

**THE ENVIRONMENTAL LICENSING OF PORTS AND
DREDGING ACTIVITIES IN THE COASTAL AND MARINE
ZONES IN BRAZIL AS AN INSTRUMENT FOR THE
IMPLEMENTATION OF INTERNATIONAL LEGAL REGIME**

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Abstract

In Brazil the national port system is composed by 35 public ports and over a hundred private terminals, responsible for over 90% of the exports of the country. In the last 10 years, the amount of cargo that passed through Brazilian ports increased by 81% and this number is expected to continue growing as new investments are predicted for the sector to overcome the challenges that it faces today. The vast majority of the ports and terminals are located along the 8.5 thousand kilometers of coastline. The new ports development and investments and the growth of the port sector raise concerns relating to potential environmental impacts associated with these projects, such as destruction of habitats, release of contaminants into coastal waters and impacts over marine species. In this regard, environmental licensing can be a tool to prevent, control and reduce the environmental effects of these activities over marine and coastal zones. In Brazil, ports and dredging activities are subject to environmental licensing and must follow the requirements of Brazilian regulations, which include environmental impact assessment and the establishment of environmental management plans, in order to obtain the environmental license to have the installation and operation authorized. The objective of this thesis is to review relevant international instruments and the legislation of the United States of America and the Republic of South Africa in order to search for best practices that can complement and improve the Brazilian procedures for environmental licensing of ports and dredging. Elements from international instruments and from the countries regulation regarding environmental licensing of ports and dredging were identified as good examples to be implemented in both ongoing and new projects in Brazil. The aspects that the thesis focuses on are related to ocean dumping, air and water quality, oil pollution preparedness and response, biodiversity and environmental impact assessment procedures. The implementation of the action identified and recommended in this thesis, once approved, would have different timing as some recommendations may be adopted within the current procedures, therefore, in the short term, and others will require new legal instruments to be developed for their implementation, in the medium or long term.

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Ms. Valentina Germani

Acronyms

ACAP	Agreement on the Conservation of Albatrosses and Petrels
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
AEL	Air Emission License
AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
AQA	Air Quality Act
AQM	Air Quality Management
ASCOBAMS	Agreement on the Conservation of Small Cetaceans of Baltic and North Seas
BAR	Basic Assessment Report
BRICS	Brazil, Russia, India, China and South Africa
CAA	Clean Air Act
CBD	Convention on Biological Diversity
CEQ	Environmental Quality Council
CFR	Code of Federal Regulations
CMS	Convention on Migratory Species
CO2	Carbon Dioxide
CONAMA	National Environment Council of Brazil
COP	Conference of Parties
CWA	Clean Water Act
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FRP	Facility Response Plan
GPA	Global Programme of Action for the Protection of the Marine Environment from Land-based Activities
HCP	Habitat Conservation Plan
IBAMA	Brazilian Institute of Environment and Renewable Natural Resources
ICMA	Integrated Coastal Management Act
ICMBio	Chico Mendes Institute for the Conservation of Biodiversity
IMO	International Maritime Organization
LPI	Logistics Performance Index

ITP Incidental Take Permit
MBTA Migratory Bird Treaty Act
MPRSA Marine Protection, Research and Sanctuary Act
MARPOL Convention for the Prevention of Pollution from Ships
MEPC Marine Environment Protection Committee
MERRAC Marine Environmental Emergency Preparedness and Response Regional Activity Centre
MMA Ministry of Environment of Brazil
NAAQS National Ambient Air Quality Standards
NEMA National Environmental Management Act
NEPA National Environmental Policy Act
NOAA National Oceanic and Atmospheric Administration
NOWPAP North West Pacific Action Plan
NPDES National Pollutant Discharge Elimination System
NWA National Water Act
OPRC International Convention on Oil Pollution Preparedness, Response and Co-operation
POP Persistent Organic Pollutant
PENAF Ports Environment Network – Africa
ROPME Regional Organization for the Protection of the Marine Environment
SPCC Spill Prevention, Control and Countermeasure
STRP Scientific and Technical Review Panel (STRP)
UNCED United Nations Conference on Environment and Development
UNFCCC United Nations Framework Convention on Climate Change
UNCLOS United Nations Convention on the Law of the Sea
UNCTAD United Nations Conference on Trade and Development
UNEP United Nations Environment Programme
USA United States of America
USCG United States Coast Guard
USACE United States Army Corps of Engineers
USEPA United States Environmental Protection Agency
WRDA Water Resources Development Act

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Introduction

1.1. Background and Context

Overview of Maritime Transport and Port Sector

With 80 percent of world trade by volume being carried by the sea, ports fulfill a critical function as links of global supply chains and constitute engines of economic growth¹. About 9.2 billion tons of goods were loaded in ports worldwide in 2012 and the world fleet has more than doubled since 2001, reaching 1.63 billion deadweight tons in January 2013².

Reflecting to a large extent their increased participation in the world trading system, developing countries continued to contribute larger shares to international seaborne trade. In 2012, they accounted for 60 per cent of global goods loaded and 58 per cent of goods unloaded. Developing economies' share of world throughput³ is approximately 70 per cent.

With a coastline of 8.5 thousand kilometers, Brazil has today 35 public ports and over a hundred private terminals, with the vast majority located on the coast (Figures 1 and 2).

¹ UNCTAD, Review of Maritime Transport 2012, Report by the UNCTAD Secretariat, United Nations, New York and Geneva, 2012.

² Deadweight Tonnage refers to the carrying capacity of a vessel. UNCTAD, Review of Maritime Transport 2013, Report by the UNCTAD Secretariat, United Nations, New York and Geneva, 2013.

³ Port throughput is the amount of cargo that passes through a port and is measured in volume or units and categorized by cargo type.

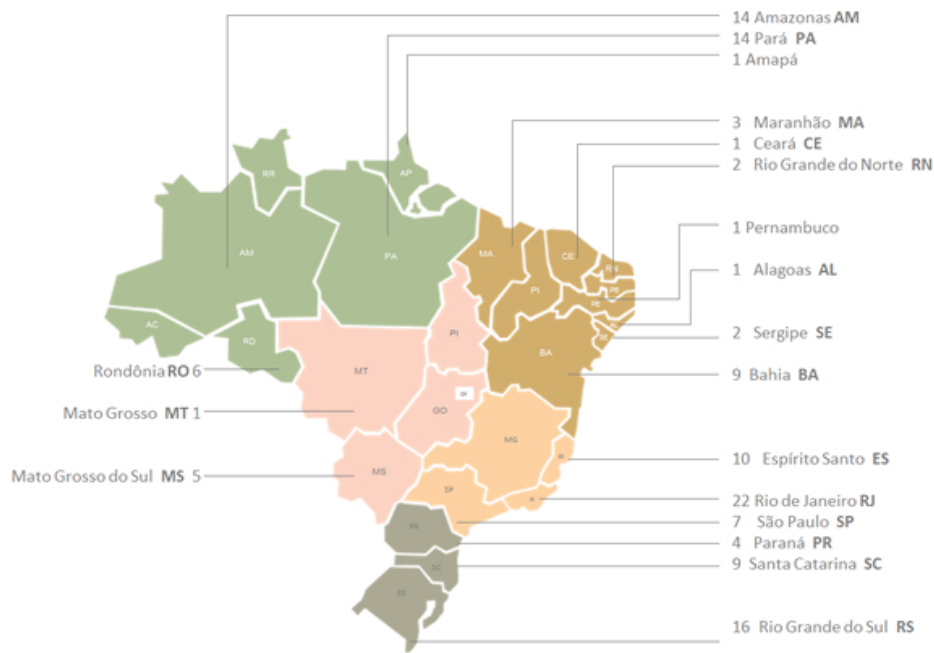


Figure 1: Public Ports of Brazil
(Source: Secretariat of Ports of Brazil)

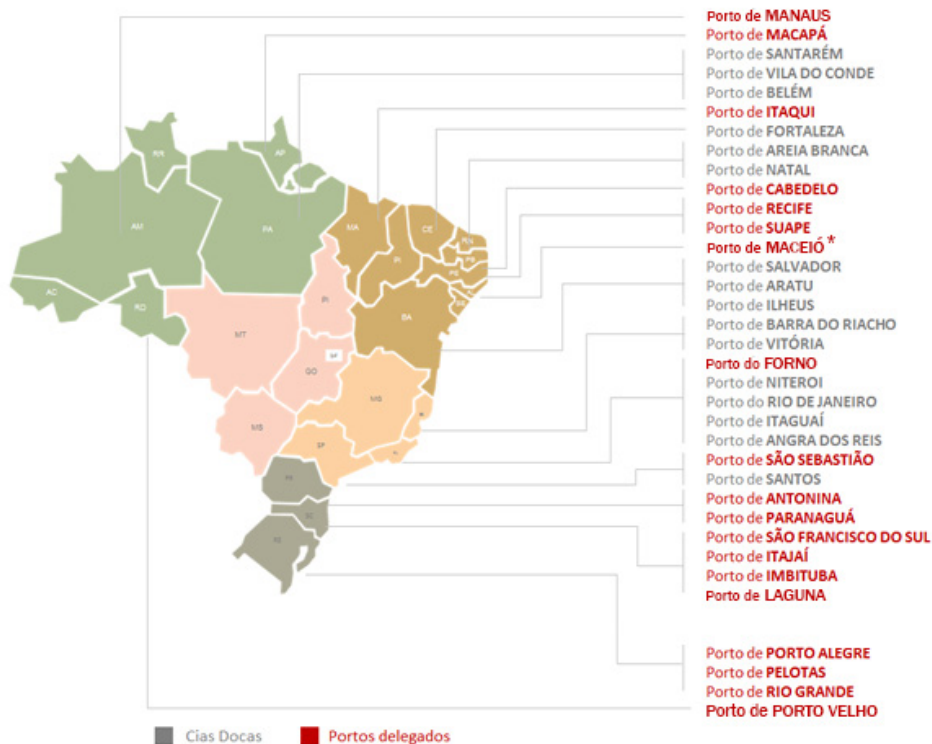


Figure 2: Amount of Private terminals in each state.
(Source: Secretariat of Ports of Brazil)

The Brazilian Port System handled, in 2013, 931 million gross tons of cargo, an increase of 2.9% compared to 2012. Alone, the port sector is responsible for over 90% of the exports of the country⁴. Figure 3 shows the growth of port throughput by Brazilian ports and demonstrates the significant growth in recent decades.

