, the national government has taken steps to strengthen regional, national and local capacities in terms of knowledge and risk reduction and preparedness for the response to tsunamis that may affect the Colombian coasts. This is how, in conjunction with the entities of the National System for Disaster Risk Management, in recent years various actions have been carried out, among which the following stand out:

- Drills: Exercises have been carried out on the Pacific coast with the active participation of national entities, governorates, town halls, community and national and international organizations to support the strengthening of risk management in the country. In 2014, a binational simulation between Colombia and Ecuador was carried out with the participation of 10 municipalities in Colombia, 23,242 people evacuated, 44 participating national entities and about 1,527 members of national institutions.

Colombia has participated in the international tsunami simulations led by Unesco through the intergovernmental coordination groups for the Caribbean and the Pacific. For the Caribbean it participated in the 2014, 2015 and 2016 versions, and for the Pacific in the 2014 and 2015 versions. The scenario proposed for 2016 did not affect the coasts of America, which is why it was not carried out in Colombia.

- Conformation of the National Tsunami Warning and Detection System - SNDAT and its protocol. In 2013, the National Tsunami Warning and Detection System - SNDAT was formed, composed of the Colombian Geological Service, OSSO Corporation, IDEAM, DIMAR and the UNGRD. This system is responsible for evaluating all earthquakes, national and international, that have the potential to generate a tsunami that affects the coasts of Colombia. Currently the SNDAT works in an integrated manner and is coordinated by the UNGRD. Similarly, and as operational mechanisms for the SNDAT, a National Protocol for Tsunami Detection and Alert has been built and implemented, whose ultimate goal is to inform and provide timely warning, in the face of probable and nearby occurrence of a tsunami that could affect the coasts of Colombia.
- Local capacities have been strengthened, from the delivery of emergency telecommunications equipment, signage for evacuation routes and meeting points, provision for the installation of crisis rooms and early warning systems in Tumaco.
- Within the framework of the International Cooperation with the Japanese Government - JICA, the technical entities of the SNGRD participate in the SATREPS Project, which will be implemented until 2020, and through which it is intended to strengthen research and response to seismic activity, volcanic and tsunami events, and promoting the improvement of risk management in Colombia. Additionally, through inter-institutional agreements with public and private entities such as the DIMAR and the OSSO Corporation, activities and studies related to the tsunami risk scenario are carried out, such as the preparation of tsunami flood maps and exposure studies in the coastal zones.

El Niño Phenomenon

It is an event of climatic variability capable of affecting the global weather patterns. It is associated with a perturbation of the ocean-atmosphere system, characterized by the heating of the surface waters of the Tropical Pacific Ocean.

In Colombia, the El Niño events have effects on precipitation patterns (reductions), particularly in the Caribbean coast and the Andean zone. The opposite happens in the south of the country and in the Eastern Plains. In addition, this phenomenon has manifested some effects on the economic sectors of the nation, with the agricultural sector being one of the hardest hit. The greatest difficulty is the reduction in the supply of food products, which in turn produces high selling costs.

Within the Colombian Ocean Commission, in 1977, the National Technical Committee for the Study of the El Niño Phenomenon (NTC RSENP) was created, framed in the ERPF program of the CPPS and aimed at articulating the efforts of the member entities, in order to forecast and monitor the phases of the phenomenon, as well as to mitigate the environmental and socioeconomic impacts generated by a warm (El Niño) or cold (La Niña) episode, in the national territory.

The need to predict the conditions of climatic variability in the national territory, began to be evidenced from the El Niño Phenomenon of 1982 - 1983. Additionally, during the phenomenon that occurred in the period 1991-1992, this need was ratified because of the serious effects that it had on the national economy and especially on the country's hydroelectric and thermoelectric sector.

For this reason, the first efforts were aimed at the application of conceptual models and included some aspects related to climate variability, seasonal and interannual, of forecasts and climate projections.

Likewise, activities aimed at the prediction and monitoring of the phases of the phenomenon have been carried out, among which stand out: the annual participation in the Oceanographic Cruise ERFEN and the development of the Multivariate Index of Tumaco - IMT, based on the time series of Superficial Temperature of the Sea - SST, air temperature and precipitation levels in the coastal area of Tumaco, with a record from 1960 to date, without this being the only one on which data is taken for monitoring.

Combining the efforts of the member entities of the NTC RSENP, a meeting is held on a monthly basis with the aim of forecasting and predicting the current conditions of the El Niño phenomenon in the national territory, in addition to the socioeconomic effects and the measures for their prevention and mitigation. This effort is reflected through the National Communication of the Current Conditions of the El Niño Phenomenon, which is published and disseminated to the national public.

Tropical Cyclones

In general, for the Atlantic Ocean basin, these phenomena are considered as rare but of high impact. In the case of Colombia, the probability that these systems affect the continental territory is quite small, in comparison with other areas of the Caribbean. According to historical data, sectors of the departments of La Guajira, Magdalena, San Andrés and Providencia have been directly impacted by tropical cyclones in the past. Other sectors of the Caribbean coast have been affected, but indirectly.

The Sierra Nevada de Santa Marta, mountainous system of 5,600 meters above sea level, and the northeast of Cartagena de Indias, are a natural shield that stands in the way when a system of these characteristics approaches the eastern part of the region, causing the storm to change trajectory slightly towards the northwest of the Caribbean Sea; protecting a large part of the central and south Caribbean coast. However, these systems produce heavy rains in the basins that can lead to floods.

According to the database of the National Hurricane Center of Miami, between 1842 and 2014, 54 tropical cyclones were registered within a radius of 100 km, centered on the geographic points mentioned. In Figure A7, of which 10 were hurricanes in the different scales, 27 were tropical storms and 17 tropical depressions.

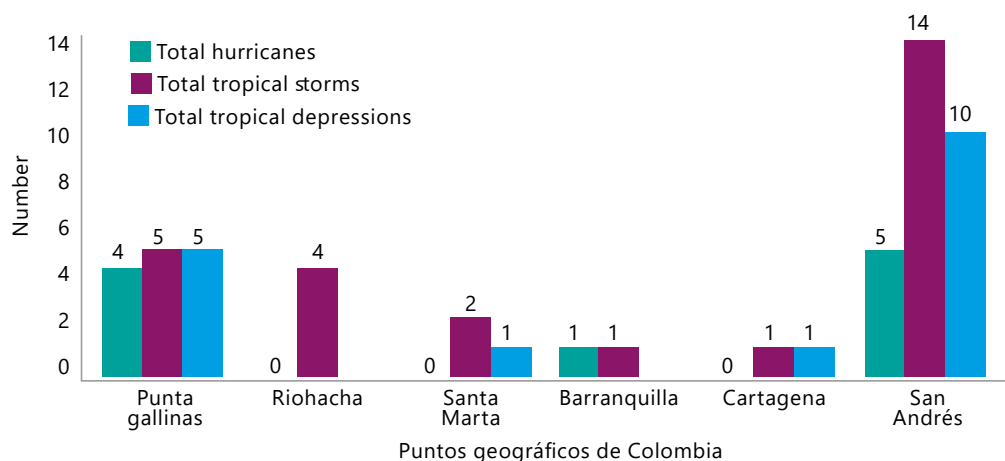


Figura A7. Tropical cyclones in Colombia. Note: UNGRD, 2016 from the database of the National Hurricane Center of Miami (1842-2014).

Some of the most remembered in Colombian territory were JOAN (October 1988) that crossed the peninsula of La Guajira and moved on the south side of San Andrés, ROXANNE (October 1995) that originated in the north of the archipelago, CÉSAR (July 1996), which made its displacement through the north of the La Guajira peninsula, and LENNY (November 1999), which, following an atypical west-east direction, indirectly affected the entire north coast of Colombia and produced strong heavy waters on the Caribbean coast.

Recent studies carried out at CIOH³ show the affectation of tropical storms and hurricanes suffered in the Colombian coast in the period between 1964 and 2004, with the following results:

Tropical storms

- 24% of tropical storms originating in the Atlantic affected the Caribbean Sea.
- Of the tropical storms that affected the Caribbean, only 8% affected the Colombian coasts in the Caribbean, which means that only 2.6% of the storms originated in the Atlantic affected the Colombian coasts.
- In terms of cyclonic season, 2.6% of the storms that affected the Colombian coasts, 75% occurred in the month of August and 25% in the month of December.

Hurricanes

In the case of the analysis of the affectation by hurricanes in the Colombian coast, the following statistics are known:

- 32% (13) of hurricanes originating in the Atlantic affected the Caribbean Sea. While of these, only 17% affected the Colombian coasts. Which means that of the hurricanes that originated between 1964 and 2004, 5.4% approached the Colombian coasts.
- The percentage distribution of the months in which these hurricanes became evident on the coast is shown in graph 1, which shows that September is the month in which most hurricanes have been present in the area of the Colombian Caribbean coast. (1964-2004).

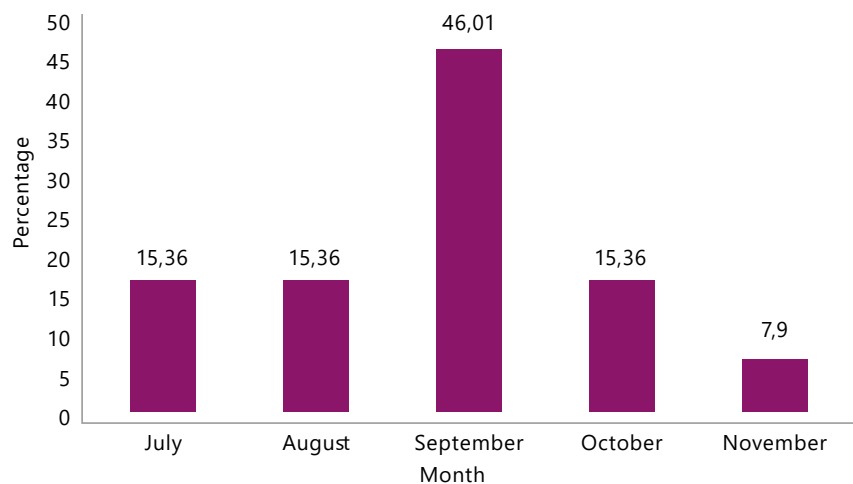


Figura A8. Percentage distribution of the months in which hurricanes have occurred in the area of the Caribbean coast.
Note: CIOH-Dimar

3 Center for Oceanographic and Hydrographic Research - CIOH of the General Maritime Directorate.

It should be mentioned that tropical cyclones are also formed in the Pacific basin, however, they do not represent any threat for Colombia according to the historical trajectories of these systems.

In spite of the location of Colombia within a strip that presents low or null occurrence of tropical cyclones, its preparation to confront and mitigate the effects of these systems is indispensable, since after all they are cataloged as the most violent meteorological phenomena and they have recorded adverse effects and impacts of considerable magnitude.

The zones with direct threat of this phenomenon are the Archipelago of San Andrés, Providencia and Santa Catalina, and the Peninsula of La Guajira, considering the physical passage of a cyclone over these areas.

The zones with indirect threat are: Arboletes, Necoclí, San Juan de Urabá, Turbo, Barranquilla, Juan de Acosta, Piojó, Puerto Colombia, Tubará, Cartagena, Santa Catalina, Los Córdoba, Moñitos, Puerto Escondido, San Antero, San Bernardo del Viento, Acandí, Unguía, San Marta, Ciénaga, Pubeloviejo, Sitionuevo, Coveñas, San Onofre, and Santiago de Tolú.

Although the majority of tropical cyclones do not touch Colombian soil, they may pass close generating events associated with the phenomenon, such as: floods, mass movements, strong winds, gales, tidal waves, waterspouts / tornadoes, electric storms, among others. These events can cause increased water levels due to sudden rise, structure collapses, landslides, falling trees, roofs and utility poles, erosion on hillsides, flooding in homes, loss of smaller vessels, and effects on boats and fishermen.

Although this phenomenon is not very recurrent in the country, when it occurs it can cause great affectation and, therefore, there are still challenges in this matter, such as developing and implementing lines of research associated with the effects and impacts of tropical cyclones, the inclusion of the phenomenon as a threat that has an impact on the planning of the territory at the municipal level, and the implementation of alert systems at the regional and local levels related to the phenomenon.

2.4. Marine Biodiversity Diagnosis

Colombia is a megadiverse country and is ranked among the 14 countries in the world with the highest biodiversity index. Two of its five ecoregions are represented by marine coastal territory in the Pacific Ocean and the Caribbean Sea, regions that represent half of the national territory and constitute a hot spot of diversity, that is, a territory with a wide range of environmental services supplied by the strategic ecosystems that are presented there, which makes the country a tropical mosaic (MADS, 2014).

The Colombian territory presents all types of marine-coastal ecosystems characteristic of the tropics, such as coastal lagoons, mangroves, estuaries, seagrass beds, coral areas, pelagic environments, beaches, rocky coasts and muddy sandy bottoms (IDEAM, 2007).

Among the country's most representative marine ecosystems are the coral reefs, with an area of 1091 km² (Díaz et al., 2000), which represent 0.4% of these ecosystems worldwide. A small fraction of them are found in the Pacific Basin, while the Caribbean Sea has 21 coral areas widely distributed, with the Seaflower Biosphere Reserve being the highest concentration area with 77% of the country's coral reefs (Murillo, 2005). At present, these ecosystems present a growing decline in their populations, due to diseases, extreme climatic events, overexploitation of hydrobiological resources, whitening, and decrease in the capacity of calcification due to effects such as climate change and oceanic acidification, being mostly anthropogenic in nature (INVEMAR, 2010).

The mangrove forests occupy an area of 294,636 ha in Colombia, the majority in the Pacific basin with 232,391ha and with 62,245ha in the Caribbean. Their greater coverages are in the south of the department of Nariño and in the Ciénaga Grande de Santa Marta. Pollution, climate change, excessive extraction of forest, non-forest and hydrobiological resources and the expansion of the urban frontier are factors that are contributing to the reduction of their populations, so it is necessary to intensify research efforts around these circumstances, since they provide ecosystem services as relevant as the protection of the coastline against the average rise in sea level (INVEMAR, 2010).