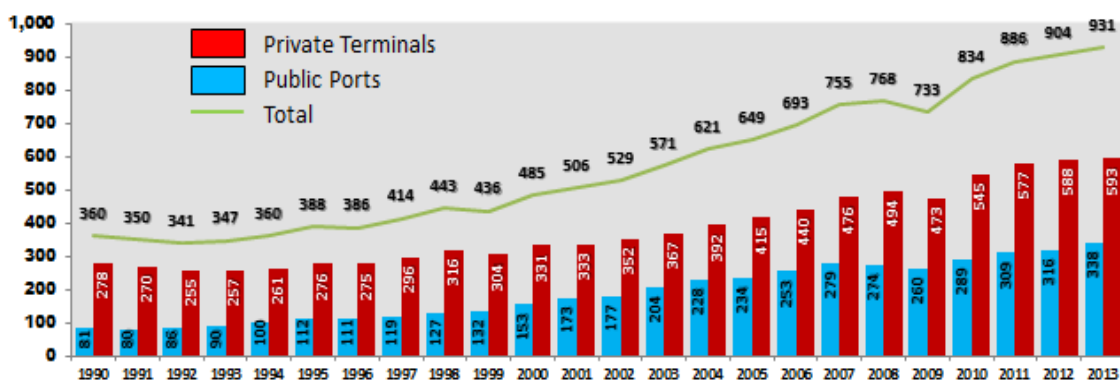


Figure 3: Port throughput by Brazilian ports from 1990 to 2013.

(Source: National Agency for Waterway Transportation)

The significant growth in the Port throughput and the seaborne trade reflects the investments made by the port sector. During the period 2000–2009, there were some 195 private investment projects in container, dry and liquid bulk and multi-purpose cargo terminals worth \$38 billion. Among the investments made in the sector, China, India and Brazil have attracted the highest number of private investments in recent years².

In Brazil, the improvements included investments in port superstructure, the acquisition of more productive cargo handling equipment, extension of infrastructure and the ability to provide associated logistics services. The improvements provided compatibility between the port system capacity and the demand growth, but today the situation is next to or, in some ports, above the operational capacity limit⁵.

Despite the improvements, Brazil has lost ground since 2010 on the Logistics Performance Index. The World Bank compiles the Logistics Performance Index (LPI) to help policy makers and the private sector jointly identify the main challenges to entering

⁴ Brazil, Secretariat of Ports, “National Ports system”, available from <http://english.portosdobrasil.gov.br/sections/port-systems> (Accessed in 09 December 2014).

⁵ Dalmo dos Santos Marchetti, Tiago Toledo Ferreira, “Situação atual e perspectivas da infraestrutura de transportes e da logística no Brasil” in *BNDES 60 anos: Perspectivas setoriais*, vol. 2, Felipe Lage de Sousa (Rio de Janeiro, RJ, BNDES, 2012).

into the global supply chain⁶. Brazil climbed 20 positions to 41st from 2007 to 2010, but fell to 45th in 2012. Improvements came from all pillars in the 2007–12 period, but mainly from better tracking and trace capacity. In the last two years, Brazil’s position deteriorated significantly in timeliness of shipments and logistics services, and slightly in quality of trade and transport-related infrastructure⁷. In 2014 The World Bank released the latest evaluation of LPI and Brazil ranks 65th on a list of 160 countries. Among the BRICS⁸, Brazil is below almost all countries, except from Russia⁹.

In Brazil, the port sector has several challenges to overcome, including the bottlenecks inherent to increased productivity and expansion of port infrastructure assets (land and sea access, basic services such as electricity, water, sanitation, signage and traffic control, environmental quality, maintaining the depth of the berths)⁵.

In order to address these needs and build up and modernize the infrastructure, the Energy and Logistics Investment Program was launched by the Brazilian Government in 2012, consisting of concessions for highways (7,500 km), railways (10,000 km), airports and ports. In this program, a total of U.S.\$ 24.3 billion¹⁰ will be invested in the modernization of the Brazilian port sector by the year 2017¹¹. Along with the investment program, the Brazilian Government also addressed the regulatory

6 The LPI measures on-the-ground trade logistics, factoring in: (i) border control efficiency; (ii) quality of trade and transport infrastructure; (iii) international shipment competitiveness; (iv) quality of logistics services and ability to track consignments; and (v) timeliness of deliveries (frequency with which shipments reach consignees within scheduled or expected delivery times). Each score was averaged to compose one index, which was used to rank 155 countries in 2007, 2010, and 2012.

⁷ Otaviano Canuto, Matheus Cavallari, José Guilherme Reis, “The Brazilian Competitiveness Cliff”, *Economic Premisse*, No.105 (February 2013).

⁸ BRIC: A label for a select group of four developing countries (Brazil, Russia, India and China) that are believed to have promising emerging markets and economies. Together these countries make up 40% of the world’s population and were forecasted by Goldman Sachs in 2001 to become leaders of global growth, output and development by 2050. When South Africa was added to the group, the acronym became BRICS. (<http://www.businessdictionary.com/definition/bric-countries.html#ixzz313VBmNky>).

⁹ Jean-François Arvis, Daniel Saslavsky, Lauri Ojala, Ben Shepherd, Christina Busch, Anasuya Raj, *Connecting to Compete 2014: Trade Logistics in the Global Economy. The Logistics Performance Index and Its Indicators* (Washington, D.C., World Bank, 2014).

¹⁰ Exchange rate in 20 May 2014 according to the Brazilian Central Bank.

¹¹ Brazil, Ministry of Finance, *Infraestrutura no Brasil: Projetos, Financiamento e Oportunidades* (Brasília, 2013).

issue, enacting, on 05 of June of 2013, Law 12,815, called “The Port Law”, which has as objectives:

- expansion, modernization and optimization of infrastructure and superstructure of organized ports and port facilities;
- stimulus for the modernization and improvement of management of ports and port facilities;
- encouraging competition;
- encouraging private sector participation; and,
- ensuring broad access to organized ports, port facilities and activities¹².

The new law also establishes the National Dredging Plan II, with new dredging projects to access the ports¹³.

Ports and dredging activities and the environmental impacts over coastal and marine zones

The new investments and the growth of the port sector raise the concern with the potential environmental impacts associated. Many commentators suggest that the greatest threat to coastal systems is development-related loss of habitats and services, such as those resulting from ports development and dredging activities, which often involve destruction of coastal forests, wetlands, coral reefs, and other habitats¹⁴.

Ports can be the source of environmental impacts in both land and marine habitats. Environmental concerns resulting from port installation and operation include: air emissions; discharges to the water; noise; loss and degradation of terrestrial and marine habitats; and waste generation and dredging disposal¹⁵. In the case of emissions to the air, the major air pollutants related to port activities that can affect human health include diesel exhaust, particulate matter (PM), volatile organic compounds (VOCs),

¹² Brazil, Law 12,815 of 05 June 2013, article 3.

¹³ Ibid, article 53.

¹⁴ Tundi Agardy, Jacqueline Alder, Paul Dayton, Sara Curran, Adrian Kitchingman, Matthew Wilson, Alessandro Catenazzi, Juan Restrepo, Charles Birkeland, Steven Blaber, Syed Saifullah, George Branch, Dee Boersma, Scott Nixon, Patrick Dugan, Nicolas Davidson, Charles Vo`ro`smarty, “Coastal Ecosystems” in *Ecosystems and Human Well-being: Current State and Trends*, Volume 1, Rashid Hassan, Robert Scholes, Neville Ash (Washington, D.C., 2009).

¹⁵ R.M. Darbra, A. Ronza, T.A. Stojanovic, C. Wooldridge, J. Casal, “A procedure for identifying significant environmental aspects in sea ports”, *Marine Pollution Bulletin*, 50 866–874 (2005).

nitrogen oxides (NO_x), ozone (O₃), and sulfur oxides (SO_x). Port operations also discharge carbon monoxide (CO), formaldehyde, heavy metals, dioxins, and pesticides¹⁶. The sources of these pollutants are: ocean-going and harbor vessels; cargo handling equipment; locomotives and vehicles¹⁷. Coastal water pollution may be caused by accidental spills of oil and other substances, release of wastewater and storm-water (rainwater) washed over port areas¹⁸. Other impacts include direct habitat destruction for port construction, effects over wetlands (affected by, inter alia, marine hydrodynamics changes due to the construction of breakwaters, noise and lighting), depletion of aquatic resources and reduction of biodiversity and species richness¹⁹, and impacts over marine protected areas.

In addition, dredged material is often disposed at the sea, causing changes to the physical, chemical, and biological characteristics of the water column and substrate that may adversely affect marine species, such as bottom-dwelling organisms at the site by smothering immobile forms or forcing mobile forms to migrate. Special importance is given to the impacts on threatened or endangered species, that include: covering or otherwise directly killing species and the impairment or destruction of habitat which host these species. The dumping of dredged material may also cause degradation or alteration of the elements of the aquatic habitat which are particularly crucial to the continued survival of some threatened or endangered species (*e.g.* good quality water, spawning and maturation areas, nesting areas, protective cover, adequate and reliable food supply, and resting areas for migratory species). Other impacts include the

¹⁶ Diane Bailey, Gina Solomon, “Pollution prevention at ports: clearing the air”, *Environmental Impact Assessment Review*, 24 749–774 (2004).

¹⁷ United States of America, U.S. Environmental Protection Agency, *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories* (2009). Available from <http://epa.gov/cleandiesel/documents/ports-emission-inv-april09.pdf>.

¹⁸ E. Peris-Mora, J.M. Diez Orejas, A. Subirats b, S. Ibanez, P. Alvarez, “Development of a system of indicators for sustainable port management”, *Marine Pollution Bulletin*, 50 1649–1660 (2005); Manel Grifoll, Gabriel Jordà, Manuel Espino, Javier Romo, Marcos García-Sotillo, “A management system for accidental water pollution risk in a harbour: The Barcelona case study”, *Journal of Marine Systems*, 88 60–73 (March 2011).

¹⁹ Liu Suling, Liu Yan, Song Guobao, Chen Yu , Zhang Shushen, Chen Jingwen, Wang Youbin, Sun Dong, Tang Zhipeng, “Study on the Eco-Compatibility between Port Construction and Wetland Nature Reserve”, *Procedia Environmental Sciences*, 2 486–495 (2010).

reduction of the rate of photosynthesis and the primary productivity due to reduced light penetration caused by suspended sediments in the water column and bioaccumulation of contaminants in wildlife²⁰.

Environmental licensing as a tool for pollution prevention and control

In Brazil and in many other countries, projects that may adversely affect the environment require an environmental license in order to have the installation and operation authorized. Environmental licenses are issued by public administrations and provide conditions that, once fulfilled, with the help of control systems, may reduced the potential impact to an acceptable level²¹. Environmental licensing is a key instrument for reducing industry's environmental impacts, facilitating its compliance with environmental requirements and promoting technological innovation. The overall goal is to protect human health and the environment, by defining binding requirements for individual sources of significant environmental impact²².

Environmental licensing combines a set of requirements usually established under different legal instruments. The common structure of the legislation is the existence of a "general legislation", that regulates the issuing of licenses for establishment and operation of productive activities, after identifying the environmental impacts of the activity, and defines the measures and operating conditions the activity should comply with, as well as "specific regulation" addressing specific resources or environmental aspects, such as air, water and biodiversity²¹. The requirements are defined both for prior and after the approval and implementation of the project, but nowadays, more emphasis has been given to the procedures prior to the approval and implementation of the project (from end-of-pipe pollution control to pollution prevention)²³, especially the environmental impact assessment.

20 United States of America, *Code of Federal Regulations*, Title 40, part 230 (2013).

21 The World Bank, *Environmental licensing: Global mapping and analysis of environmental regulations*, (Washington, D.C., World Bank, 2011).

22 Organisation for Economic Cooperation and Development, *Guiding Principles of Effective Environmental Permitting Systems* (Paris, France, OECD, 2007).

23 Aleg Cherp, Eugene Mazur, "Linkages between Environmental Assessment and Environmental Permitting in the Context of the Regulatory Reform in EECCA Countries", paper presented at the EECCA regional expert meeting in Moscow, 11 April 2003.

In Brazil the requirements for environmental licensing and environmental impact assessment were established through the National Environment Policy in 1981²⁴. Projects and activities that may cause impacts over the environment, such as ports and dredging, are subject to the requirements of environmental licensing, that are set in different legal instruments including, inter alia, the National Environment Council Resolutions, Laws and Normative Instructions from the Ministry of Environment.

1.2 Scope and Objectives

In the light of the current scenario and future expansion of the Brazilian port system combined with new dredging projects, the objective of this thesis is to identify examples to improve the federal environmental licensing procedures for ports²⁵ and dredging in Brazil based on international best practices. The focus will be the federal environmental licensing in Brazil, that is conducted by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) according to the Supplementary Law 140/2011²⁶. States may also be responsible for the environmental licensing of ports and dredging activities, and even though they are subject to federal law, states may adopt specific procedures for their environmental licensing, which will not be addressed in this thesis.

The scope of the research, in order to achieve this objective, is the review of the international legal regime concerning aspects related to the environmental licensing of ports and dredging, addressed in United Nations and other international instruments and in the countries' environmental regulation.

Provisions within international instruments (i.e. Conventions, Agreements, Conferences) regarding pollution prevention and control that could be applied on the environmental licensing of Ports and dredging will be examined. This analysis will include binding and non-binding instruments that have global and regional range.

The regulatory framework of other countries will be studied, to identify best practices that could serve as example for Brazil. The analysis will include the “general

24 Brazil, Law 6,938 of 31 August 1981, article 9.

25 For the purpose of this thesis, will be considered as “Port”, the place where facilities were built and equipped to meet the needs of shipping, handling and storage of goods and passenger traffic to or by water transport. It also includes the infrastructure for protection and access to the port (adapted from the Brazilian Law 12,815/2013).

26 Brazil, Lei Complementar 140 of 08 December 2011, article 7.

regulation”, that addresses the issuance of environmental licenses and environmental impact assessment procedures, and “specific regulation”, which regulates environmental aspects related to the environmental licensing of ports and dredging: sea and ocean dumping, air, water, oil pollution preparedness and response, threatened and endangered species and marine protected areas.

The United States of America and Republic of South Africa were selected as examples. The United States of America was the first country to implement the environmental impact assessment within regulatory procedures for the issuance of licenses, in 1969, through the National Environmental Policy Act²⁷, and also has a wide regulatory framework regarding environment aspects. South Africa was select because, like Brazil, belongs to the BRICS group. The African continent is increasingly attracting attention as a region with significant potential for maritime transport and seaborne trade and South Africa has the best logistics in Africa (the country was in the 34th position globally on the LPI, among 160 countries surveyed) and, among the BRICS, is the second nation with better logistics, after China.

After the review on the regulatory framework, the Brazilian federal environmental licensing procedures for ports and dredging will be compared to international regulations and other countries requirements. The Brazilian aspects that could be improved will be highlighted and a proposal will be put forward for the improvement of these procedures in Brazil, based on international standards and in the best practices of other countries. The proposal will evaluate the possible timing for the implementation of the new aspects, that could be either in short term, medium or long term.

1.3 Overview of the Report

The thesis is composed by an Introduction, which presents an overview of the maritime transport and port sector both in a global perspective and in Brazil and addresses the main environmental problems caused port development and dredging activities as well as the role of the environmental licensing in the prevention and control of pollution.

Part 1 of the thesis has two chapters: the first chapter, which presents the review of United Nations and other international instruments, with global and regional range,

27 United States of America, National Environment Policy Act of 1 January 1969.

that could be applied on the environmental licensing of ports and dredging; and the second chapter, that analyses the regulatory framework of the United States of America and South Africa regarding environmental licensing of ports and dredging, and environmental aspects related to the following activities: sea and ocean dumping, air, water, oil pollution preparedness and response, threatened and endangered species and marine protected areas.

Part 2 of the thesis presents the Brazilian case in two chapters. The first chapter has one section about the Brazilian regulation regarding the federal environmental licensing of ports and dredging and environmental aspects related to the same activities (Section A), and one section presenting a comparative analysis among the provisions of international instruments, the United States of America and South Africa regulation and Brazilian procedures (Section B). Based on the analysis of chapter 1, chapter 2 discusses the opportunities to improve the federal environment licensing of ports and dredging and how the proposal, if approved, could be implemented, in particular whether a new legal instrument will be necessary or if the implementation can occur within the current laws and procedures.

The thesis concludes with a summary of the finding and discussion about the achievements, as well as recommendations for future work.

Part 1: The International Legal Regime

Chapter 1: International Legal Framework

Section A: Global instruments

United Nations General Assembly Resolution 68/70 emphasizes the “importance of the implementation of Part XII of the Convention on the Law of the Sea in order to protect and preserve the marine environment and its living marine resources against pollution and physical degradation”. The Resolution also recalls the importance of the effective implementation of relevant conventions adopted in the framework of the International Maritime Organization, and the follow-up of relevant initiatives such as the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, to reduce the impacts on marine ecosystems²⁸. Under other conventions, such as the Convention on Biological Diversity (CBD), the Convention on Wetlands of International Importance and the Convention on Migratory Species, measures were also adopted to protect specific coastal and marine ecosystems and species²⁹. As ports and dredging activities may contribute to the impacts faced by the coastal and marine environment (e.g. destruction of habitats, release of contaminants into water), the provisions on the United Nations and other international instruments can provide elements to enhance the pollution prevention and control within the environmental licensing procedures.