According to Díaz *et al.*, (2003), it is reported that seagrass beds have an extension of 43,223ha in the Colombian Caribbean, of which 2,006 are in the archipelago of San Andrés, Providencia and Santa Catalina. There are indications that these areas have been underestimated and it is necessary to generate more knowledge to establish their current status and their tendency over time (INVEMAR, 2010).

It is evident that it is still necessary to generate baseline knowledge in Colombia to understand the behavior of ecosystems and the biodiversity they support, given the global trends in the face of global and local phenomena that affect the sustainability of the natural capital of the nation.

The technological and economic advances of the last century have greatly benefited humanity, even so, these processes have been detrimental to natural systems, their functions and the sustainability of their resources. The continuous anthropogenic pressures in the vicinity of the coasts and oceans have produced an accelerated loss of biodiversity and resources, and the degradation of marine habitats (Katsanevakis *et al.*, 2011).

These events represent a challenge for the planning, formulation of public policies and implementation of successful strategies against the management of coastal marine territories. Although there are clear goals and objectives to be met in relation to the conservation and maintenance of resources, such as the AICHI goals that are aimed at reaching the millennium goals (MADS, 2014), it is necessary for the marine environment to draw up governance plans that involve all levels of society to guarantee the health of marine ecosystems, their productivity and resilience (Mc Leod *et al.*, 2005).

In this way it is necessary to understand the coastal marine territory from all its dimensions and interactions, to make an effective management of it. The strengthening of research, the generation of scientific knowledge, the structuring of monitoring plans and the incorporation of this information in politics will allow generating environmental management plans that recognize the complexity of the territories, taking into account aspects not in an isolated way, but from the interactions that occur between the environment and man (Katsanevakis *et al.*, 2011)

2.5. Culture, Education and Marine Sciences Diagnosis

2.5.1. Maritime Education

The lack of development and exploitation of the potential of the maritime territory of Colombia, according to the capabilities, needs and challenges of the country in the 21st century, must be worked on in order to achieve a better economic development in the country. In this regard, education plays a fundamental role, since it must include at all levels of the national education maritime issues, which in turn allow professionals to be trained with the skills to develop the potentials offered by the ocean.

Taking the Brundtland report as a reference, which establishes that in order to achieve sustainable development, the ecological, economic and social aspects must be considered, where the relationship between social welfare with the environment prevails, their conservation, an appropriate develop-

ment that does not affect ecosystems, peace, equality and respect, it is proposed to identify the needs of academic offer and labor demand that the country has in the maritime sector, from the economic, environmental and social aspects.

The preliminary study of the labor market in the maritime sector of the country required an investigation in the subsectors of teaching, ports, fishing, defense, naval industry, offshore industry, tourism, companies providing maritime services and shipping companies, where the public or private entities were recognized in each subsector, their geographic location, the level of education of the employees and the Gross Domestic Product, to compare their economic importance in the country.

With the information obtained, statistics were created that allowed visualizing graphically the sectors that most demand employees and the need for maritime education in the professionals who are working in the maritime sector, as well as the need that represents for the country to train students with some focus in this area. The results obtained are as follows:

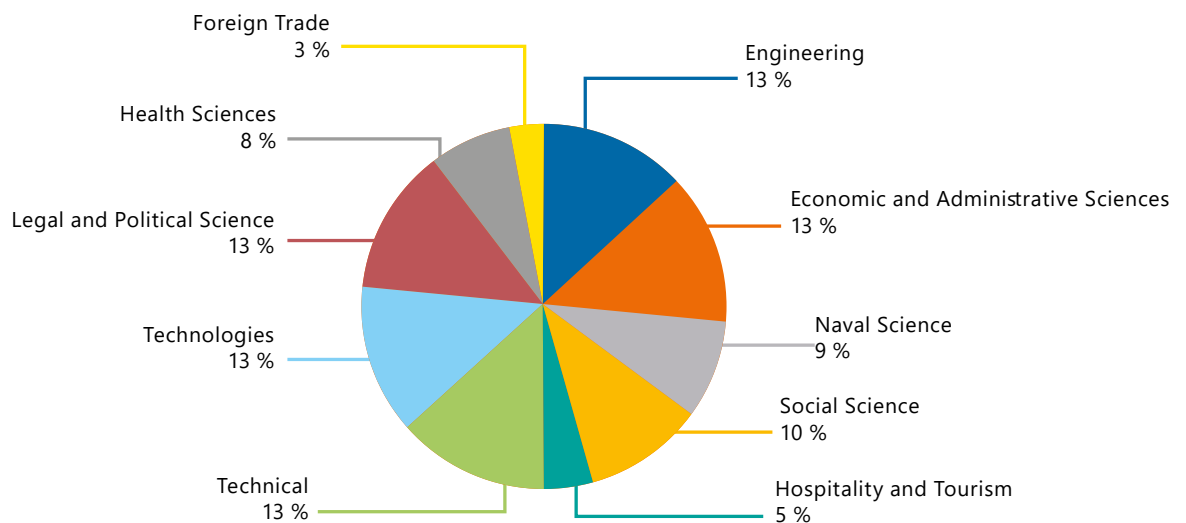


Figura A7. Professions that are most demanded by the maritime sector according to the economic diagnosis.
Note: Natalí Delgado.

It is relevant to consider the need for the country to create content with maritime approaches in academic programs, such as environmental engineering (techniques to prevent the erosion of the coasts, prevention of contamination by ballast water or oil spill, meteorology in the ocean, development of renewable technologies to obtain energy, development of clean technologies, hydrology of the ocean, and study of the limits of exploitation of renewable resources); civil engineering (construction and maintenance of ports and dry ports with updated technology, as well as drawing of plans); economics (economic valuation of marine ecosystems, indicators of the State of exploitation of resources, pollution status and the status of ecosystem recovery); law (creation of legislation for the protection of the biosphere reserve. Likewise, the implementation of a specific subject in which the maritime regulations already existing in Colombia and internationally are assessed); business administration (maritime administration); international relations (defense of the maritime territory, relations with countries with maritime development potential, and executive development of the maritime sector), among others.

In this regard, all the needs of the economic, social and environmental aspects will be taken into account so that education works as a unifying entity and the sustainable development of the seas is achieved. Likewise, postgraduate studies are proposed in the academic programs of civil and mechanical engineering.

2.5.2. Maritime Culture

The COChas identified weaknesses in the maritime culture of the country, which is why the inhabitants who currently have a close relationship with this environment do not represent the majority and do not find themselves in a direct correspondence, whether professional, labor or any other, that links them to the maritime environment. As fundamental principles for the construction of the Colombian nation, identity and territorial sovereignty must extend not only to terrestrial space, but also to maritime space, the latter being an integral part of the country.

To establish a channel to approach the maritime sector in Colombia, various activities have been carried out that contribute to the creation of maritime awareness in the country. Among them, the following are exhibited:

Creation of the National Technical Committee of Maritime Culture, in which the efforts of all the entities that are currently working on projects focused on the promotion and strengthening of maritime culture, activities and plans related to the Submerged Cultural Heritage, infrastructure and museology for the conservation and dissemination of cultural goods are joined.

Preparation of two atlases, led by the CCO, with maritime cartography of Colombia from the sixteenth - eighteenth and nineteenth centuries, titled: "Atlas Histórico Marítimo de Colombia, Siglos XVI y XVIII" and "Atlas Histórico Marítimo de Colombia Siglo XIX." The first one shows the great Colombian and Spanish documentary collections that build the history of our nation's marine and coastal territories. The second one shows the importance of building institutions on issues of sovereignty, defense and development.

Some of the most representative maps of the atlases were enlarged to carry out cartographic exhibitions in different cities of the country, with steps taken by the ICANH, where the coastal marine sector is shown, with the aim of appropriating the people of this territory, visualize Colombia and identify the heritage that the country has lost in history, and raise awareness of the importance of the marine sector, both for commercialization and for communication with other countries. The cartographic exhibitions were held in Barranquilla, Santa Marta, Bogotá, Popayán and Honda. With these exhibitions, approximately 300 people have been impacted. Additionally, other initiatives were held such as the launch of the "El mar en mapas" Bulletin, published by the Luis Ángel Arango Library - Banco de la República de Colombia.

In terms of training, there are two diploma courses: "Introduction to Ocean-politics" and "Naval History". The first of these has as its main objective to unify the necessary criteria to understand, in a clearer way, the marine strategic area of the country, with the purpose of facilitating the interaction between national officials and institutions in order to direct more effectively the efforts for national maritime development. Four cohorts have resulted from this diploma course, which has impacted around 100 people. The second, seeks to offer a historical and analytical overview of the maritime space, as a scenario that has undergone changes and continuities throughout history

Preparation and publication of the booklet: "Una aventura llamada océano", which allows children of school age to connect to the marine world and learn about the uses that the oceans of Colombia offer, through the development of psycho-motor skills.

ICANH managed and coordinated the 1st International Symposium on Maritime History, which counted with 5 foreign lecturers and impacted 180 people from academic programs such as sociology, philosophy, literature, history, and social and human sciences.

Underwater archaeological studies have increased over the years. It should be said that this activity is quite representative, since it promotes the generation of knowledge of the events that happened in history and accounts for the artifacts used and the aspects that presented problems to be corrected in subsequent events.

Educational institutions, such as Universidad del Norte, have led research studies and have been teaching undergraduate courses, increasing Caribbean subjects with emphasis on anthropology, history, oceanography, biodiversity, art and archeology, as an integral approach to our oceans from different perspectives, with the objective of promoting and developing interdisciplinary projects, mainly, in the Bay of Cartagena and in the Bay of Puerto Colombia, focusing on the maritime cultural landscape. Additionally, they have managed the dissemination and social appropriation of scientific knowledge in these areas, through the MAPUKA museum, with temporary exhibitions, as well as through the participation of their projects in international documentaries and regional and national dissemination publications, besides constituting the day of the sea in association with other institutions.

The Terra Firme Foundation, for its part, has made progress in the projects proposed for 2016. In training, short theoretical-practical courses have been conducted at the Nautical Archaeological Society. In research, a diagnosis was made for the generation of a proposal of infrastructure for the preservation and conservation of the submerged cultural heritage in Cartagena de Indias, an archaeological investigation in an 18th-century shipwreck BOCACHICA 1 and a seminar-workshop in Sustainable Conservation Structures Programs in conjunction with the Externado de Colombia University. Finally, there is the Liquid Territories research group for patterns of navigability, accidents and subsidence in the Caribbean.

As for the advances in dissemination, there is the realization of a documentary in National Geographic entitled "Did this shipwreck change the course of history?", which is about a discovery in Cartagena; the book: "Paisajes desde Proa", which is in press; the publication in the magazine of the Center for Oceanographic and Hydrographic Research of the Caribbean in several articles and the publication on heritage infrastructures published by the Externado University.

An archaeological diving was also carried out in the Seventh version of the National Heritage Meeting: "Cartagena emergent memory", with the aim of allowing a direct and real contact with the archaeological evidences that rest on the seabed.

In the Conservation of the Submerged Cultural Heritage, advances were made in the laboratory, since the fort of San Felipe de Bocachica was designated as a building destined to house the archaeological material of the underwater site located in the Bocachica channel and in the area of underwater conservation of archaeological materials

In this way, it is expected to have initiated a process of awareness and appropriation of the maritime space in Colombia, where education and government sectors begin the task of proposing mechanisms that lead to social, economic and environmental improvement, using the resource of the sea as a sustainable source.

2.5.3. Science, Technology and Innovation

Research in Marine Sciences is coordinated from Colciencias through the National Program of Science and Technology and Innovation (PNCTel) of the Sea, which has 78 research groups for 2016, which

have declared the Marine Sciences as the main and secondary line. There, research centers, community associations and technological development centers meet. In spite of this, there are other groups that have declared their research in Geosciences, Basic Sciences, Environment, Biotechnology, Engineering, Mining and Agriculture as main and secondary research areas the marine sciences.

In the analysis of the Colciencias records, an increase was observed in the groups registered in the program, during the first two decades of existence. By 1991 there were 9, while in 2008 there were 76. Likewise, the substantial increase from 2006 to 2008 stands out, as shown in the figure; from now on, the suspension of growth is appreciated, since from 2008 to 2016, only two research groups have been added.

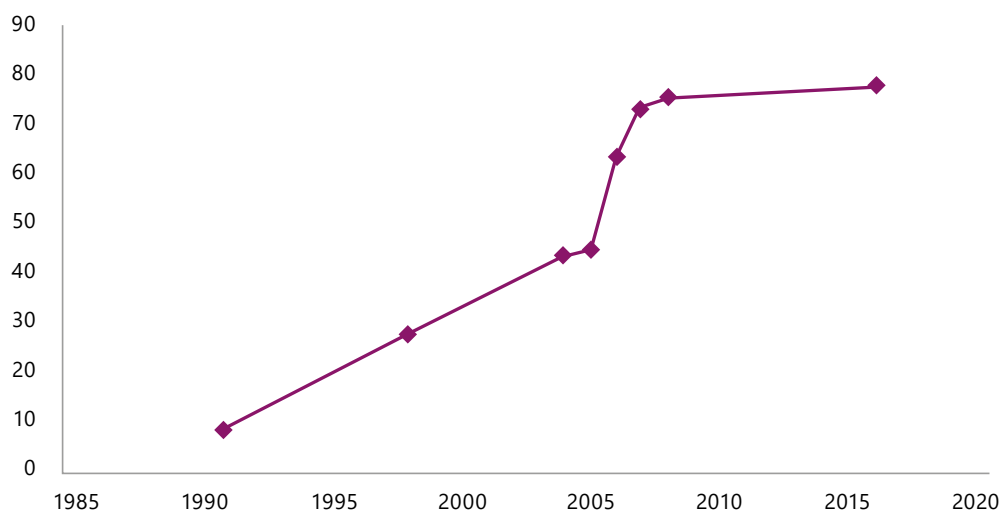


Figura A8. Research Groups of the National Program of Science and Technology of the Sea. Note: Administrative Department of Science, Technology and Innovation, 2016.

However, when comparing the number of groups involved in the aforementioned program, it is found that it is part of the programs with the smallest number of registered groups, surpassing only the National Program of CTel in Geosciences and the National Program of CTel in Security and Defense.

On the other hand, according to the Call for projects of Science, Technology and Innovation in Marine Sciences for the Caribbean Region 2016, ocean science research was organized into two major thematic areas. However, this responds to the specific call that was organized with resources from the General Royalty System.

The first area refers to the Marine Environmental Quality, which investigates lines of research such as (i) environmental quality of coastal waters; (ii) status of ecosystems and their relation to the environmental quality of coastal waters; (iii) technologies for coastal marine decontamination. The second thematic area examines the ordering of the coastal marine territory, allowing research to focus on the lines of (i) models of territorial ordering; (ii) governance; (iii) hydro-chemical processes with effects on the coastal population or infrastructure; and (iv) models of sustainable economic ordering. Despite this, the international trend leaves Colombia behind in research regarding issues such as blue growth, marine geological risks, and in relation to health and human well-being.

Regarding the financing of projects, Colciencias reports that close to COP \$ 49,574 million were allocated to support research activities, which has made it possible to develop 674 R + D + i projects, through 17 public calls. In relation to PNCTel of the Sea and Hydrobiological Resources, 16 projects were supported for a total amount of COP \$ 2,308, contributed by Colciencias in the call 714 of 2015, which represents only 5% of the funding provided by the entity (Administrative Department of Science, Technology and Innovation, 2015). Although there are other projects financed by other calls and other programs, it is necessary to encourage research in this regard, so as to increase the application of projects for the management of resources of the PNCTel of the Sea and the Hydrobiological Resources.

Regarding the education of human capital in Science and Technology, those with the lowest participation are the beneficiaries of doctorates in the sea and hydrobiological resources, with 1.6% in master's and doctoral programs.

Finally, although research initiatives on marine issues are of great importance, it is important to take into consideration the transfer of technology as a key tool for achieving it. As agreed in the 2030 Agenda for Sustainable Development, the transfer, dissemination and divulgation of technology is a key element that can effectively contribute to the implementation of this policy and the achievement of sustainable development.



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3 Vision Colombia: Being a Medium Oceanic Power

3.1. What is it?

Medium Oceanic Power (PMO) catalogs a State that possesses high capacities of national maritime power⁴ for the integral management of the territory, assuring the capacity of projection and decisive participation in the international scenarios; all with the purpose of increasing the welfare of its population, increasing sustainable development and strengthening its capacity for regional influence. Likewise, it has marine resources and political instruments that allow it to make good use of its oceanic position.

Facing the sea power Geoffrey Till makes an approximation of the challenges that the States must develop and direct in the management of their maritime territory to be a PMO. The sea can be understood from five edges: the sea as a resource; as a means of transportation and exchange; as a means of information; as a means of domination and finally, as an area of sovereignty. Understanding the relationship between these factors opens the possibility for States to generate strategies that strengthen the development of the Maritime Power.

The formulated concept was constructed taking into account geopolitical and ocean political theories⁵, as well as the theories of international relations to define the power structure of the Contemporary International System.

4 **Maritime Power:** Is the ability to create, develop, exploit and defend the Maritime Interests of a country in both peace and conflict. In short, it consists of the power that a State has to use the sea for its benefit. (Cuadros, 2005).

5 **Ocean politics:** It is about occupying the oceanic space as a true space of knowledge and development of the State. (Duvauchelle, 1996).

Geopolitics: Conceives the State as a geographic organism or as a phenomenon of Space (Rudolf Kjellen, 1916).

When making an analysis from the ocean politics, Martinez Busch raised a system with a series of vectors that serve to obtain an organized panorama of what the sea offers for the development of the humanity, these vectors are: *communicational vector, productive vector, recreational and tourist vector, urban vector, legal vector and power vector.*

Each one of these vectors deals with analyzing and establishing parameters that serve to order the exploitation of the resources that the sea has offered since the beginning of humanity for its benefit.

In this order of ideas, the contributions provided by ocean politics and specifically the approaches of this author, are important in formulating the strategies that a State that aims to become an *Oceanic Medium Power* must implement.

The theoretical sustenance to analyze the influence between states called Medium Oceanic Powers focuses on the so-called *Smart Power*, understood as "a synthesis of the various tools of the art of governing, ranging from the "soft," ones such as foreign aid, to the "hard" ones such as military force" (Wilson, 2008). *Smart Power* is the ability of an actor to combine the two elements of soft power and hard power, so that they reinforce one another, where the purposes of the actors are advancing efficiently and effectively.

3.2. What are its characteristics?

The *Medium Oceanic Power* is directly associated with three variables that seek to propose a model in marine and coastal issues.

- a) Oceanic and maritime position: it is necessary to highlight the territorial conception of oceanic, coastal and island spaces. Processes of use, delimitation, occupation, presence and control are necessary for territorial appropriation.
- b) Political Will of Maritime Power: inclination of decision-makers and the population in general for a vision of the marine-coastal territory as a resource and space for the expression of their will as State and Nation.
- c) National Maritime Interests (IMN): these are the aspirations of the State related to the set of political, economic, social, environmental and military benefits that the use and exploitation of the sea can offer in all activities related to the national maritime territory.

The National Maritime Interests (IMN) of the Colombian State are:

1. Sovereignty and integrity of the national maritime territory
2. Consciousness, Territorial Appropriation and Maritime Culture
3. Marine-Coastal Environmental Resources
4. Maritime Education
5. Scientific, Technological and Innovation Research
6. Naval Power
7. Integral Maritime Security
8. Marine-Coastal Regulation
9. Maritime Transportation and Trade
10. Maritime Tourism and Recreation

11. Naval and Maritime Industry
12. Marine and Submarine Mining
13. Fishing and agriculture

These variables are hand in hand with institutional strategies, which are oriented in four approaches:

1. To formulate and implement a National Maritime or Ocean Policy that grants:
 - Integrated and intersectoral governance framework at the national and regional levels.
 - Advocacy capacity in the formulation of sectoral policies related to maritime development.
 - Action plans with specific objectives and expected results, benchmarks and deadlines.
2. To formulate and implement strategies for employment and sustainable management of the marine-coastal territory, based on:
 - Comprehensive knowledge of the weaknesses, strengths, threats and opportunities provided by the marine-coastal territory.
 - Formulation and implementation of sectoral policies oriented towards sustainable maritime development.
 - Rational use of the resources and ecosystems of the marine-coastal territory.
3. To strengthen the naval power, with the purpose of improving the capacity to support the activities developed in the marine-coastal territory and the international maritime projection of the State, based on a cooperative approach.
4. Formulation and implementation of Science, Technology and Innovation strategies to conduct research in oceanic and coastal spaces, and the strengthening of maritime governance.

Likewise, a *Medium Oceanic Power* must comprehensively implement the following aspects: the challenges generated by the connection of its continental territory to the oceanic territory, to implement procedures and protocols for risk management and its effects on the population and its activities, territorial management in marine-coastal spaces, the generation of maritime awareness in the national population, the maintenance of maritime cooperation with the allied States and the management of projects that allow strengthening and improving weak aspects in oceanic issues.

3.3. Colombia Medium Oceanic Power

When thinking of Colombia as a Medium Oceanic Power, several questions arise about the turn or change that must be made at the structural level to achieve this objective. The progress that has taken place in the world, demands the International System to face the new dynamics that are developed. Therefore, it is not only the territory, the population or the resources, but also the instruments that it uses to administer them, which makes possible the advances regarding the affairs of the sea.

Research has been carried out from the Executive Secretariat of the COC that allows the theoretical and methodological construction of this new categorization of the country within the structure of the International System, taking into account real and potential advantages that the rational and integral use of the nation's maritime territory grants. For this reason, it is considered that thanks to the institutional advances and the cooperation framework developed with countries in the region, the coun-

try has adopted a decided will to promote its IMN, which added to the formulation of this policy will allow the State to advance in its geopolitical and geo-economic projection, standing out with a structural position between the world powers and the minor or peripheral states.

Therefore, 4 global indices have been selected that allow comparing national capacities with some countries in different parts of the world, and with this, defining the quantitative elements that define a PMO.

1. Ocean Health Index: Measures biological, physical, economic and social elements in relation to the sustainable use of the oceans.

$$OHI = \frac{(Obj1 + \dots + Obj10)}{10}$$

$$OHI \text{ COLOMBIA} = \frac{(26+60+57+72+81+79+21+73+62+76)}{10} = 61$$

The total score of the index is the result of a combination of ten components or "goals" of ocean health. The scores reflect the optimization of the coastal regions in their potential benefits and ocean services in a sustainable manner in relation to a reference point (objective), on a scale of 0 to 100.

In the Colombian case, the OHI has promoted inter-institutional work to generate a battery of indicators adjusted to national conditions. In the last general report, the country obtained a score of 61/100, being below the world average, which is 70/100, which places Colombia in the No. 198 place of 210 areas studied.

The Medium Oceanic Power must seek to overcome the world average, for example Chile obtained a score of 71/100. For the above, For the year 2022 Colombia will reach a score higher than 70/100 and for 2030, equal to or greater than 80/100.

2. Human Development Index: Measures in an integral way the level of human development of a territory, based on three main indicators: longevity, educational level and standard of living.

$$IDH = \frac{IDH \text{ Colombia}}{IDH \text{ Mundial}} \quad IDH = \frac{0.711}{0.944} = 0.75$$

According to the latest report of the United Nations Development Program (UNDP, 2014), Colombia occupies position No. 97 of 187 with an index of 0.711, taking into account that it presents high levels of inequality, illiteracy, poverty and several unsatisfied basic needs. Additionally, the institutional results have not had homogenous effects in all the national territory, reason why it is necessary to coordinate synergies to improve the living standards of the coastal populations, representing a significant advance in the national indicators.

A Medium Oceanic Power will seek to improve its level in said index and enter the country category with "very high IDH". In the region is Chile, which occupies the position No.41 with an index of 0.822.

3. *ELCANO Index*: The Elcano Global Presence Index aggregates and quantifies, based on objective data, the external projection and the international positioning of the countries, based on the three dimensions that make up its presence: economic, military and soft.

These dimensions are composed of:

- Economic: energy, primary goods, manufacturing, investments and services.
- Military: troops and military equipment.
- Soft: development cooperation, education, science, technology, information, culture, sports, migration and tourism.

100% of this index is divided into economic 41.4%, military 19.7% and soft 38.9%. This index is illustrated graphically below.

After consulting the last report, Colombia took the No.43 place out of 90 countries that were evaluated in this index. The results in each of the dimensions were the following:

- Economic: 56.5%
- Soft: 46.9%
- Military: 3.0%

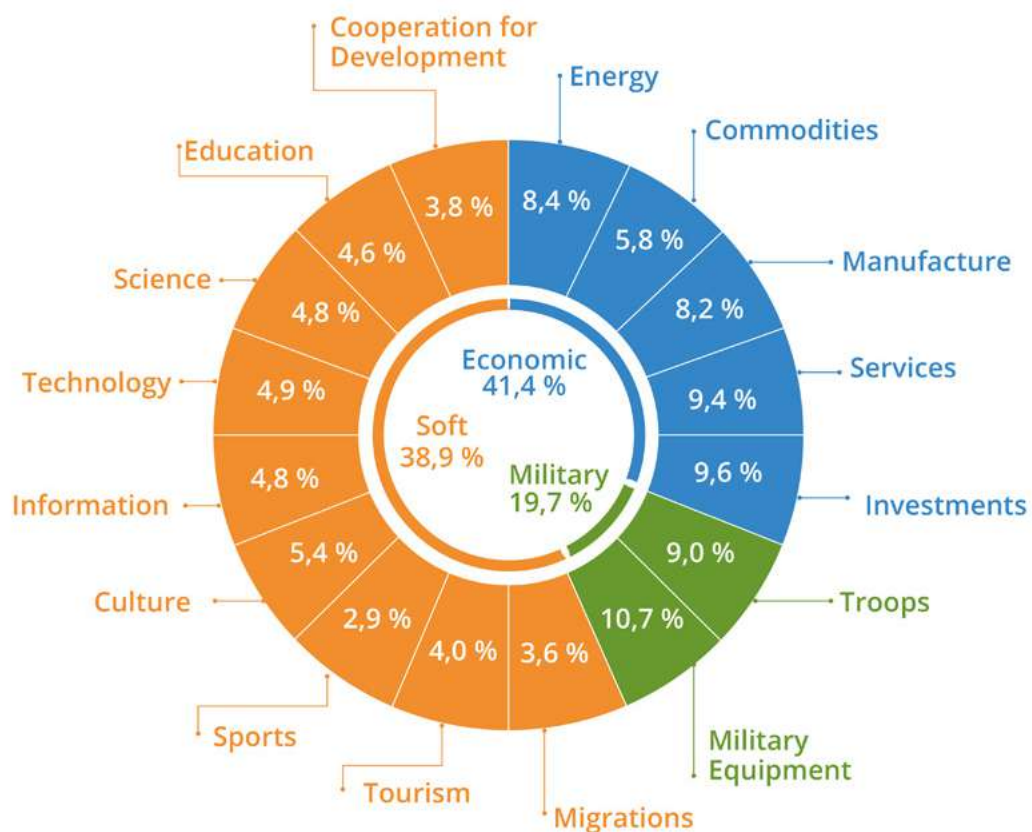


Figura AX. ELCANO index. Note: Royal ELCANO Institute.

4. Maritime Cargo Connectivity Index: This index has been promoted by UNCTAD (United Nations Conference on Trade and Development) and aims to reflect the availability of means available to each country for the development of maritime international trade. Some of the indicators that make it up are: No. of container ships assigned to lines that reach each country, capacity in Teus of the fleet assigned to lines operating in each country, and No. of container ships per million of inhabitants, among others.