Paragraph 1: Conventions, Protocols, Agreements and Treaties

United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (UNCLOS)³⁰ was opened for signature in 1982 and entered into force in 1994. A total of 166 States have become Parties to the Convention, including Brazil since 1988.

UNCLOS is known as “The Constitution of the Oceans”. It comprises 320 articles and nine annexes, governing all aspects of ocean space from delimitations to environmental control, scientific research, economic and commercial activities, technology and the settlement of disputes relating to ocean matters³¹. The Agenda 21,

28 A/RES/68/70

29 A/68/71/Add.1

³⁰ United Nations, *Treaty Series*, vol. 1833, No. 31363

³¹ The Law of The Sea: Official Texts of the United Nations Convention on the Law of The Sea and of the Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of The Sea with Index and excerpts from the Final Act of the Third United Nations Conference on the Law of the Sea (United Nations Publication, Sales No. E.97.V.10.

document adopted in the United Nations o Environment and Development (UNCED) of 1992, emphasizes that UNCLOS provides the international basis upon which to pursue the protection and sustainable development of marine and coastal areas and its resources³². Also, the document “The Future We Want”, which is the outcome document of the United Nations Conference on Sustainable Development of 2012³³, reaffirms UNCLOS as the instrument that provides the legal framework for the conservation and sustainable use of the oceans and their resources.

Part XII of the Convention addresses the protection of the marine environment against pollution. States are obligated to protect and preserve the marine environment³⁴ against different types of pollution³⁵:

- release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through atmosphere or by dumping;
- pollution from vessels (intentional and unintentional discharges);
- pollution from installations and devices used in exploration or exploitation of natural resources of seabed and subsoil;
- pollution from other installations and devices operating in the marine environment.

While the Convention makes no reference to biological diversity, Article 194 (5) does requires parties to take measures necessary “to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life”³⁶.

The Convention addresses the need for environmental impact assessment for planned activities that may cause substantial pollution or significant and harmful changes on the marine environment³⁷. Under UNCLOS, States are also required to monitor the risks and effects of pollution of the marine environment³⁸.

³² Chapter 17.1 (Section II Conservation and Management of Resources for Development) of the Agenda 21:Earth Summit – The United Nations Programme of Action from Rio, 294 p. April 1993.

³³ Report of the United Nations Conference on Sustainable Development, Rio de Janeiro, Brazil, 20–22 June 2012, Resolutions Adopted by the Conference (A/CONF.216/16).

³⁴ Article 192 of the United Nations Convention on the Law of the Sea.

³⁵ Article 194 of United Nations Convention on the Law of the Sea.

³⁶ Patricia Birnie, Alan Boyle, Catherine Redgwell, *International Law and the Environment*, 3rd ed. (New York, NY, Oxford University Press Inc., 2009).

³⁷ Article 206 of the United Nations Convention on the Law of the Sea.

³⁸ Article 204 of the United Nations Convention on the Law of the Sea.

Environmental licensing of ports and dredging activities should follow the principles of the Convention regarding prevention and control of marine pollution, especially in the observance of articles 194, 204 and 206.

Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and the 1996 Protocol

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1972, also called “The London Convention”, has as main objective the prevention of marine pollution caused by dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea³⁹. The London Convention entered into force in 1975 and has eighty seven Contracting States, including Brazil, where it entered into force in 1982⁴⁰.

The London Convention regulates any deliberate disposal at sea⁴¹ of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea and any deliberate disposal at sea of vessels, aircraft, platforms or other manmade structures at sea⁴². The waste or other matter covered by the London Convention is vast, including sewage sludge, dredged materials, construction and demolition debris, explosives, chemical munitions, radioactive wastes and other material loaded on a vessel for purpose of dumping⁴³.

In 1996 States agreed to the adoption of a Protocol to modernize the London Convention. The 1996 London Protocol entered into force in 2006 and supersedes the Convention as between the Contracting Parties to the Protocol which are also Parties to

³⁹ Article 1 of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

⁴⁰ International Maritime Organization. Status of multilateral Conventions and instruments in respect of which the International Maritime Organization or its Secretary-General performs depositary or other functions. 25 of June 2014. Available from <https://docs.imo.org/>

⁴¹ "Sea" means all marine waters other than the internal waters of States.

⁴² Article 3 of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

⁴³ David Hunter, James Salzman, Durwood Zaelke, *International Environmental Law and Policy* (Foundation Press, 2002).

the Convention⁴⁴. Today there are 45 Contracting States. The 1996 London Protocol reflects the incremental changes brought about by amendments over the years to the Convention⁴ but also brings important changes such as the “reverse list”, which means that the dumping of any wastes or other matter is prohibited with the exception of those listed in Annex 1 (which includes dredged material)⁴⁵.

The London Convention and the London Protocol require the issuance of permits prior to the dumping of wastes and other matter and the conditions to be fulfilled for the issuance of the permits, which include: evaluation of waste management options, description and characterization of the waste, dump site selection, assessment of potential effects and aspects of the permits⁴⁶.

Specific guidelines for the application of the Annexes of the London Convention for the disposal of dredging material have been addressed in the London Convention Resolutions. Consultative Meeting of the Contracting Parties to the London Convention has approved guidelines regarding dredging material assessment since 1986, later reviewed in 1995 and in 2000. In 2013 the Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol approved the “Revised Specific Guidelines for Assessment of Dredged Material⁴⁷”. The document guides national authorities in evaluating applications for dumping of wastes in a manner consistent with the provisions of the London Convention 1972 or the London Protocol, therefore, it can be applied to the environmental licensing of dredging activities.

⁴⁴ Article 23 of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

⁴⁵ Article 4.1 of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

⁴⁶ Article IV, Annex 1 and Annex 3 of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and Article IV and Annex 2 of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

⁴⁷ Report on Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol, London, 14 – 18 October 2013.

Convention for the Prevention of Pollution from Ships as modified by the Protocol of 1978 Relating Thereto

The Convention for the Prevention of Pollution from Ships is better known as “MARPOL” and was first adopted in 1973. In 1978 a protocol amended the Convention and the combined instrument entered into force in 1983. 152 States are Contracting Parties to the Convention, including Brazil since 1988.

When it entered into force, MARPOL focused on pollution by oil (MARPOL annex I). The convention has then been modified to address other types of pollution from ships and new annexes were added: noxious liquid substances in bulk (MARPOL annex II); Harmful Substances Carried by Sea in Packaged Form (MARPOL annex III); sewage (MARPOL annex IV); garbage (MARPOL annex V); Air Pollution (MARPOL annex VI).

The implementation of MARPOL requires not only the adoption of measures by the ships, but also the provision, by the port States, of land facilities for the reception of wastes (“port reception facilities”)⁴⁸. In order to provide orientation for the Contracting Parties to implement the port reception facilities under MARPOL, the Marine Environment Protection Committee of IMO has issued Resolution 83 (44), presenting guidelines for ensuring the adequacy of port waste reception facilities, and Resolution 219 (63) with guidelines for the implementation of MARPOL Annex V, which also addresses port reception facilities.

The Convention on Wetlands of International Importance

The Convention on Wetlands of International Importance, also called “The Ramsar Convention”, from 1971, has today 168 countries as contracting parties, including Brazil since 1993. The main objective of the Convention is the conservation and wise use of wetlands and their resources and takes a broad approach in determining the wetlands which come under its mandate⁴⁹, but five major wetland types are generally recognized: marine (coastal wetlands including coastal lagoons, rocky shores, and coral reefs); estuarine (including deltas, tidal marshes, and mangrove swamps);

⁴⁸ MARPOL Annex I: regulation 38; Annex II: regulation 18; Annex IV: regulation 12; Annex V: regulation 7; and Annex VI: regulation 17

⁴⁹ Articles 1.1 and 2.1 of the Convention on Wetlands of International Importance.

lacustrine (wetlands associated with lakes); riverine (wetlands along rivers and streams); and palustrine (meaning “marshy” – marshes, swamps and bogs)⁵⁰.

According to Article 2 of the Convention, a Contracting Party shall designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance. Brazil has established until today twelve Ramsar sites, three of them located at the coastal and marine zones.



Figure 4: Brazilian Ramsar Sites.

Source: Ministry of Environment of Brazil.

The Ramsar Convention addresses issues that could be applied to the environmental licensing of ports and dredging. For example, the need for Environmental Impact Assessment (EIA) prior to the implementation of a project that could affect a Ramsar site. Article 3.2 of the Ramsar Convention requires its Contracting Parties to

“arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference⁵¹”.

⁵⁰ Ramsar Convention Secretariat, *The Ramsar Convention Manual: a guide to the Convention on Wetlands (Ramsar, Iran, 1971)*, 6th ed. (Gland, Switzerland, Ramsar Convention Secretariat, 2013).

⁵¹ Article 3.2 of the Convention on Wetlands of International Importance.