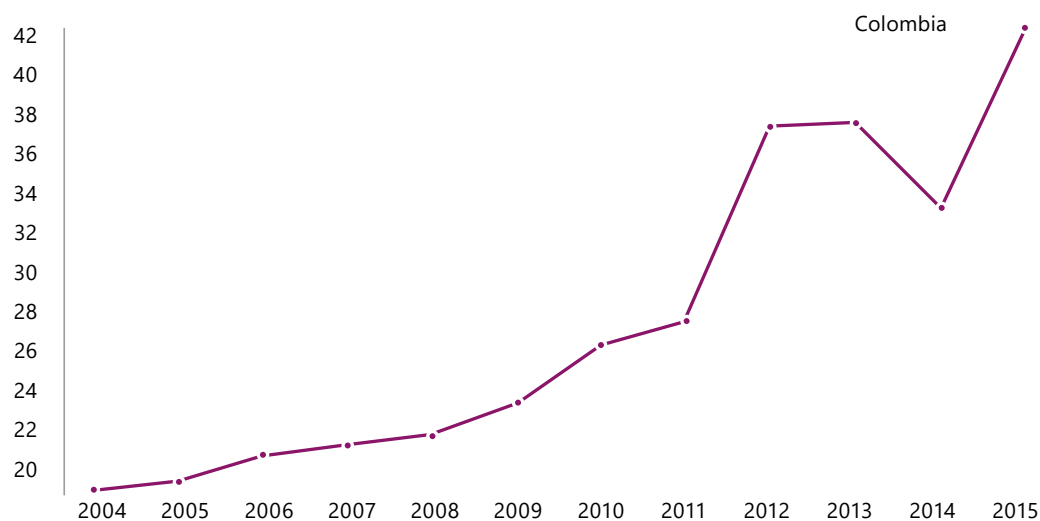


Figura AX. Maritime Cargo Connectivity Index 2004-2015.

In this case, since 2004 Colombia has been presenting a considerable increase in the expansion of its cargo by maritime connectivity.

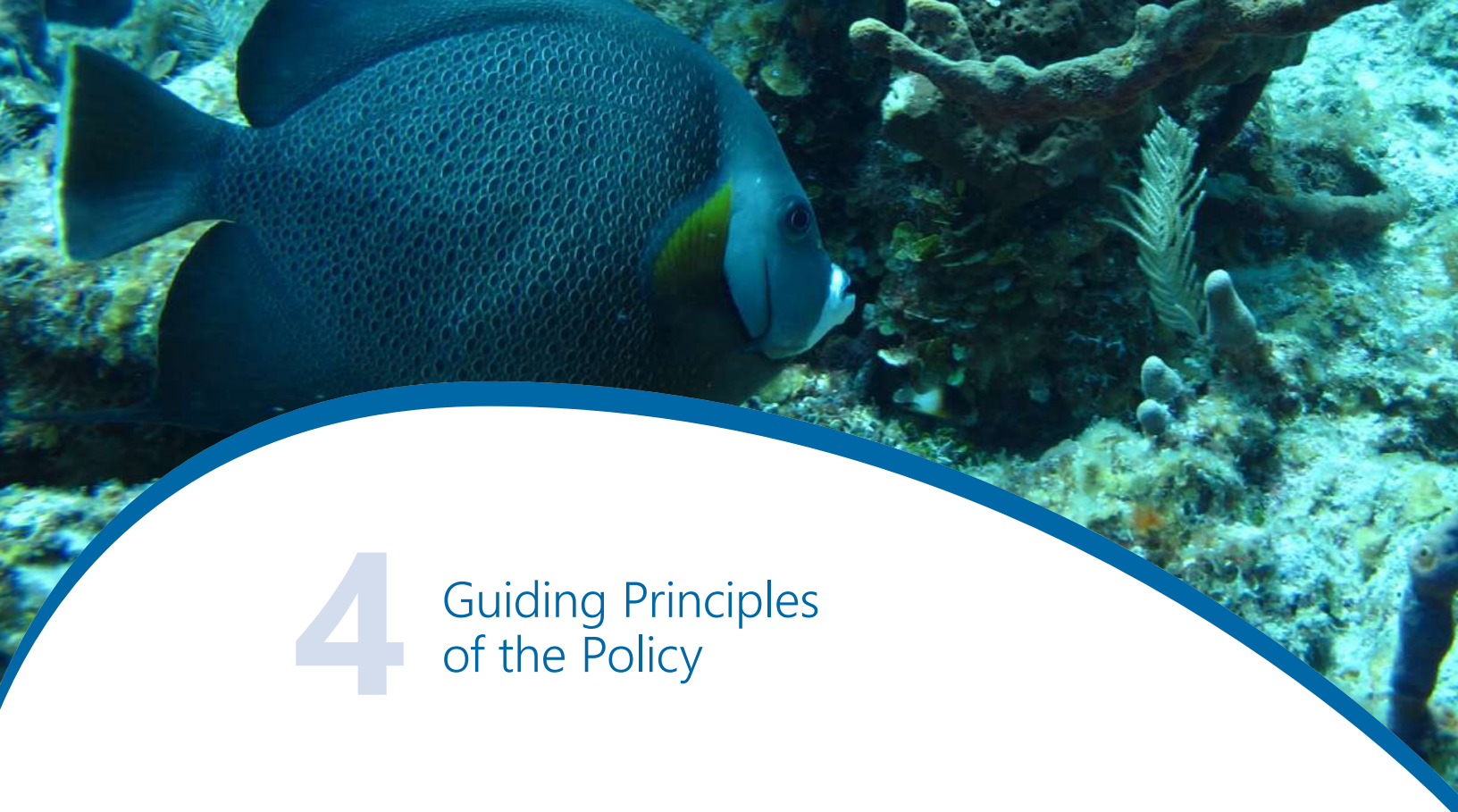
As has been indicated up to this point, there are several elements that converge to reach the state of Medium Oceanic Power (PMO), where the disposition of the actors is necessary, who, in an inter-sectorial work with the orientation of the CCO, will execute the strategies of this new Policy.

Having described the concept of *PMO*, it is possible to identify the sectors of Colombia that have made progress and those that have had a late development, in reference to the strengthening of maritime power. The activities and themes that fall within the defined term are relevant both for the economic development of the country and for its international recognition; fishing, tourism, hydrocarbon exploitation, port infrastructure, industry and merchant shipping, among others, are strategic issues for cataloging a State as *PMO*.

Global reality in a continuous process of transformation requires the Colombian State continuous attention, guided and structured under identifiable objectives, aimed at promoting national maritime and coastal development in its broadest conception, from the political, social, territorial, economic, cultural and environmental points of view. This task should begin with the recognition of the challenges posed in matters concerning the development of maritime spaces, including coastal zones in the country. In this regard, it is necessary to continue strengthening a multidisciplinary and inter-institutional work, through the 60 institutions that are part of the CCO, with the purpose of obtaining national and international results that facilitate and encourage the maritime and coastal development of the country.



For this reason, we want to consolidate the political management and the value of the influence of the sea in the life cycle of the State, generating a robust strategic action which supports the promotion of national maritime interests, the articulation and complementarity of all the thematic areas, such as that of production and support, involving themes of environmental management, research, exploration and sustainable economic development, transportation, sovereignty, defense, comprehensive security, land use planning and protection of the historical, cultural and natural heritage of the country, consolidating the entirety around the theme of the sea, through an effective administration and transversal oceanic, coastal and insular management; coupled with a significant and renewed maritime vocation, understanding the latter as the conception that people have about their ocean spaces and the relationship that they manage to establish them, since marine space is a totalizer and transverse element to the sectors that make up the State and society.



4 Guiding Principles of the Policy

For the execution of the strategic lines of the PNOEC, the following guiding principles are established, which constitute the material substrate of the policy.

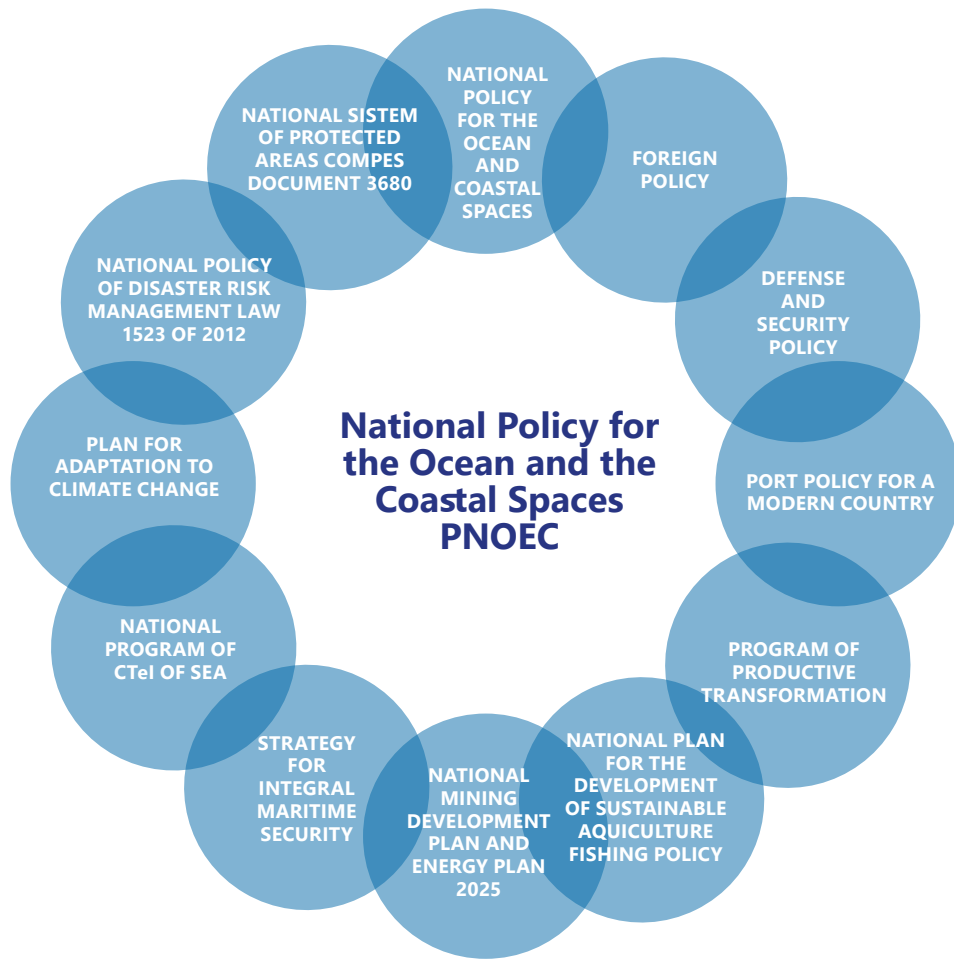
Territorial Unit of the State: The oceanic and coastal spaces are an integral part of the State, therefore, the policy will have the territorial unit framed in the National Sovereignty as reference, articulated to the participative and decentralized processes of planning, ordering and integral management of the territory, based on respect and recognition of cultural and natural diversity.

Interest of the State: The State highlights the importance of continuing to develop the potential offered by the ocean, the continental shelf, islands, islets, cays, cliffs, lowlands and banks, in addition to the coastal regions, and recognizes the value of its resources and the importance of their uses, seeking to take advantage of them in an integral and sustainable manner for the benefit of the present and future Colombian population, framed in the exercise of national sovereignty.

Balance between Economic Development and Sustainability: The State in its actions, through a set of principles and actions, guarantees the balance between socio-economic development, conservation and sustainable use of its resources, all framed in the full and permanent exercise of National Sovereignty.

Multisectorial, Inter-institutional and Multidisciplinary Approach: For the integral management of the ocean and coastal areas, the intervention of different sectors, institutions and disciplines is required whose common denominator is the sea, which under the coordination of the COCconcur in the formulation of plans, strategies that respond to the challenges emanating from national maritime interests. This means that the PNOEC has two conditions according to its constitutive function: it must be a multisectoral policy and its objective must be the optimization of the administration of the ocean and coastal zones for the social welfare and economic development of Colombians. In addition, the

PNOEC anticipates that the participation of public entities will be proactively presented, in such a way that they will generate investment initiatives based on an innovative effort, managing to integrate some sectoral policies of the past and thus foresee future plans and projects.



Community Participation: Based on the democratic, participatory and pluralist nature of the Colombian State, the active participation of all citizens in the planning, use and conservation of their oceanic and coastal spaces is recognized and fostered, through a rational and sustainable plan for the use of its resources. For the foregoing, the participation of the sectors subject to public policies related to the maritime country is foreseen, making it essential to have all instances of articulation and regulation, since experience has shown that intervention and interaction are essential not only in planning, but in execution, monitoring and control.



5 Objectives

5.1. General Objective

To establish a framework for the development and promotion of the National Maritime Interests, through an effective and harmonious integration between the actors in charge of its execution, guaranteeing the proper administration of the uses established for the territory, economic exploitation of marine-coastal activities, public benefit, conservation of the environment, promotion of the sustainable development of the ocean and coastal spaces, sociocultural development, surveillance and control of jurisdictional spaces.

The ultimate goal is to safeguard a healthy, safe, developed and prosperous territory for current and future generations that allows to turn Colombia into a Medium Oceanic Power that results in the increase of the quality of life of the inhabitants and the national development..

5.2 Specific Objectives

- To establish the necessary conditions for the integral development of maritime spaces through the exercise of sovereignty, the promotion of maritime interests and international cooperation, leading the country towards a regional leadership in marine issues.
- To safeguard the sovereignty and integrity of the national maritime territory.
- To achieve regional leadership in the development of the port system, maritime transport, the naval industry, the sustainable use of marine-coastal resources and maritime and recreational tourism, thus creating the conditions that favor the country's economic development.

- To establish a marine-coastal planning that makes it possible to reconcile the different visions, policies, plans, programs and actions on the territory, seeking a harmonious and integrated spatial development within the framework of governance, which provides well-being and generates security conditions to coastal populations.
- To generate the necessary conditions to maintain a healthy marine-coastal environment and to promote the conservation and sustainable use of resources.
- To generate and strengthen maritime territorial awareness and appropriation, academic programs oriented to the sea and the development of Science, Technology and Innovation, creating the conditions that allow the insertion of maritime culture in national activities.