This implies a need to have the ability to anticipate and predict the effects of actions on wetland ecosystems, and, arguably, a need to go through a process of the kind typically embodied by EIA⁵². In 1996, the Conference of Contracting Parties highlighted in Recommendation no 6.2 the concern that “much loss and degradation of wetland functions and values occurs without adequate prior assessment of the potential environmental impact of the relevant plans and projects” and called the Contracting Parties to “integrate environmental considerations in relation to wetlands into planning decisions in a clear and publicly transparent manner”. In the 7th Conference of Contracting Parties, the Resolution VII.16 called the Contracting Parties to

“reinforce and strengthen their efforts to ensure that any projects, plans, programmes and policies with the potential to alter the ecological character of wetlands in the Ramsar List, or impact negatively on other wetlands within their territories, are subjected to rigorous impact assessment procedures”⁵³.

The importance of the EIA was also addressed in the Strategic Plans of the Convention, since the first issued for the period 1997-2002 (adopted in 1996), being reinforced in the subsequent Strategic Plan of 2003-2008 and now on the last Strategic Plan (2009 – 2015), that brings the Strategy 1.3, which has as one of expected key results for 2015: “In accordance with national legislation, Environmental Impact Assessments have been made for any project which is likely to have negative impacts on the ecological character of wetlands”.

Guidelines for EIA were first presented in the 8th Conference of Contracting Parties. Resolution VIII.9 brought the recommendation for the Contracting Parties to

“make use, as appropriate, of the *Guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or processes and in strategic environmental assessment*, as adopted by Decision VI/7 of Convention on Biological Diversity (CBD) Conference of Parties 6, with

⁵² Ramsar Convention Secretariat, *Impact assessment: Guidelines on biodiversity-inclusive environmental impact assessment and strategic environmental assessment*. Ramsar handbooks for the wise use of wetlands, 4th edition, vol. 16. (Gland, Switzerland/Ramsar Convention Secretariat, 2010).

⁵³ Report of the Seventh Conference of Contracting Parties to the Convention on Wetlands of International Importance, San José, Costa Rica, 1999, Resolution VII.16.

the assistance of the guidance prepared by the Scientific and Technical Review Panel (STRP)”⁵⁴.

In 2006 the guidelines were updated by the CBD and the STRP reviewed the material and provided some supplementary perspectives of particular relevance to the Ramsar Convention, and these have been duly incorporated in the Annex to Conference of Contracting Parties Resolution X.17⁵⁵.

Other instrument that can be related to the environmental licensing procedures is the guidelines for Rapid Assessment of Inland, Coastal and Marine Wetland Biodiversity were approved at Resolution IX.1 of the 9th Conference of Contracting Parties and can be used, in some cases, as guidance for the study of the proposed area for the project, in order to provide information for the environmental impact analysis⁵⁶.

Convention on the Conservation of Migratory Species of Wild Animals

The Convention on the Conservation of Migratory Species of Wild Animals, also known as “The Bonn Convention”, (concluded in 1979, entered into force in 1983) has 120 States Parties and Brazil figures as a range state⁵⁷ but not as a Party to the Convention.

Fundamental principles of the Bonn Convention include the protection of the endangered migratory species listed on Appendix I and the establishment of agreements among the parties for the conservation and management of the species listed on Appendix II⁵⁸. Regarding Appendix I, the Convention indicates that the parties shall endeavor to conserve habitats of the species and prevent, remove, compensate or minimize adverse impacts of activities that could seriously impede or prevent the migration⁵⁹.

54 Report of the Eighth Conference of Contracting Parties to the Convention on Wetlands of International Importance, Valencia, Spain, 2002, Resolution VIII.9.

55 Report of the Tenth Conference of Contracting Parties to the Convention on Wetlands of International Importance, Changwon, Republic of Korea, 2008, Resolution X.17.

56 Report of the Ninth Conference of Contracting Parties to the Convention on Wetlands of International Importance, Kampala, Uganda, 2005, Resolution IX.1.

⁵⁷ State that exercises jurisdiction over a part of the range of a migratory species listed on the Convention, according to article 1 of the Convention on the Conservation of Migratory Species of Wild Animals

⁵⁸ Article 2 of the Convention on the Conservation of Migratory Species of Wild Animals

⁵⁹ Article 3 of the Convention on the Conservation of Migratory Species of Wild Animals

Following the Ramsar Convention and the CBD, Resolution 7.2 of the 7th Conference of Parties emphasized the importance of the EIA as a tool for the implementation of Articles 2 and 3 of the Convention, which acknowledge the importance of migratory species and the need to take action to protect it, especially migratory species that are endangered, and indicated the guidelines adopted at the COP 6 of the CBD as a reference⁶⁰. Other aspects that also called the attention and became Resolutions of the Conference of the Parties were: Oil pollution⁶¹; Adverse human induced impacts over cetaceans⁶²; and adverse anthropogenic marine/ocean noise impacts on cetaceans and other biota⁶³.

In the light of the Bonn Convention, the environmental licensing of ports and dredging could have a special focus on the possible impacts of the new activity over migratory species listed in the appendixes and, where appropriate, request specific analysis addressing the issues listed above.

International Convention on Oil Pollution Preparedness, Response and Co-operation (1990) and the Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (2000)

The International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC 1990) is a global instrument adopted by the IMO that establishes a framework for preparation and response to oil pollution incidents, through National and Regional Systems for preparedness and response and International co-operation. The OPRC 1990 was the outcome of a Diplomatic Conference in 1990, convened on the basis of the resolution 674 of the Assembly IMO. The Convention entered into force in 1995 and has one hundred and seven contracting parties, including Brazil, where it entered into force in 1998.

⁶⁰ Report on the Seventh Meeting of the Conference of the Parties to the Convention on Migratory Species, Bonn, Germany 18 September 2002 to 24 September 2002, Resolution 7.2.

⁶¹ Ibid, Resolution 7.3.

⁶² Report on the Eighth Meeting of the Conference of the Parties to the Convention on Migratory Species, Nairobi Kenya, 20 November 2005 to 25 November 2005, Resolution 8.22.

⁶³ Report on the Ninth Meeting of the Conference of the Parties to the Convention on Migratory Species, Rome, Italy, 01 December 2008 to 05 December 2008, Resolution 9.19; and Report on the Tenth Meeting of the Conference of the Parties to the Convention on Migratory Species, Bergen, Norway, 20 November 2011 to 25 November 2011, Resolution 10.24.

The Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol adopted in 2000) is a result of Resolution n° 10 adopted at the same Diplomatic Conference and extended the principles of the OPRC 1990 to pollution incidents involving hazardous and noxious substances. Thirty-three States are Parties to the Protocol, which entered into force in 2007.

Pursuant to the to Article 12 of the OPRC 1990 and to Article 10 of the OPRC-HNS Protocol, the Marine Environment Protection Committee (MEPC) of the International Maritime Organization established the OPRC-HNS Technical Group (previously OPRC Working group) as a subsidiary body of the Committee for the development of tools, manuals and other types of guidance to assist in the implementation of OPRC Convention and OPRC-HNS Protocol⁶⁴. The documents are submitted to the approval of the MEPC and could serve, specially the manuals, as guides for the analysis of oil pollution emergency plan that are submitted as part of the environmental licensing of ports⁶⁵.

Among the documents issued under the OPRC approved by the MEPC, the following guides and manuals could have application on the environmental licensing of ports: Manual on Assessment of Oil Spill Risks and Preparedness⁶⁶; Guidance Document on the Implementation of an Incident Management System⁶⁷; Guideline for Oil Spill Response in Fast Currents, approved by the MEPC in 2011⁶⁸, for the control of

⁶⁴ IMO, MEPC 61/8, available from <https://docs.imo.org/Search.aspx?keywords=%22mepc%2061%2F8%22>.

⁶⁵ Article 3 of the OPRC 1990 requires appropriate oil pollution emergency plans or similar arrangements for ships, offshore units and sea ports and oil handling facilities, which must be coordinated with the national system established in accordance to the article 6 of the Convention.

⁶⁶ Report on the Fifty Eighth Session of Marine Environment Protection Committee, London, 6-10 October 2008.

⁶⁷ Report on the Sixty-First Session of Marine Environment Protection Committee, London, 27 September to 1 October 2010.

⁶⁸ Report on the Sixty-second Session of Marine Environment Protection Committee, London, 11 – 15 July of 2011.

oil spill in a fast water environment⁶⁹; and Guidelines for the use of these substances during the oil spill response⁷⁰.

Convention on Biological Diversity

The Convention on Biological Diversity (CBD)⁷¹ is one of the outcome documents of the United Nations Conference on Environment and Development (UNCED) of 1992. The CBD entered into force in 1993 and today has 194 Contracting Parties, including Brazil, where it entered into force in 1994.

The objectives of the CBD are: the conservation of the biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding⁷².

Article 6 requires the Contracting Parties to develop national strategies, plans or programmes for the conservation and sustainable use of the biological diversity and to integrate the conservation and sustainable use of the biological diversity into sectorial and cross-sectorial plans, programmes and policies.

Provisions regarding potential impacts over biological diversity are addressed by the Convention. Article 7 establishes that:

“each part shall, as far as possible and as appropriate, (...) c) Identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques”.

Article 8, regarding In situ Conservation, requires the parties to regulate or manage the processes and categories of activities that have or are likely to have significant adverse effect on biological diversity. Also, Article 10 requires Parties to

69 Fast water refers to any situation where river, harbour, or estuary surface current velocities are expected to exceed one knot.