6 Thematic areas

6.1. Integrity and Projection of the Maritime Territory

Global reality in a continuous process of transformation requires from the Colombian State continuous attention, guided and structured under identifiable objectives, aimed at promoting national maritime and coastal development in its broadest conception, from the political, social, territorial, economic, cultural and environmental points of view. This task must begin with the acknowledgment of the challenges posed in matters concerning the development of the maritime spaces, including the coastal zones of the country. In this regard, it is necessary to continue strengthening a multidisciplinary and inter-institutional work, with the purpose of obtaining national and international results that facilitate and encourage the coastal and maritime development of Colombia.

According to Article 101 of the Political Constitution of Colombia, the islands, islets, cays, hills, banks, the subsoil, the territorial sea, the contiguous zone, the continental shelf, the exclusive economic zone and the air space adjacent to it are part of this territory.

This gives the country, among other sovereign rights, an extensive maritime zone in both the Caribbean Sea and the Pacific Ocean, spaces that have been delimited, mostly, according to treaties signed with neighboring States, which are supported mainly in international cooperation, aimed at boosting bilateral relations and facing common problems.

Based on the previous scenario, on the geostrategic position of the country, and on the new challenges involved in the processes of globalization and integration in the maritime sphere, such as the conservation of the marine environment, the search for offshore energy resources, safety in maritime traffic, the free development of international trade, the prevention of crime at sea, among others; The country requires continuous attention in the aforementioned issues under the structure of identifica-

ble objectives aimed at the maintenance of sovereignty and the promotion of national maritime and coastal development in its broadest conception.

Additionally, it will be necessary to strengthen Integral Maritime Security, with the objective of taking actions that seek the protection of human life at sea, control of maritime traffic and safer navigation.

Thus, the objective of this area is to: Establish the necessary conditions for the integral development of maritime spaces through the exercise of sovereignty, the promotion of maritime interests, and international cooperation, leading the country towards a regional leadership in sea issues

6.1.1. Maintenance of Sovereignty, Territorial Integrity and Integral Development of Maritime Borders

Colombia's foreign policy is based on the principles of sovereign equality, non-intervention in the internal affairs of other states, compliance in good faith with the obligations undertaken, the peaceful settlement of disputes and the obligation of cooperation among States in the instruments that do not affect the sovereignty or self-determination of peoples.

Colombia defends the sovereign right to exploit its own resources in application of its policy, without prejudice to the provisions of ratified international instruments, with the responsibility to ensure that the activities carried out within its jurisdiction or under its control, do not harm the environment of other States or of areas beyond national jurisdiction.

Colombia will maintain and strengthen a permanent and planned defense of the interests of the country in the different multilateral forums that exist or are established in these matters, especially those that promote the integral development of maritime spaces, as well as those that promote respect for sovereign spaces, the protection and conservation of the environment. The Colombian State fully exercises its sovereignty in jurisdictional waters, its continental shelf and its coastal spaces.

The State will continue to safeguard its maritime, insular and terrestrial integrity through various actions that include, among others: the defense of sovereignty and national and international actions that reaffirm the jurisdiction of Colombia in its maritime, island and terrestrial areas, in accordance with the principles and norms of International Law and the economic and social development of said spaces, maintaining a sustainable protection of biodiversity and environmental resources.

Action lines

- Promoting the signing and / or ratification of border treaties for the definition of marine and submarine areas of the country, promoting national maritime interests at all times, and thus facilitating the development of integration programs with border states.
- Strengthening the actions of the Naval Power of the country with the purpose of safeguarding the integrity of the maritime territory, preventing and counteracting the development of criminal actions in the border areas.
- Developing the necessary mechanisms to support and promote naval, scientific and maintenance activities of the insular human habitation, intended to support the rights of Colombia over the Exclusive Economic Zone, the Continental Shelf and the Insular Areas.

- Promoting the development of oceanic spaces through infrastructure, cooperation projects and opening of productive markets.
- Implementing a strategy of security and defense of the interests of the country in a global scenario, which also considers the control of the sea, maritime interdiction and the protection of the resources of the Exclusive Economic Zone and its uses.
- Strengthening the development of Integral Maritime Security.

6.1.2. Strengthening International Cooperation in the Maritime and Marine-Coastal Sphere

The generation and consolidation of cooperation channels with other countries is vital for issues that require comprehensive approaches such as maritime security and defense, protection of marine resources, climate change, among others. International cooperation is a tool that facilitates the exchange of solutions in the face of common and international challenges and strives for the strengthening of local and national capacities, facilitating the insertion of Colombia in bilateral and multilateral scenarios in the issues of the sea. The foregoing, bearing in mind that the ultimate goal is always to safeguard the interests of the Nation and strive for its maritime and marine-coastal development.

Action lines

- Guiding the international cooperation policy and encouraging the development of cooperation programs in matters related to the maritime and coastal resources that are priorities for the country.
- Providing continuity to the synergies of a coastal and oceanic nature that are being carried out with the other countries of the region and that contribute to the protection of resources, the prevention of crimes at sea and the solution of coastal-marine problems common with other States.
- Leading maritime development initiatives in the region, making the country an international benchmark in ocean issues.

6.1.3. Projection of Antarctic Affairs

Antarctica is considered as one of the main regulators of the global climate, since all the oceans of the planet converge there, the connection between our country and the Antarctic territory can be oceanic, climatic and biological. Global warming at the same time produces some effects, such as thermal expansion of the water, rising sea level, melting of the poles, which introduces large amounts of water into the ocean; flooding of the coasts, modification of the beach profile and erosion processes on the coasts, as well as effects on ocean circulation.

Colombia joined the Antarctic Treaty through Law 67 of 1988, under the premise of contributing to scientific research on phenomena of global affectation, such as global warming and climate change, as well as other geostrategic aspects. The system that regulates Antarctica promotes that this space is still used exclusively for peaceful purposes of science and international cooperation and does not become the scene or object of international discord. In this regard, it is relevant that a country that is directly affected by climate change contributes with research and measures that allow us to demand from the world the care of this territory for our own survival and that of future generations.

New challenges are imposed on the dynamics of the international world; thus, scenarios such as the white contingent have been of great importance, and Colombia cannot be alien to them. Therefore, the country must assume a position that allows it to increase its participation in the Antarctic Treaty System, in order to achieve the status of Consultative Member, of which it has been part since the end of the nineties.

National aspirations are guided by the precepts established in the Treaty, among which are considered participation for protection, freedom of scientific research, cooperation between the parties, maintenance of Antarctica as a territory of peace, conservation of this zone and knowledge transfer.

Action lines

- Strengthening the country's participation in the Antarctic Treaty System and in the regional scenario.
- Implementing the Colombian Antarctic Program (PAC).

6.2. Economic Development

The State, in the development of its economic policy for the oceans and coastal zones, will manage the relevant resources in order to modernize and optimize the public infrastructure, promoting private investment and free competition, for the port system and port infrastructure, maritime transport, merchant marine and naval industry, tourism and mining industries, fisheries and aquaculture, marine bioprospecting, among others. Promoting the transformation of sectors towards efficiency and competitiveness through balanced and sustainable development that reduces environmental impacts and ensures the adequate use of natural capital; in order to consolidate the insertion of Colombia in international markets, through commercial and regional integration agreements, within the framework of international regulations and the principles of security and defense.

In this regard, the National Government will generate the strategies for the development of the maritime industry and its implementation in the regions, with regard to trade, rational use of marine resources, minerals, hydrocarbons, renewable energy sources and nautical development, which lead to the socio-economic growth of the country. Likewise, the Integral Maritime Security will be articulated as an axis that promotes development and competitiveness from the spectrum of physical and nautical safety, while promoting legal stability as one of the main engines of the increase of foreign investment in the coastal marine zones, which in the long run will result in stability and well-being of the population, due to the generation of employment and income that this represents.

Therefore, the specific objective of the area is: To achieve regional leadership in the development of the port system, maritime transport, the naval industry, the sustainable use of marine-coastal resources and maritime and recreational tourism, creating thus the conditions that favor the economic development of the country.

6.2.1. Development and Strengthening of Ports and Port Infrastructure

The national policy of ports expresses the need to connect Colombia with the world through maritime communication channels to face the new dynamics and commercial challenges. Hence, the need

to continue carrying out the expansion of port capacity in alliance with the private sector and considering the orderly development that responds efficiently to the demands of foreign trade and to the opportunities for the provision of port and logistics services; all in order to articulate the road, rail, air and fluvial network, yielding better results when optimizing multimodal transport.

Action lines

- To strive for a sustainable development of ports.
- To continuously improve the levels of efficiency in the provision of maritime and port services (Integral Maritime Security).
- To create the conditions of development in services, health, housing and education, and to strengthen industry and trade in areas of port influence for the sake of improving the quality of life of the populations that settle around the terminals.

6.2.2. Promotion and Potentializing of the Merchant Navy

The Merchant Navy provides the basic structure necessary for national and international trade. Therefore, the State must promote through its economic policy, the technological development so that it participates in an efficient and competitive manner in equal conditions with foreign companies. Maritime trade is enormously regulated at the international level, it encourages the development of shipbuilding, merchant shipping and the port system, besides being the safest means of transport, respectful of the environment and highly efficient. The development of maritime trade is relevant in the development of international trade, not only because of the volume of cargo that it carries, but also because of the synergies it develops.

Maritime transport plays a fundamental role in the integration and development of national and international trade. It is necessary for the country to be able to respond to a greater demand for maritime transport in order to be an influential State at the international level, which is why it is imperative that the strengthening of the merchant navy should be a priority in national policies, fostering exports, transportation, commercialization and cargo transfers, from Colombia to the rest of the world and within Colombian ports, also promoting a fleet of vessels not only used for trade, but also for tourism.

The development of the Merchant Navy not only implies an economic value, but also a strategic one, by generating stability in the trade of the country's flagship products. In accordance with the above, the following is proposed:

Action lines

- To ensure that the progress of the Merchant Marine of international maritime transport is developed through a transversal approach that includes aspects such as infrastructure, suitability of theseafarers, processes and procedures within the framework of maritime integral security, protection of the marine environment and legal security.
- To encourage the development of national and bi-oceanic cabotage navigation.
- To strengthen the implementation of Physical Security in compliance with Integral Maritime Security Strategy.

6.2.3. Consolidation of the Naval Industry

The Naval Industry, like the Merchant Navy, provide part of the basic structure necessary for national and international trade. According to the Shipyard Committee of the Fedemetal Chamber of the Andi: “the Colombian shipbuilding industry comprises a conglomerate of business and technological capabilities oriented to the design, construction, maintenance, repair, modernization and dismantling of ships and naval artifacts” (DINERO, 2013).

The shipyard industry is characterized as a sector with infrastructure to develop, in which a potential exporter is identified, which is why it is necessary to expand the activities beyond the repair and maintenance of vessels. The development of a shipbuilding industry, capable of building and providing technical support to maritime and fluvial vessels for the defense of the National Sovereignty and to promote foreign and domestic trade, with self-sufficiency in naval, fluvial and maritime technology should be promoted.

The State should promote an infrastructure of shipyards in Colombia for series construction, for which purpose it should privilege the acquisition of technologies, innovative capacity and preparation of highly qualified personnel, with the objective of converting the Naval Industry into an exporter line of work of great impact, from the use of the strategic location of the country with access to two oceans.

Action lines

- To develop regulatory frameworks and actions that generate greater competitiveness for the national shipbuilding industry, eliminating the existing negative protections.
- To promote, through the PES Program, competitiveness in the design, construction and repair of vessels that contribute to the productive transformation of the country.
- To encourage the development of shipyard Clusters along the Caribbean and Pacific coasts, privileging those ports that offer a strategic geographical position and that also provide comparative advantages in terms of location, depth and protection of the bay.

6.2.4. Sustainable Development of the Fisheries and Aquaculture Sector

The development of activities such as fishing and aquaculture in Colombia is transcendental for its contribution to the food security of the population and for the generation of income and jobs; key indicators for the country.

Therefore, the efforts of the national government should be oriented to the development of this productive sector, in accordance with the principles, orientations and strategies indicated in its political and normative framework, especially integral sustainability (social, economic, environmental) and that of the territorial and participatory approach. In addition, the country continues to make efforts in various international scenarios to increase fishing capacity in open sea in a manner that is responsible for the environment.

Action lines

- To promote the sustainability of resources of fisheries and those associated with coastal marine aquaculture.
- To Promote the competitiveness and efficiency of the coastal marine fisheries and aquaculture sector through research, technological innovation, training of human resources, technology transfer, improvement of infrastructure and logistics associated with the sector.
- To generate national aquaculture development that reduces the pressure on the natural resource and guarantees food security.
- To increase the internal consumption of fishing resources and national aquaculture.

6.2.5. Promotion of Maritime Tourism and Recreation

Since 2001, the country had identified in its 2020 vision some basic products in which the regions have been specializing: sun and beach, history and culture, nature tourism (eco-tourism, rural tourism and adventure tourism), agro-tourism, sports, fairs, festivities and capital cities (which includes shopping, health, congresses and conventions, incentive travel). Around these products, the regional offer has diversified considerably. The challenge of tourism is then oriented to generate economic growth, inclusive development and environmental sustainability, promoting the competitiveness of its products and destinations in a way that attracts a segment of tourists with permanent flow.

Tourism linked to the ocean offers great prospects. On the one hand, the sun and beach product is one of those that must gain in quality, in such a way that it can be compared with competitors from the Caribbean and other regions of the world. On the other hand, it must be complemented with other options, such as nautical tourism, which allows all kinds of nautical activities with the enjoyment of nature, the tourist and recreational offer of the different coastal regions of our country and cruises, in the which we are beginning to take the first steps.



Action lines

- Promover los principios de turismo sostenible en todos los destinos y productos ligados al territorio marino-costero.
- Desarrollar proyectos que promuevan la industria turística en el campo marino –costero y en el desarrollo del Plan Nacional de Turismo Náutico.
- Generar mecanismos para reglamentar y optimizar el desarrollo del buceo recreativo, Pesca deportiva, actividades de recreación y el deporte náutico marino en Colombia.