70 Report on the Sixty-fifth Session of Marine Environment Protection Committee, London, 13 -17 May 2013.

71 United Nations, *Treaty Series*, vol. 1760, n° 329.1996.

72 Article 1 of the Convention on Biological Diversity.

integrate the consideration of conservation and sustainable use of biological resources into national decision-making.

The need for EIA is specifically addressed in article 14. It establishes that the Parties shall introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures. Further provisions to implement article 14 of the CBD were adopted at the Conferences of Parties to the Convention (COP). The first guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or process and in strategic environmental assessment were approved at the 6th COP. Later, at the 8th COP, the “Voluntary guidelines on biodiversity-inclusive impact assessment” replaced these guidelines⁷³.

The conservation and sustainable use of marine and coastal biodiversity have an important role within the framework established by the Convention. At the 2nd COP, States adopted a new global consensus on the importance of marine and coastal biological diversity, referred as “The Jakarta Mandate on Marine and Coastal Biological Diversity” and Decision 10 addressed the issues for further work on marine and coastal biological diversity⁷⁴.

The programme of work on marine and coastal biological diversity has six “elements” which focus the objectives and activities: implementation of integrated marine and coastal area management; marine and coastal living resources; marine and coastal protected areas; mariculture; invasive alien species; and general. The programme also includes a specific plan of work on coral bleaching⁷⁵.

The 11th COP approved the voluntary guidelines for the consideration of biodiversity in environmental impact assessments and strategic environmental

73 Report of the Eighth meeting of the Conference of Parties to the Convention on Biological Diversity, Curitiba, Brazil, 20-31 March 2006, Decision 28 .

74 Report of the second meeting of the Conference of the Parties to the Convention on Biological Diversity, Jakarta, 6-17 November 1995.

75 Report of the Seventh Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity Kuala Lumpur, Malaysia, 9 - 20 February 2004, Decision 5.

assessments, annotated specifically for biodiversity in marine and coastal areas⁷⁶. The same decision also emphasized the importance in taking measures to minimize the significant adverse impacts of anthropogenic underwater noise on marine biodiversity.

The CBD provides significant elements that are related to environmental licensing: the provisions of the articles 6, 7, 8, 10 and 14; the guidelines for environmental impact assessment adopted in the Decisions 7/16, 8/28 and 11/18; and the provisions within the programme of work on marine and coastal biological diversity.

Paragraph 2: Other instruments

Sustainable Development Instruments

The United Nations Conference on Environment and Development (UNCED), also called “Earth Summit”, was convened in the city of Rio de Janeiro, Brazil, in 1992. The objectives of the UNCED were established in the United Nations General Assembly Resolution n° 44/228 of 1989 and included: the examination of the state of the environment and changes since the United Nations Conference on the Human Environment of 1972; the recommendation of national and international measures to protect and enhance the environment, taking into account the specific needs of developing countries, through the development and implementation of policies for sustainable and environmentally sound development; and the promotion of the further development of international environmental law, taking into account the Declaration of the United Nations Conference on the Human Environment⁷⁷.

The Conference brought together virtually all nations of the world (178 countries) and 114 heads of state, as well as 9,000 individuals from the media and representatives of 1,400 nongovernmental organizations, to reach final agreement on the outcomes of the Earth Summit:

- 1) the Rio Declaration of Principles;
- 2) The Framework Convention on Climate Change;
- 3) The Convention on Biological Diversity,
- 4) Agenda 21—a 40-chapter action plan to serve as a roadmap for sustainable development; and

⁷⁶ Report of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012, Decision 18.

⁷⁷ A/RES/44/228.

5) a set of forest principles⁷⁸.

Also, agreement was reached to develop subsequent legal instruments on desertification; on straddling fish stocks and highly migratory fish stocks; and on land-based sources of marine pollution.

Agenda 21 is a comprehensive and detailed blueprint for the future implementation of sustainable development⁴. Chapter 17 of the Agenda 21 addresses the protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources. UNCLOS is referred to in the document as providing “the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment”, but the Agenda 21 introduced new elements such as the integrated and precautionary approaches to marine and coastal environment.

Chapter 17 includes provisions for, *inter alia*, prevention from land and sea based pollution, integrated management and sustainable development of coastal areas and the marine environment, protection of fragile ecosystems such as mangroves, coral reefs and estuaries. It also emphasizes the need for prior environmental impact assessment, systematic observation and follow-up of major projects and integration of sectorial programmes on sustainable development for settlements, agriculture, tourism, fishing, ports and industries affecting the coastal area⁷⁹.

The Agenda 21 can serve as orientation for the decision making process in the context of the environmental licensing, for it to be conducted in the light of the objectives and activities established for the protection and sustainable development of marine and coastal environment, and for the orientation on the interpretation of other legal environmental instruments.

In 2002, the World Summit on Sustainable Development was held in Johannesburg, South Africa, with the objective to be a ten-year review of the progress achieved in the implementation of the outcome of the UNCED, focusing on the

⁷⁸ Biliana Cicin-Sain, Miriam Balgos, Joseph Appiott, Kateryna Wowk, Gwénaëlle Hamon, “Oceans at Rio+20: How Well Are We Doing in Meeting the Commitments from the 1992 Earth Summit and the 2002 World Summit on Sustainable Development? Summary for Decision Makers.” 2011, <http://globaloceanforumdotcom.files.wordpress.com/2013/03/rio20summaryreport.pdf>.

⁷⁹ Report of the United Nations Conference on Sustainable Development, Rio de Janeiro, Brazil, 20–22 June 2012, Resolutions Adopted by the Conference (A/CONF.216/16).

identification of accomplishments and areas where further efforts are needed to implement Agenda 21 and the other results of the UNCED⁸⁰.

Over 170 States attended the conference and two documents were adopted: the Johannesburg Declaration on Sustainable Development and the Plan of Implementation of the World Summit on Sustainable Development. These documents reaffirm the commitment to the sustainable development based on the Rio Declaration and according to the global programme of action Agenda 21. The documents also recognize the poverty eradication, changing unsustainable patterns of production and consumption and protecting and managing the natural resource base of economic and social development as overarching objectives for the sustainable development and establish new targets within these topics⁸¹.

The Plan of Implementation of the World Summit on Sustainable Development reaffirms the need to ensure the sustainable development of oceans through the implementation of the provisions of chapter 17 of Agenda 21 and emphasizes the importance of relevant international instruments in this matter, such as the Ramsar Convention, the CBD, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and the conventions and protocols and other relevant instruments of the International Maritime Organization⁸¹.

The documents adopted at the World Summit on Sustainable Development express the importance in strengthening the existing environmental policy, especially the goals and commitments endorsed in Agenda 21.

The United Nations Conference on Sustainable Development, also known as “Rio + 20”, was held in Rio de Janeiro, Brazil, in 2012 and 193 States attended the conference. The objective was to secure renewed political commitment for sustainable development, assessing the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development and addressing new and emerging challenges, with the focus in a green economy in the context of sustainable development and poverty eradication and the institutional framework for sustainable development⁸².

80 A/RES/55/199.

81 Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August to 4 September 2002 (A/CONF.199/20).

82 A/RES/64/236.

The conference adopted the outcome document entitled “The Future We Want”. The document has a broad aspect and addresses not only the commitment with the Rio Declaration and past actions plans, such as the Agenda 21, the Plan of Implementation of the World Summit on Sustainable Development and with the Millennium Development Goals; it underscores the role of the green economy in the context of sustainable development and poverty eradication to enhance the ability to manage natural resources sustainably and with lower negative environmental impacts, increase resource efficiency and reduce waste. The Future We Want also highlights the framework for the sustainable development considering its social, economic and environmental dimensions.

UNCLOS was presented as the instrument that provides the legal framework for the conservation and sustainable use of the oceans and their resources. The document stresses the importance of the conservation and sustainable use of the oceans and seas and of their resources and presents the commitment to effectively apply an ecosystem approach and the precautionary approach in the management, in accordance with international law, of activities having an impact on the marine environment, to deliver on all three dimensions of sustainable development. Among the actions agreed to the oceans, is the reduction of the incidence and impacts of pollution on marine ecosystems through the effective implementation of relevant conventions adopted in the framework of the International Maritime Organization, and the follow-up of relevant initiatives such as the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. The importance of protection of coral reefs and mangroves is also recognized in the document⁸³.

United Nations Conference on Trade and Development

The United Nations Conference on Trade and Development (UNCTAD) is the United Nations body responsible for dealing with development issues, particularly international trade – the main driver of development. UNCTAD is governed by 194 member States. The first Conference was held in 1964 and since then, the sessions are convened every four years, to discuss major global economic issues and decide on the programme of work. The work of UNCTAD aims to: help decision-makers to promote the macroeconomic policies best suited to ending global economic inequalities and

83 Report on the United Nations Conference on Sustainable Development, Rio de Janeiro, Brazil 20–22 June 2012 (A/CONF.216/16).

generating people-centred sustainable development; establish a forum where representatives of all countries can freely engage in dialogue and discuss ways to establish a better balance in the global economy and offer direct technical assistance to developing countries and countries with economies in transition for capacity building⁸⁴.

Since 1968, UNCTAD publishes annually the Review of Maritime Transport, a report that provides an analysis of structural and cyclical changes affecting seaborne trade, ports and shipping, as well as an extensive collection of statistical information.