6.2.6. Exploitation of Minerals, Hydrocarbons and Non-Conventional, Alternate or Renewable Energy Sources (FNCE) in the Sea and the Coastal Zone

The National Policy of the energy mining sector in line with the PNOEC, allows to progress as a State facilitator and promoter of the industry. By generating an adequate infrastructure for the expansion of each of the sectors, positioning itself energetically, both in the national and international markets, in a framework of sustainability and harmony with natural resources and in accordance with current environmental regulations.

In order to achieve the objectives of economic growth, employment generation, increase in exports, convergence and regional development, it is necessary to supply hydrocarbons, to expand the coverage of electric power and natural gas, promoting energy integration with other countries, strengthening the institutional framework of the mining sector and developing a responsible and competitive mining, but at the same time responsible with the environment and the communities. Also, with an efficient energy basket that encourages the gradual replacement of the diesel generation and the penetration of the FNCE, with priority in renewable sources, in localities without access to energy, taking advantage of natural resources and generating competitive advantages internationally.

It is also the objective of this policy to facilitate, in the medium term, the local supply of natural gas and fuels; to develop projects to expand the infrastructure of these services (oil pipelines, transport infrastructure, among others, all this carried out within a framework of sustainable development of the exploitation of resources and the development of the mining sector).

For the hydrocarbons, mining and energy sectors, strategies, programs and environmental projects of the national order have been identified, prioritized and developed, related to the activities of the sectors, promoting their competitiveness and sustainability in relation to the following axes: water resources, ecosystem services and biodiversity, climate change, productive processes, prevention and control of environmental degradation and institutional strengthening.

Action lines

6.2.6.1. Minerals

- To manage the strengthening of infrastructure that facilitates, promotes and makes competitive the exploitation of gold, platinum, coal and construction materials, among others; evaluating, preventing, reducing and controlling the pollution generated by these activities and their impacts in the marine coastal areas.

- To act as a priority in the prevention, control and restoration of degraded marine and coastal areas, as a consequence of mining exploitation or illegal activities carried out on the territory.
- To promote compliance with good environmental practices in marine and coastal areas, as mechanisms that ensure sustainable management of the mining productive activity in these areas of the National Territory.
- To develop geological studies focused on determining the true potential of strategic minerals, their extraction and optimal use.
- To promote the exploration and clean exploitation of deep ocean minerals known as polymetallic nodules.

6.2.6.2. Hydrocarbons: Oil and Gas

Oceans and coastal areas are important to continue positioning the Colombian Oil Industry, for which, the action is translated as follows:

- To optimize the levels of efficiency of the country in the face of contingencies due to spills of hydrocarbons both on the coast and in the ocean.
- To determine the hydrocarbon potential of the country.
- To strengthen the monitoring and control of activities related to the exploitation of hydrocarbons on the continental shelf in aspects of inspection and control, with a view to protecting human life and the marine environment.
- To generate new maritime interconnections that strengthen the capacity to transport natural gas in the country.

6.2.6.3. Unconventional Sources of Energy (FNCE), Alternate or Renewable

To continue to develop Colombia's low-carbon development strategy and to prioritize implementation strategies for short, medium and long-term actions to reduce greenhouse gas emissions, contributing to generate economic, social and environmental benefits, such as savings in production costs, diversification and energy security, and improvement in air quality.

To promote the development and use of conventional and non-conventional energy sources, mainly those of a renewable nature, with criteria of rational and efficient use, including through cogeneration systems, both in the national interconnected system and in non-interconnected areas, because of their impact on marine and coastal areas.

6.2.7. Development of Marine Bioprospecting

Colombia is recognized worldwide as a mega-diverse country and for being at the top of the lists of the states with the greatest biodiversity of birds, amphibians and reptiles, among others, as well as for its great marine biodiversity. The identification, evaluation and use of this diversity can be used as a means to promote economic, technological and sectoral development. In relation to the above, it is considered necessary to develop said activity through:

Action lines

- To promote the sustainable use of marine and coastal biodiversity.
- To promote the sustainable use of the genetic diversity provided by marine and coastal ecosystems.

6.3. Strengthening Marine-Coastal Governance

El territorio marino y costero colombiano posee potencialidades económicas, naturales, sociales y culturales. The Colombian coastal and marine territory has special economic, natural, social and cultural potentialities. Natural, urban, rural, social and political phenomena interact in it directly or indirectly which result in processes of use, transformation and occupation of the territory, generating opportunities to improve competitiveness, incorporating guidelines that contribute to the well-being of local populations, the maintenance of ecosystems and economic development.

For this reason, the planning and territorial ordering processes of the marine and coastal spaces are fundamental to guarantee that the activities that generate development are carried out in a sustainable manner in said territories, in such a way that assures both growth and the distribution of economic benefits and the maintenance of the natural base that sustains them.

Thus, the governance of the oceanic spaces and the coastal areas of the Nation acquires a renewed preponderance by becoming one of the main tools for territorial development, as it is understood by the COI: "the processes and institutions through which coastal zones and oceans are managed by public authorities, in partnership with communities, industry, NGOs and other actors through international, national, sub-national laws as well as policies and programs, uses and customs and culture, in order to improve the socioeconomic conditions of the communities that depend on these areas and their living resources."

To this end, the National Government will propose the organization of the coastal-marine territory of the country and will strengthen the institutionalism of the sea, which must act in an intersectoral and multidisciplinary manner; in the transversal, harmonic and coordinated action at both the central and decentralized levels and other organizations designated within the national legal framework.

Consequently, the following specific objective is proposed for the area: To establish a marine-coastal order that makes it possible to reconcile the different visions, policies, plans, programs and actions on the territory, seeking a harmonious and integrated spatial development within the framework of Governance, which provides welfare and generates security conditions for coastal populations.

6.3.1. Institutional and Policy Consolidation

The transversality of the oceanic and coastal theme in the different institutions that make up the structure of the Colombian State reflects the importance of its integrated management. Hence, that governance is understood as the interactions between structures, processes and traditions that determine how power is exercised, how decisions are made regarding issues of public interest, and how citizens or other actors participate to achieve long lasting economic, social and institutional development and for a healthy balance between the State, civil society and the economy.

For this reason, and in order to recognize the relevance of marine and coastal spaces for the development of the country, it is necessary to achieve agreements between the State, public and private actors

and society, to contribute to the resolution of conflicts in the marine-coastal territory; as well as managing and maintaining the assets of public use of the Colombian State in such a way that Colombians can effectively use and enjoy them.

Aware of this situation, the National Government, through Decree 347 of 2000, defines the COCas an intersectoral body of advice, consultation, planning and coordination of the National Government in the field of PNOEC and its various issues related to the development of Colombian seas and their resources. Hence, the importance of coordinated, harmonious and multisectoral action that can develop through the Executive Secretariat the entities that make up the CCO, since they exercise different functions, which are complementary to each other, and necessary to do a successful job in the maritime territory.

Action lines

- To promote spaces and mechanisms (regional, national or international) that allow improving the governance of the marine and coastal territory.
- To coordinate joint control and surveillance schemes between entities whose competencies so define it.
- To strengthen the inter-institutional communication and coordination of entities related to the conservation and use of marine biodiversity.
- To strengthen the capacities (technical, financial and operational) of the institutions in charge of the management of the coastal marine territory of the country.
- To promote the analysis, adaptation or creation of legal instruments to improve the comprehensive management of the Colombian seas and coasts.
- To implement the National Policy of the Ocean and Coastal Spaces.
- To strengthen the national marine data and information infrastructure.
- Management of marine data and information in the country and implementation of monitoring systems for decision making.

6.3.2. Planning and Management of Coastal Areas and Oceanic Spaces

The planning and management of coastal zones and oceanic spaces are indispensable processes in the administration of the territory; directly linked to the Government (at national, regional and local levels), productive sectors, communities and research, whose final goal is the effective harmonization of cultural, economic and environmental values. Likewise, beaches, low-tide zones and jurisdictional marine areas should be considered as a fundamental part of the planning and physical ordering of the Colombian territory, in their quality of goods for public use, due to their strategic connotation for territorial unit and the sovereignty of the State.

Therefore, the planning and management of this territory must be carried out in accordance with current legislation, through the application of different methodologies, adapting to the conditions of each region. The State will incorporate the criteria established in the agreed marine-coastal planning processes into the planning instruments of the national, regional and local order.

Thus, the Integrated Management will have as referents, the three Integral Regions of Planning and Territorial Organization: Oceanic Caribbean Region, Insular Caribbean Region and Pacific Region (which includes the Insular Pacific Zone), which will make it possible to articulate in these territories, the national development policies with the specific problems of the coastal regions. It will be developed through a National Committee for the Integrated Management of Oceanic and Coastal Spaces, made up of the competent entities, articulated by the Colombian Ocean Commission and harmonized with the coastal environmental units and their regional and local committees.

Action lines

- To strengthen the planning of coastal and insular municipalities and departments, incorporating considerations related to coastal zones and the sea, and establishing mechanisms for agreement for the management and sustainable use of these territories.
- To promote inter-institutional actions for the maintenance, administration, protection and control of public goods, as well as re-signifying their social value as spaces for education, recreation and coexistence.
- To propitiate the space for the generation of policies and resource management that allows the planning, ordering, administration and control of national maritime waters.

6.3.3. Risk Management

The risk corresponds to the potential damages or losses that may occur due to the dangerous physical events of natural, socio-natural, technological, bio-sanitary or unintentional human origin, in a specific period of time and which are determined by the vulnerability of the exposed elements. Therefore, disaster risk stems from the combination of threat and vulnerability. In this regard, earthquakes, coastal erosion, landslides, floods, droughts, tsunamis, and tropical cyclones are among the main threatening phenomena that generate risk situations, both for the populations settled in coastal zones and for marine ecosystems and their biodiversity. Other threatening phenomena are pollution by land and marine sources and invasive species.

Vulnerability in maritime and coastal areas is dynamic, therefore, capacities to reduce risk and to prepare for emergency response through public, private and community, integrated and efficient management must be strengthened. In such a way that risk management contributes to the safety, welfare, quality of life of the inhabitants and the sustainable development of the marine and coastal areas of the country, through participation in planning processes, execution, monitoring and evaluation of policies and actions related to knowledge, prevention, reduction and mitigation of social, economic and environmental risks in marine and coastal areas of the country.

6.3.3.1. Mitigation of Climate Change and Acidification

The climate of the planet is changing and the phenomena associated with these changes affect the living conditions of the inhabitants of the Colombian marine and coastal areas, as well as the economic development of the regions and the environment. At present, Colombian coasts concentrate a number of economic activities, besides experiencing an accelerated population growth and an increase in public and private investments, helping to thrust the economic development of the country.

Impacts are expected on ecosystems, food production, human health, the availability of water, industry, human settlements and society in general. Specifically for coastal and marine areas, it has been established with a high level of certainty that:

- On the coasts the erosion risk will increase.
- In the low and vulnerable areas, the number of floods will increase.
- The oceans will continue to modify their pH, becoming increasingly acidic, with the consequent impact on coral organisms and dependent species.
- The mobility patterns of the different fisheries will be modified.
- The frequency and intensity of extreme weather events will increase.

For this reason, it is necessary to incorporate considerations related to climate change in planning and decision making, to respond to the challenges of a changing climate and to find opportunities to improve intervention in the territory (land use, infrastructure development and improvement of the quality of life of the inhabitants of the regions) and designing strategies and actions to be implemented both in the coastal municipalities and in natural ecosystems, in such a way that vulnerability is reduced in the short, medium and long term.

Action lines

- To promote the design and implementation of proposals related to the reduction of CO2 emissions in order to reduce the impacts generated in the marine environment.
- To promote the design and implementation of comprehensive initiatives that increase the resilience of the coastal and insular areas of the country in the face of Climate Change.

6.3.3.2. Natural Events

Climate variability depends on the interaction of the climate system: the atmosphere, hydrosphere, cryosphere, lithosphere and biosphere. This is due to external forcing, whether natural, such as the sun (seasonal changes) or anthropogenic, such as the modification of riverbeds and forests (modifying the reflection of light and water resources). The extreme events that are part of the climatic variability are not more than events that exceed the 90-10 percentiles, being very rare. However, climate change can increase these extreme events.

These changes in variability result in warm, cold regions and circulation patterns in atmosphere and ocean with time scales that can vary from a few days, weeks, months or years. Among the most known modes of variability are the ENSO oscillations, better known as El Niño or La Niña, the tropical cyclones, and among the extreme events, droughts, frosts and Tsunamis.

These oscillations don't have a strict regularity, so being prepared for variations in intensity and time is fundamental for the populations.

Action lines

- Generating guidelines on risk management in natural events in coastal areas.

- Focusing inter-institutional efforts on the dissemination of technical-scientific information, in order to ensure the incorporation of risk management issues from the national, regional and local levels.

6.3.3.2.1. Tsunami

- Guiding, promoting and strengthening the research processes related to the knowledge of the threat and the risk of Tsunamis.
- Supporting actions that favor the reduction of the risk due to tsunami.
- Promoting the development of capacities aimed at the effective and timely operation of the National Detection and Tsunami Warning System.
- Encouraging actions to strengthen risk communication processes and preparing for community and institutional response through the National Technical Committee for Tsunami Relief.

6.3.3.2.2. "El Niño" or "La Niña" Conditions

- Strengthening monitoring, following up and prediction of the El Niño - La Niña phenomenon in the country.
- Promoting the generation of knowledge about the El Niño - La Niña Phenomenon in the country.
- Increasing the resilience of cities and towns to the effects and impacts of the El Niño - La Niña Phenomenon.

6.3.3.2.3. Tropical Cyclones

- Developing and implementing lines of research associated with the effects and impacts of tropical cyclones in the country.
- Encouraging the inclusion of the phenomenon as a threat that has an impact on the planning of the territory at the Municipal level.
- Implementing warning systems at regional and local levels related to the phenomenon.
- Promoting risk communication actions for communities exposed to tropical cyclone risk.
- To technically support the formulation of processes aimed at reducing the vulnerability of homes and essential buildings.

6.3.3.3. Research, Evaluation, Prevention, Reduction and Control of Terrestrial and Marine Sources of Pollution to the Sea

It is increasingly evident that human activities carried out both in the coastal zone and on the continent, are responsible for the pollution of the seas and the coasts of the country. The sea has become the final destination of the discharges and waste that are transported by the rivers from the cities and towns, putting at risk not only the sustainability of productive activities such as tourism and fishing, but also affecting the health of people, species and ecosystems. Therefore, it is necessary for the country to focus its efforts towards the prevention, reduction and mitigation of pollution generated by both terrestrial and marine sources, in order to guarantee the competitiveness of economic activities and environmental sustainability of the territory.

Action lines

- To strengthen national instruments related to coastal marine pollution.
- To coordinate national actions to prevent and reduce the impacts caused by land-based sources of pollution.
- To coordinate national actions to prevent and reduce the impacts caused by sources of marine pollution.
- To promote the design of instruments that allow the implementation of sustainable activities that change the behavior of the industry and consumers.

6.3.3.3.1. Knowledge of Invasive Alien Species

Invasive Alien Species (EAI) are currently one of the greatest threats to global biodiversity, because they cause serious economic, environmental and health impacts, resulting in difficulties in achieving development. In marine and coastal environments, invasive species are one of the four major threats to the oceans, along with pollution from land-based sources, the overexploitation of marine resources and the destruction or alteration of marine habitats. Introduction of these species can be intentional or unintentional (accidental) and occur through a variety of routes. The knowledge and understanding of the invasion routes will allow the country to take appropriate actions to prevent the arrival of invasive alien species.

Action lines

- To identify, evaluate, monitor and control invasive species with a higher risk of invasion in port and marine areas.
- To coordinate actions related to the prevention of marine biological invasions.

6.4. Sustainable Use of Marine Biodiversity

Colombia is the second country with the greatest biodiversity in the world, after Brazil (Rodriguez, 1997); the second in marine biodiversity of the American continent, after Mexico and the only one in South America with a coastline on the Pacific and the Atlantic Oceans, which places it in an important place of maritime activity due to its proximity to the Panama Canal and the crossing of the main communication channels of world trade; but that puts the country at greater risk of environmental contamination by the activity that takes place at sea.

In this regard, marine and coastal areas have gained special importance because of the potential they have for the development of the country, as a result of the benefits or ecosystem services that generate the natural and social base of these territories.

Based on the foregoing, in order to manage the marine and coastal environment, it will be important to develop the maritime integral security in its component "protection of the marine environment", the incorporation, among others, of the ecosystem approach will be an important strategy for the conservation and sustainable use of marine biodiversity, recognizing the cultural diversity of Colombians as an integral component of ecosystems. In addition, an adaptive management that responds

to the complete and dynamic nature of ecosystems where research plays an important role in decision-making will be necessary.

For this reason, the specific objective of the area is to: Generate the conditions that allow maintaining a healthy marine-coastal environment and promote the conservation and sustainable use of resources.

6.4.1. Knowledge and Protection of Biodiversity

- To improve knowledge of marine and coastal ecosystems in terms of their composition, structure and functioning as a basis for conservation and sustainable use.
- To develop and adjust economic valuation models of marine biodiversity and its ecosystem services in the Caribbean, Pacific and Insular regions.
- To improve knowledge of focal species, both flora and fauna of marine biodiversity (threatened, endemic, introduced, emblematic, of current and potential use) in terms of population dynamics, composition, structure and function as a basis for their conservation and sustainable use.
- To expand the knowledge of the genetic composition of species and ecosystems of the country's marine biodiversity.
- To identify and evaluate the impacts of natural and anthropic factors on the components of marine biodiversity
- To know, protect and strengthen the cultural systems associated with marine biodiversity
- To strengthen the Marine Biodiversity Information System (SIBM)

6.4.2. Conservation and Restoration

In recent decades, the conservation of the natural base of Colombian territory has become a priority, both in academic areas and in official institutions that have the function of managing and maintaining biodiversity.

The complexity and magnitude of the loss of marine biodiversity, as well as the benefits generated to society by it, are increasing. Fragmented or deteriorated habitats, diminution of populations and species, as well as unsustainable fishing practices, scarce regulations for the use of the coastal zone and marine spaces, are some of the threats to our natural heritage. As an in situ strategy to face these problems, the country, within the framework of the Convention on Biological Diversity (CDB), the Sustainable Development Goals and the development goals of the Millennium, has committed itself to the formation of representative, effective and complete systems of marine protected areas, both nationally and regionally. In addition, efforts continue to be made in the Regional Organizations for Fisheries Management (OROP) to generate regulations on management and conservation. Changes in land use, occupation and fragmentation of ecosystems result in the loss and deterioration of marine biodiversity. Endemic, migratory and threatened species play a fundamental role in the dynamics of ecosystems, many of them contribute to the reproduction and maintenance of other species, as well as the sustenance of local populations. For this reason, it is necessary to guarantee the survival of these species, by establishing programs for their conservation (for example, protected areas) and management, in addition to signing agreements and conventions for their management

- Consolidation of the Subsystem of Marine Protected Areas (SAMP).

- Implementation of the Action Plan of the National Restoration Plan.
- Development of management plans for marine species in situ.
- Ex situ conservation of components of marine biodiversity.

Strengthening local, regional and national capacities for the fulfillment of international commitments subscribed and ratified by the country, related to the conservation and management of bio-diversity (eg Cites, Ramsar, Unesco-MAB, Unesco-World Heritage etc.).

6.4.3. Exploitation

Colombia has a huge natural heritage, which reinforces its potential as one of the countries with the greatest opportunities to generate economic alternatives for its development. The use of the country's marine biodiversity should be directed towards knowledge and sustainable use that avoids the collapse of resources due to unsustainable practices, such as overfishing and the fragmentation of ecosystems, which sometimes cause irreversible damage to the functioning of the oceans. The characterization of the components, the evaluation of the status of the populations and essential habitats, their monitoring, and the surveillance and control, through an adequate management and ordering of the activities, will contribute to the conservation of the marine wealth that the country has.

- To promote initiatives for the sustainable use of marine biodiversity through local knowledge.
- Sectoral management that promotes the sustainability of marine biodiversity.
- To develop programs for the sustainable use of marine biodiversity (bio-trade, green markets, promising species).

6.5 Maritime Culture, Education and Science

The need to generate a maritime awareness in the citizens of the country, among those who are: residents and visitors of coastal and insular spaces, has as one of its referents the importance of recognizing the existence of social cultural, artistic and educational practices and expressions characteristic of these contexts and the way in which these spaces are preserved and conceived by society in general.

In this regard, it is essential to identify the set of traditions, practices and social manifestations that have been forged over the years in these areas, in order to promote, with the identification, the appropriation of historical, anthropological and cultural heritage; an activity that plays a fundamental role in the development of public policy objectives in the cultural sphere, since it encourages the process of creating a national identity.

To this end, an articulation between the entities with public responsibilities on the maritime and coastal areas and the academic and research entities that develop activities related to these spaces is indispensable. Derived from this articulation, it will be possible to have a greater number of professionals specialized in the maritime and coastal areas, able to understand and support the process of strengthening existing cultural manifestations, and the development of social and economic spheres. Likewise, it is essential to educate and sensitize the Colombian population from school spaces, including those who do not develop recurrent practices, in these environments, about the meaning and natural and cultural wealth that exists there.

On the other hand, it is necessary to identify and preserve the resources and the ancestral and contemporary cultural expressions of the marine and coastal spaces, investigating, protecting and divulging their value. Among them, those associated with tangible (movable and immovable) and intangible heritage, cultural interest goods and archaeological assets, all of which are scarcely researched and promoted, take on particular importance.

For the reasons stated above, the specific objective for the area of marine culture, education and science consists in: "generating and strengthening maritime territorial awareness and appropriation, academic programs oriented towards the sea and the development of Science, Technology and Innovation, creating the conditions that allow the insertion of maritime culture in the national activities".

6.5.1. Promotion of Maritime Culture and Heritage Protection Culture

In relation to the cultural sector, Colombian regulations set the National System of Cultural Heritage of the Nation, which is made up of the set of public of national and territorial level that exercise powers on the cultural heritage of the nation, for their goods and manifestations, for the goods of cultural interest and their owners, users at any title and holders; for the demonstrations incorporated into the Representative List of Intangible Cultural Heritage, for the set of instances and processes of institutional development, planning, information, and for the competencies and public obligations and the individuals, articulated between those that enable protection, safeguard, recovery, conservation, sustainability and dissemination of the cultural heritage of the nation.

Given that this system establishes responsibilities of the Culture Sector of the National, departmental and municipal Order, it is essential that strategies, alliances, programs and projects be promoted which are intended to promote investment in cultural activities, such as measures to protect culturally relevant assets; the Special Regime of Archaeological Heritage; the National Archives System; the goods declared as monuments, historical or architectural conservation areas; languages, dialects and material and immaterial practices in the maritime and coastal areas.

Recognizing that human settlements in insular, coastal and maritime spaces in the Colombian territory represent, in their vestiges and in their contemporary manifestations, an invaluable example of the cultural richness recognized by the 1991 Constitution, it is essential to open spaces for investigate, assess and protect the social and cultural practices associated with their condition of proximity to the sea, strengthening national and regional dynamics for social development.

On the other hand, it is necessary to indicate that the recognition of the existence of practices, experiences and vestiges in coastal environments, many of which enjoy processes of local appropriation, allows to strengthen the relationships that communities have with the maritime environment, in order to preserve and protect the nation's cultural heritage.

As a paragraph of this section, it cannot be forgotten that cultural issues in certain communities may be associated with vital activities, such as fishing, transport, worldview or daily practices, and that by virtue of this permanent link between culture and social dynamics, it is feasible to find fields in which trade, tourism and cultural industries become options for linking to legal and profitable economic circuits and spaces for institutional strengthening and supply. It is inferred then that the maritime space becomes a potential axis for national development that integrates different productive sectors of the economy.

Action lines

- Encouraging archaeological, anthropological and historical studies that lead to recognize and identify adaptations in the processes of migration and settlement of human presence in oceanic and coastal spaces.
- Encouraging intercultural dialogue between the groups seated in the coastal marine spaces, promoting the mutual recognition of interests, needs and importance of the existing cultural heritage.
- Developing tourism strategies that promote knowledge of the traditions and culture of the populations settled in coastal marine areas in an effort to improve their conditions and life plans.
- Stimulating the development of strategies that contribute to the Protection of the Archaeological and Cultural Heritage of the country in the oceanic and coastal spaces.
- Strengthening the dissemination of content through activities that generate and increase the maritime awareness of the population.

6.5.2 Promoting and Strengthening Maritime Education

Education is a right of every person and a public service that has a social function; it seeks access to knowledge, science, technology and other goods and values of culture. In this framework, it is necessary to include maritime issues at all levels and modalities of the national education system, to promote technical, technological and professional training programs on ocean issues, to promote the development of scientific competencies related to marine issues, to stimulate research master's programs and doctorates related to these issues, as well as to support teachers and seafarers to train in these programs.

The exercise of national sovereignty implies the recognition of maritime territory. A maritime education is needed that allows the seas and coastal areas to be known not only in their geographical, historical and cultural reality, but also in the wide variety of productive possibilities and of development of economic activities so that it is really considered as a development alternative.



Action lines

- To Promote and encourage the creation of academic programs related to the use, preservation and exploitation of the ocean and coastal areas by developing related scientific competencies.
- To create, disseminate and promote educational programs at the preschool, elementary and middle levels, articulated with Higher Education and to develop pedagogical dissemination strategies encouraging the generation of maritime awareness that recognizes the historical-geographical importance of the Colombian maritime territories.
- To promote the training of teachers in maritime subjects, through the encouragement of postgraduate programs.
- To generate the interinstitutional articulation space for the development of maritime education in accordance with national and international needs.

6.5.3. Development of Science, Technology and Innovation

The jurisdictional waters, the continental shelf and the coastal spaces, both in the Caribbean Sea and in the Pacific Ocean, are areas that are part of the national territory so, the knowledge of the maritime territory is essential for the development of different types of activities and processes such as: tourism; fishing; marine transport; mining exploration and exploitation; generation of alternative energies; conservation and recovery of biological diversity; science, technology and innovation; the maritime culture; global climate change and governance, among others.

Both basic and applied research is transversal to the implementation of any initiative that promotes the sustainable development of the country from the marine-coastal order, the characterization of the elements that make up the physical and biotic environment of these areas is a basic input to ensure that the decisions to be taken are supported by scientific certainty and are not the product of media actions that in the long term cause negative impacts on the quality of life of the inhabitants of these areas, their environment or in the national economy. On the other hand, the products resulting from marine scientific research are support tools in the strengthening of governance, integral maritime security and the protection of human life, among others.

The development of science allows knowledge, use and conservation of living and non-living resources of the maritime territory. The technical and scientific arguments are the basis for the construction of the defense of territorial integrity and sovereignty. The actions that promote the development of scientific and technological issues translate into the key arguments for the defense of Colombian maritime interests, materialized in the rights it would preserve in terms of exploration, exploitation and conservation of living and non-living resources of the maritime territory and the continental shelf, such as oil, gas and carbohydrates, polymetallic nodules, sedentary species, deep corals and all those resources harbored by the ocean floor and that will only be known through the marine scientific research that is developed in these areas.

Knowledge of the maritime territory and a better understanding of its resources is necessary to guarantee its integrity, administration and exploitation, guaranteeing the access of future generations of Colombians to the resources vital for their survival and development.

For this reason, it is necessary to contribute to the organization, development, strengthening and consolidation of science, technology and innovation of the sea in Colombia, in order to ensure that

the country has solid scientific and technical bases that allow comprehensive management and of its coastal and marine zones and resources, in such a way that a balance is achieved between its conservation and productive development (sustainable use).