In the past few years, the Review of Maritime Transport has been pointing to climate change as one of the emerging trends affecting international shipping. Two important aspects are considered in this context: the contribution of international shipping to climate change, with the carbon emissions that result from the burning of heavy oil in ships' bunker; and the possible impacts from various climate change factors such as rising sea levels, extreme weather events and rising temperatures over maritime transport⁸⁵.

Regarding the role of international shipping in contributing to climate change, this industry generates at least 3 per cent of global carbon emissions and these emissions are projected by the IMO to treble by 2050. Possible mitigation measures are therefore being considered, at both the regulatory and industry levels. In accordance with the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol, IMO addresses the question of emissions of greenhouse gases from ships. IMO is currently leading international efforts in developing a regulatory regime for the reduction of CO₂ emissions from international shipping, including the various technical aspects⁸⁶.

In order to address the impact of climate change factors such as sea level rise and extreme weather events over sea ports, UNCTAD held an Ad Hoc Expert Meeting on "Climate Change Impacts and Adaptation: A Challenge for Global Ports", to discuss

84 UNCTAD, Annual Report 2012, available from http://unctad.org/en/PublicationsLibrary/dom2013d1_en.pdf.

85 UNCTAD, Review of Maritime Transport 2009, Report by the UNCTAD Secretariat, United Nations, New York and Geneva, 2009; and UNCTAD, Review of Maritime Transport 2011, Report by the UNCTAD Secretariat, United Nations, New York and Geneva, 2011.

86 UNCTAD, Review of Maritime Transport 2011, Report by the UNCTAD Secretariat, United Nations, New York and Geneva, 2011.

best practices relating to climate change impacts on ports and associated adaptation requirements. As part of the outcome of the Ad Hoc Expert Meeting, it was recognized that: ports and other coastal transport infrastructure will be affected by climate change, with the main drivers being sea level rise and extreme events such as storm surges causing, for example, coastal erosion and flooding; there is a need for data and information about climate change factors and impacts at local and regional levels; adaptation policies and measures are necessary to control impacts of the already unavoidable sea level rise, potentially through elevation of port levels/infrastructure and through adjustments to design standards and codes; a shift in the planning paradigm is required. The design of adaptation strategies for ports requires a risk assessment with innovative approaches such as scenario planning, and it needs to be undertaken with regard to exposure, vulnerability and resilience. The assessment of the vulnerability of ports to climate change impacts also have to take into account the potential impacts of climate change on coastal transport networks, port hinterland connections and the multiple stressors that may occur simultaneously. Continuous monitoring is required in view of the uncertainties inherent in climate-change factors and in the business environment⁸⁷.

The planning of new ports has to incorporate the analysis of possible impacts of climate change, which could be considered during the environmental licensing. The tools for this evaluation, as exposed before, are: the risk/vulnerability assessment with scenario planning considering type, range and distribution of possible effects and strategies to avoid or mitigate the impacts; and the continuous monitoring for evaluation of the predicted scenarios.

Global Programme of Action for the Protection of the Marine Environment from Land-based Activities

Land-based sources contribute for 80% of marine pollution⁸⁸. UNCLOS addresses issues relevant to land-based marine pollution in its articles 207 and 213. In 1982, the United Nations Environment Programme (UNEP) took the initiative to develop advice to Governments on addressing impacts on the marine environment from

87 UNCTAD, Ad Hoc Expert Meeting on Climate Change Impacts and Adaptation: A Challenge for Global Ports-Main Outcomes and Summary of Discussions (UNCTAD/DTL/TLB/2011/3). Available from http://unctad.org/en/Docs/dtltlb2011d3_en.pdf.

88 IOC/UNESCO, IMO, FAO, UNDP. *A Blueprint for Ocean and Coastal Sustainability* (Paris, IOC/UNESCO, 2011).

land-based activities. This initiative resulted in the preparation of the Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-based Sources in 1985⁸⁹.

In 1992, Agenda 21 recognized the importance of prevention, reduction and control of degradation of the marine environment from land-based activities and recommended, *inter alia*: updating, strengthening and extending the Montreal Guidelines; assessing the effectiveness of regional agreements on land-based sources; and the formulating of new regional agreements where appropriate. Also, Agenda 21 invited the United Nations Environment Programme to convene a meeting on land-based sources as soon as practicable and identified priority actions for control of these sources.

The proposed international conference on land-based sources of marine pollution was held in Washington, USA, in 1995.¹⁰⁸ States, including Brazil, attended the conference in Washington, which had two outcome documents: The Washington Declaration on Protection of the Marine Environment from Land-based Activities and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities

Through the Washington Declaration, States committed to protect and preserve the marine environment from the impacts of land-based activities and deal with all land-based impacts upon the marine environment, specifically those resulting from sewage, persistent organic pollutants, radioactive substances, heavy metals, oils (hydrocarbons), nutrients, sediment mobilization, litter, and physical alteration and destruction of habitat. It encouraged the implementation of the Global Programme of Action through national and regional programmes and established the periodic intergovernmental review of the Global Programme of Action.

The Global Programme of Action adopted by the Conference in Washington is a non-binding document with a source of conceptual and practical guidance to be drawn upon by national and/or regional authorities in devising and implementing sustained action to prevent, reduce, control and/or eliminate marine degradation from land-based activities. The document brings provisions regarding the scope of national plans of action and orientation for regional and international cooperation. It also recommends

89 UNEP, Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, UNEP(OCA)/LBA/IG.2/7.

specific approaches by these source categories, to be observed in actions adopted at national, regional and global levels: sewage; persistent organic pollutants (POPs); radioactive substances; heavy metals; oils (hydrocarbons); nutrients; sediment mobilization; litter; and physical alterations and destruction of habitats⁹⁰.

The Global Programme of Action is periodically reviewed, through Intergovernmental Review Meetings. The first meeting was held in Montreal, Canada, in 2001 and the second in Beijing, China, in 2006. The third Intergovernmental meeting was convened in Manilla, Philippines, 2012, where it was decided that the Global Programme of Action should focus the work for the period 2012-2016 on nutrients, litter and wastewater as the three priority source categories⁹¹. Following that decision, the Global Programme of Action established: the Global Partnership on Marine Litter, the Global Partnership on Nutrient Management and the Global Wastewater Initiative.

Ports and dredging activities can contribute to the land-based sources of degradation of the marine environment addressed by the Global Programme of Action (*e.g.* physical alterations and destruction of habitats). Therefore, the provisions of the Programme should be observed in the environmental licensing of these activities, especially the specific approach for each source category, as well as the work plan decided in the Intergovernmental meetings and the initiatives established to implement it.

Section B – Regional Instruments

The importance of regional cooperation for the protection of marine environment is reflected in United Nations instruments. In its Article 197, UNCLOS indicates that States should cooperate for the protection and preservation of marine environment in both global and regional levels. Article 123 also addresses the need for regional agreements, for States bordering enclosed or semi-enclosed seas, in order to coordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment. The Convention on Migratory Species of

90 Report of the Intergovernmental Conference to Adopt a Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, Washington, D.C., 23 October - 3 November 1995 (UNEP(OCA)/LBA/IG.2/6).

91 Report of the third session of the Intergovernmental Review Meeting on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, Manila, 25 and 26 January 2012 (UNEP/GPA/IGR.3/6).

Wild Animals, requires the States to establish regional agreements covering the conservation and management of migratory species⁹². The GPA recognizes that regional and subregional cooperation and arrangements as crucial for successful actions to protect the marine environment from land-based activities and Agenda 21 established the strengthening of regional cooperation and coordination one of the as one of its programme areas for oceans and coastal areas .

The adoption of regional regulation for the protection of environment allows the application of rules that take into account the special needs and varying circumstances of a range of seas with diverse ecological and oceanographic characteristics, facilitate cooperation in negotiating stronger (or more precautionary) environmental standards and supervising compliance and offer a more appropriated basis for the integrated ecosystem and coastal zone management called for by Agenda 21⁹³.

Paragraph 1: Conventions, Protocols, Agreements and Treaties

Convention on Migratory Species of Wild Animals

In response to article 2.3 of the Convention on Migratory Species of Wild Animals, States adopted regional agreements regarding the protection of migratory species. The Agreement on the Conservation of Small Cetaceans of Baltic and North Seas (ASCOBAMS) adopted in 1992 (entered into force in 1994; in 2008 the name changed to Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas) has ten States parties⁹⁴ and involves the cooperation for the conservation for small cetaceans (Agreement article 2.1). A conservation and management plan establishes the measures to be implemented for the achievement of the objectives which include, inter alia: the effective regulation, to reduce the impact on the animals, of activities which seriously affect their food resources and the prevention of other significant disturbance, especially of an acoustic nature.

Adopted in 1996, the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) entered into

⁹²Article 2.3 of the Convention on Migratory Species of Wild Animals

⁹³Patricia Birnie, Alan Boyle, Catherine Redgwell, *International Law and the Environment*, 3rd. ed. (New York, NY, Oxford University Press Inc., 2009).

⁹⁴The States Parties to the Agreement on the Conservation of Small Cetaceans of Baltic and North Seas are: Belgium; Denmark; Finland; France; Germany; Lithuania; Netherlands; Poland; Sweden; and United Kingdom.

force in 2001, requiring the Parties⁹⁵ to take coordinated measures to achieve and maintain a favorable conservation status for cetaceans. The agreement also recommends the application of the precautionary principle and impact assessments, in order to provide a basis for either allowing or prohibiting the continuation or the future development of activities that may affect cetaceans or their habitat in the Agreement area⁹⁶. At the 4th Meeting of Parties to the Agreement, the Resolution 4.17 established “Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area”⁹⁷, which includes measures for construction works on the coast or on the shoreline, including harbors.