Action lines

- To promote and strengthen joint work between the government, academic and production sectors, in order to consolidate the relationship between research and innovation in subjects related to marine sciences, oriented towards technological development for the productive and social transformation of the country.
- To evaluate and disseminate the impacts of scientific, technological and marine innovation research carried out in the country, that allow the solution of national or global problems related to the improvement of the quality of life and the sustainable use of ecosystems and marine resources, and, therefore, the standards of life of Colombians.
- To strengthen the training of experts and groups in the different areas of sea research, and the easiest access to training programs.
- To strengthen the National Program of Marine Sciences and Technologies.
- To identify and generate best practices, protocols and other guidelines with a view to improving standards in science, technology and innovation.



7 Monitoring and Evaluation

The National Policy of the Ocean and the Coastal Spaces with its objective: to turn Colombia into a Medium Oceanic Power (PMO), becomes the framework in which the different actions of all the sectors in search of the recognition of the sea and the coasts as a constituent part of the Colombian State, taking into account the global dynamics and the opportunities that the country has to promote ocean development in accordance with national maritime interests.

The foregoing is implemented through the PNOEC Action Plans, where the plans, programs and projects to be developed are consolidated, in order to achieve the objectives proposed in a specific period of time and the actors responsible for their fulfillment. These will be formulated in a concerted manner, through the different tools at their disposal for inter-institutional, intersectoral and inter-organizational coordination.

The resources for the development of the activities derived from the policy, must come from a suitable projection of the General Budget of the Nation, coordinated by the Ministry of Finance and Public Credit, and the DNP. Likewise, the PNOEC must rise to the CONPES document category and serve as input for the formulation of documents such as the National Development Plan, the Sectoral Administrative Development Plans, the Development Plans of the Territorial Entities and the Territorial Land Regulation Plans. Likewise, the entities responsible for complying with this Policy and its respective Action Plan will timely incorporate into their investment plans the budget resources for full compliance with the established goals.

The PNOEC evaluation will be carried out under the coordination of the Executive Secretary of the CCO, taking into account criteria of effectiveness, efficiency and equity, in such a way that it is kept up to date and continues to be the optimal basis for adjusting the interventions of the National Government, in accordance with the changing realities of the environmental, economic, social, institutional and technological environment. That said, it will be responsible for verifying compliance with

the goals and products of the Action Plans, as well as to carry out the publications of their progress and management through the SINOC in a periodic and systematic way throughout its implementation and execution, independently of the evaluation carried out by the corresponding control bodies.

Finally, the National Government, will indicate within the National Development Plans (PND), the purposes and objectives related to this Policy, in turn, it will establish the necessary appropriations within the Investment Plan of the Public Entities of the National Order, with the objective of complying with the actions established in it.



8 List of acronyms

ACCEFYN: Academy of Exact, Physical and Natural Sciences

AEC: Association of Caribbean States

GRASP Alliance: Regional Alliance for the observation of the Oceans of the Southeast Pacific.

AMP: Marine Protected Areas

ANH: National Hydrocarbons Agency

ARC: Navy of the Republic of Colombia.

ASCUN: Colombian Association of Universities.

AUNAP: National Authority of Aquaculture and Fisheries.

CARs: Regional Autonomous Corporations.

CBIR: International Whaling Commission. CCO: Colombian Ocean Commission

CBD: Convention on Biological Diversity

CIIFEN: International Center for the Investigation of the El Niño Phenomenon. CICAR:

CITES: Convention on International Trade of Endangered Species of Wild Fauna and Flora

CIURE: Intersectoral Commission for the Efficient and Rational Use of Energy and Other Forms of Unconventional Energy

COI: Intergovernmental Oceanographic Commission

COLCIENCIAS: Administrative Department of Science, Technology and Innovation. COMMNAP: Council of Administrators of the National Antarctic Council.

CN AA: National Commission of Antarctic Affairs.

COTECMAR: Science and Technology Corporation for the Naval, Marine and Fluvial Industries

CPA: Committee on Environmental Protection.

CPPS: Permanent Commission for the South Pacific
CREG: Energy and Gas Regulation Commission.
CTN AA: National Technical Committee for Antarctic Affairs.
NTC RSENP: National Technical Committee of the Regional Study of the El Niño Phenomenon.
CTN AT: National Tsunami Warning Technical Committee.
CTPD: Technical cooperation among developing countries
DANE: National Administrative Statistics Department
DIMAR: General Maritime Directorate.
DNP: National Planning Department
ERFEN: Regional Study of the El Niño Phenomenon.
FAO: Food and Agriculture Organization of the United Nations.
FENR: New and Renewable Energy Sources
FFMM: Military Forces.
FNCE: Non-conventional sources of energy.
GLOBALHAB: Global Ecology and Oceanography of Harmful Algal Blooms. ICANH: Colombian Institute of Anthropology and History.
IDEAM: Institute of Hydrology, Meteorology and Environmental Studies of Colombia.
IDOE: Projects and Programs of the International Decade for Oceanic Exploration.
IGAC: Agustín Codazzi Geographical Institute.
INCODER: Colombian Institute of Rural Development. INGEOMINAS: Colombian Institute of Geology and Mining. INPA: National Institute of Fisheries and Aquaculture.
INVEMAR: Marine and Coastal Research Institute José Benito Vives de Andreis.
IOCARIBE: Intergovernmental Oceanographic Commission.
IPSE: Institute of Promotion and Planning of Energy Solutions.
MADR: Ministries of Agriculture and Rural Development. MADS: Ministry of Environment and Sustainable Development.
MARPOL: International Convention for the Prevention of Pollution from Ships. MDN: Ministry of National Defense
MINCIT: Ministry of Commerce, Industry and Tourism MME: Ministry of Mines and Energy
NOAA: National Oceanic and Atmospheric Administration.
OHI: International Hydrographic Organization
NGO: Non-Governmental Organization PAC: Colombian Antarctic Program.
PlaNDAS: National plan for the development of sustainable aquaculture.
PES: Strategic Surface Platform.
PMO: Medium Oceanic Power.
PNGRD: National Plan for Disaster Risk Management.
PNGRT: National Tsunami Risk Management Plan.
PNICM: National Program for Research, Evaluation, Prevention, Reduction and Control of Terrestrial and Marine Sources of Pollution to the Sea
PNOEC: National Policy of the Ocean and Coastal Spaces.
PNUD: United Nations Development Program (UNDP)
PNUMA: United Nations Environment Program

RAPAL: Meeting of the Administrators of Latin American Antarctic Programs.
RCTA: Consultative Meetings of the Antarctic Treaty.
RIMPAC: Rim of the Pacific Exercise.
RUNAP: Unique Registry of Protected Areas.
SCAR: Consultative Meetings of the Antarctic Treaty.
SENA: National Learning Service
SIAC: Environmental Information System for Colombia. SIAM: Marine Environmental Information System.
SIBM: Information System on Marine Biodiversity.
SINA: National Environmental System.
SINAP: National System of Protected Areas.
SINOC: National Oceanic and Coastal Information System. SNCTI: National System of Science, Technology and Innovation. SNDAT: National Tsunami Warning System.
SNIGRD: National Information System for Disaster Risk Management.
SNP: National Planning System.
SPNN: System of National Natural Parks.
UAC: Integral Planning and Territorial Environmental Management Units.
UE: European Union
UNCTAD: United Nations Conference on Trade and Development
UNESCO: United Nations Organization for Science, Education and Culture.
ZNI: Non-interconnected areas.



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Second Officer Andrés Polo Gallego
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Doctor Juan Bernardo Vargas Reyes

MINISTRY OF DEFENSE

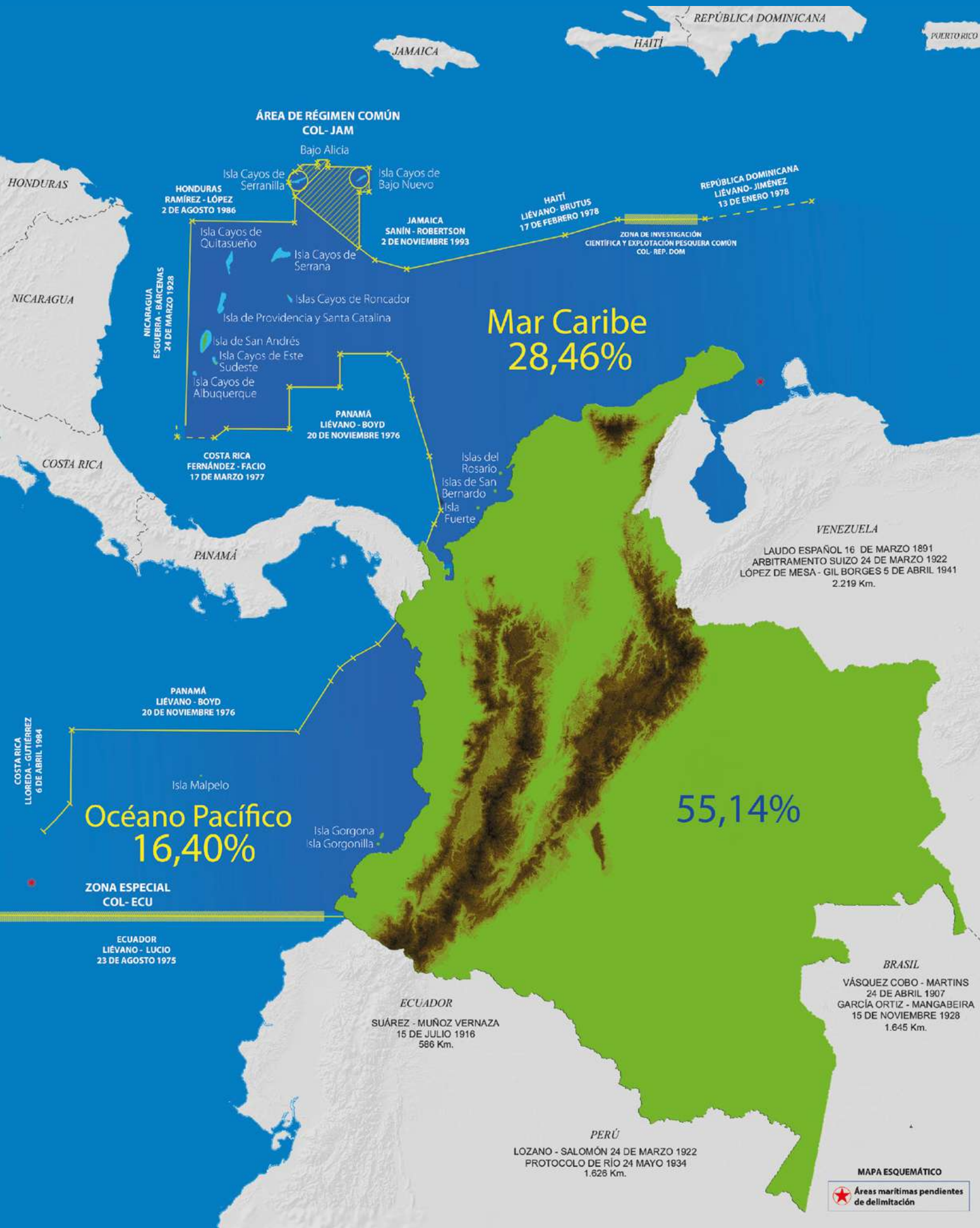
Captain of Frigate César Vargas Turizo
Doctor Hugo Chacón Moreno

MINISTRY OF MINES AND ENERGY

Doctor Héctor Pérez Cardona
Doctor Olga Salamanca Barrera

OTHER SPECIALISTS

Colonel of IM (Retired) Luis Chávez Perdomo
Corvette Captain William Gómez
Corvette Lieutenant Juan Galvis
Doctor Camilo Mateo Botero



JAMAICA

REPÚBLICA DOMINICANA

PUERTO RICO

HAITÍ

ÁREA DE RÉGIMEN COMÚN COL- JAM

Bajo Alicia

Isla Cayos de Serranilla

Isla Cayos de Bajo Nuevo

HONDURAS RAMÍREZ - LÓPEZ 2 DE AGOSTO 1986

JAMAICA SANIN - ROBERTSON 2 DE NOVIEMBRE 1993

Isla Cayos de Quitasueño

Isla Cayos de Serrana

HAITÍ LIÉVANO - BRUTUS 17 DE FEBRERO 1978

REPÚBLICA DOMINICANA LIÉVANO - JIMÉNEZ 13 DE ENERO 1978

NICARAGUA ESGUERRA - BÁCENAS 24 DE MARZO 1928

ZONA DE INVESTIGACIÓN CIENTÍFICA Y EXPLOTACIÓN PESQUERA COMÚN COL- REP. DOM

Mar Caribe 28,46%

HONDURAS

NICARAGUA

COSTA RICA

PANAMÁ

Islas del Rosario

Islas de San Bernardo

Isla Fuerte

VENEZUELA

LAUDO ESPAÑOL 16 DE MARZO 1891

ARBITRAMENTO SUIZO 24 DE MARZO 1922

LÓPEZ DE MESA - GIL BORGES 5 DE ABRIL 1941

2.219 Km.

COSTA RICA LLOREDA - GUTIÉRREZ 6 DE ABRIL 1984

PANAMÁ LIÉVANO - BOYD 20 DE NOVIEMBRE 1976

Isla Malpelo

Océano Pacífico 16,40%

Isla Gorgona

Isla Gorgonilla

55,14%

ZONA ESPECIAL COL- ECU

ECUADOR LIÉVANO - LUCIO 23 DE AGOSTO 1975

ECUADOR

SUÁREZ - MUÑOZ VERNAZA 15 DE JULIO 1916

586 Km.

BRASIL

VÁSQUEZ COBO - MARTINS 24 DE ABRIL 1907

GARCÍA ORTIZ - MANGABEIRA 15 DE NOVIEMBRE 1928

1.645 Km.

PERÚ

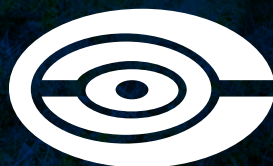
LOZANO - SALOMÓN 24 DE MARZO 1922

PROTOCOLO DE RÍO 24 MAYO 1934

1.628 Km.

MAPA ESQUEMÁTICO

* Áreas marítimas pendientes de delimitación



**COLOMBIAN
OCEAN
COMMISSION**

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