Also in 1996 occurred the adoption of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), with the objective to maintain migratory waterbird species in a favorable conservation status or to restore them to such a status. The measures to achieve this objective should observe the precautionary principle. EIA is part of the agreement: Parties shall assess the impact of proposed projects which are likely to affect waterbirds populations and, as far as possible, promote high environmental standards in the planning and construction of structures to minimize their impact on these populations. The 4th Meeting of Parties of AEWA approved the Resolution 4.13 with “Guidelines on how to avoid, minimize or mitigate the impact of infrastructure developments and related disturbance affecting waterbirds”⁹⁸.

The Agreement on the Conservation of Albatrosses and Petrels (ACAP) adopted in 2001, entered into force in 2004 requiring the Parties to implement measures in order

⁹⁵The States parties the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area are: Albania; Algeria; Bulgaria; Croatia; Cyprus; Egypt; France; Georgia; Greece; Italy; Lebanon; Libya; Malta; Monaco; Montenegro; Morocco; and Portugal.

⁹⁶The Agreement area is constituted by all the maritime waters of the Black Sea and the Mediterranean and their gulfs and seas, and the internal waters connected to or interconnecting these maritime waters, and of the Atlantic area contiguous to the Mediterranean Sea west of the Straits of Gibraltar, as specified on the Article 1 of the agreement.

⁹⁷Report on the Fourth Meeting of the Contracting Parties to ACCOBAMS, Monaco, 9 -12 November 2010, Resolution 4.17.

⁹⁸Report of the 4th Session of the Meeting of the Parties (MOP4) to the African-Eurasian Migratory Waterbird Agreement (AEWA), 15 – 19 September 2008, Antananarivo, Madagascar, Resolution 4.13 (UNEP/AEWA/MOP4).

to achieve and maintain a favourable conservation status the populations of these species, is: to prevent, remove, minimize or mitigate the adverse effects of activities that may influence the conservation status of albatrosses and petrels. It includes, according to the Action Plan that is part of the Agreement, the assessment of the potential impact on albatrosses and petrels of policies, plans, programmes and projects that may affect the conservation of albatrosses and petrels before any decision on whether to adopt such policies, plans, programmes or projects.

The agreements adopted under the Convention on Migratory Species of Wild Animals provide examples and guidance to be applied in the environmental licensing of activities (such as ports) that may affect the species that are protected in those instruments. The assessment of potential impacts of the activities should consider the effects over cetaceans, waterbirds and albatrosses and petrels and, whenever possible, observe the guidelines approved by the Resolution 4.17 of the ACCOBAMS and Resolution 4.13 of the AEWAs.

Regional Seas Programme:

The Regional Seas Programme combines legally binding (conventions and protocols) and non-binding (action plans) instruments adopted in different regions to enhance the protection of the marine environment. The regional seas convention are framework instruments addressing aspects and provisions of marine pollution prevention and control in the geographical area of application. Under the conventions, protocols establish provisions for the specific types of pollution or aspects of the marine environment, such as land-based activities, dumping, biodiversity, etc. The following Conventions are part of the Regional Seas Programme:

The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region

The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, commonly referred as the “Cartagena Convention”, adopted in 1983 (entered into force in 1986) is a comprehensive, umbrella agreement for the protection and development of the marine environment. The Convention lists the sources of pollution that require regional and national actions for their control: pollution from ships, dumping, land-based sources and sea-bed activities together with airborne pollution and issues for which cooperative efforts are necessary: specially protected areas and wildlife, cooperation in cases of emergency, environmental impacts assessment, and scientific and technical cooperation. Article 12 establishes the need for

environmental impact assessment to prevent or minimize harmful impacts on the Convention area.

The protocols established under the Cartagena Convention are: The Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region (adopted in 1983, entered into force in 1986), with the objective of encourage the Parties to take necessary measures, both preventive and remedial, for the protection of marine environment from oil incidents; The 1990 Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (which entered into force in 2000), for the protection, preservation and management in a sustainable way of areas that require protection to safeguard their special value and threatened or endangered species of flora and fauna; and the “Protocol Concerning Pollution from Land-based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region”, (adopted in 1999, entered into force in 2010. which defines sources categories, activities and associated pollutants of concern to prevent reduce and control pollution from these aspects on the Convention area⁹⁹.

Some of the measures established in the protocols include:

- regulation or prohibition of dumping or discharge of wastes, including those emanating from coastal establishments and developments, that may endanger protected areas;
- prohibition of activities that result in the destruction of endangered or threatened species of fauna or flora and the regulation or prohibition of industrial activities¹⁰⁰; and,
- Development of environmental impact assessment when a planned land-based activity or a planned modification to such activity is likely to cause substantial pollution of, or significant and harmful changes, to the Convention area¹⁰¹.

⁹⁹The Convention area includes the marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean adjacent thereto, south of 30° north latitude and within 200 nautical miles of the Atlantic coasts of the States referred to in article 25 of the Convention.

¹⁰⁰Article 5 of the Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region.

Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region

The Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region, better known as the “Abidjan Convention” adopted in 1981 has as objective the prevention, reduction, combat and control of pollution of the Convention area¹⁰² and the sound environmental management of natural resources¹⁰³. The Convention addresses the specific sources of pollution to be controlled¹⁰⁴ and identifies the means to prevent, reduce and combat the pollution: establishment of especially protected areas; co-operation in combating pollution in cases of emergency; and environmental impact assessment for planned projects, particularly in the coastal areas, that may cause substantial pollution of, or significant and harmful changes to, the Convention area¹⁰⁵.

Like in the case of other Regional Seas Conventions, the Protocols address in a more specific way the aspects of the Convention. The 1981 Protocol Concerning the Co-operation in Combating Pollution in Cases of Emergency focuses on the protection of the coastline and related interests¹⁰⁶ from threat and effects of pollution resulting from marine emergencies.

¹⁰¹Article VIII of the Protocol Concerning Pollution from Land-based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region.

¹⁰²As established in the Article 1, the Convention covers the marine environment, coastal zones and related inland waters falling within the jurisdiction of the States parties of the West and Central African Region, from Mauritania to Namibia

¹⁰³Article 4.1 of the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region.

¹⁰⁴Articles 5 to 10 of the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region.

¹⁰⁵Article 13 of the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region.

¹⁰⁶According to the Article 1 of the Protocol concerning the co-operation in combating pollution in cases of emergency, related interests means: maritime, coastal, port or estuarine activities, including fisheries; historic and tourist attractions of the area concerned; the health and well-being of the inhabitants of the area concerned, including the conservation of living marine resources and wildlife and the protection of marine and coastal parks and reserves.

The Protocol Concerning Cooperation in the Protection and Development of Marine and Coastal Environment from Land-Based Sources and Activities in the Western, Central and Southern African Region (adopted in 2012) has as objective the prevention, reduction, mitigation and control of pollution from land-based sources and activities, including through the atmosphere, to protect and sustain the marine and coastal environment of the Protocol area¹⁰⁷. Ports and dredging activities are included in the point sources of pollution that are priority for control. The promotion and use of best available techniques and best environmental practices and the application of, access to and transfer of environmentally sound technologies, including cleaner production, are among the measures for the effective implementation of the protocol. Article 15 of the Protocol reaffirms the need for environmental assessment, and requires the Parties to assist in the planning and implementation of their development projects in such a way as to minimize the immediate, long-term, cumulative and transboundary harmful impact on the Protocol area. With the EIA, the Protocol also requests the regular and systematic environmental audits for existing development, activities, programmes and processes with a potential impact on the marine and coastal environment¹⁰⁸.

In 2012 the Conference of the Parties to the Convention approved the Decision CP. 10/9, establishing a partnership with PENAf (Ports Environmental Network-Africa) for the reduction of the environmental impacts from ports and shipping by on the marine and coastal environment by search; and promoting ports environmental best practice and information exchange and eco-initiatives¹⁰⁹.

The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of Western Indian Ocean

¹⁰⁷Article 1 of the Protocol Concerning Cooperation in the Protection and Development of Marine and Coastal Environment from Land-Based Sources and Activities in the Western, Central and Southern African Region.

¹⁰⁸Article 15.2 of the Protocol Concerning Cooperation in the Protection and Development of Marine and Coastal Environment from Land-Based Sources and Activities in the Western, Central and Southern African Region.

¹⁰⁹Report on the Tenth meeting of the Contracting Parties to the Convention on cooperation for the protection, management and development of the marine environment and coastal areas of the Atlantic coast of the West, Central and Southern African region, Pointe Noire, Republic of the Congo, 12 to 16 November 2012, Decision 10.9 (UNEP(DEPI)/WACAF/COP.10/12).

The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of Western Indian Ocean¹¹⁰ entered into force in 1996 and covers the Eastern and Southern African region.

Similar to other Regional Seas Conventions, the Nairobi Convention aims to prevent, reduce and combat pollution and ensure sound environment management of natural resources in the Convention area. The main sources of pollution to be addressed are: pollution from ships; caused by dumping; from land-based sources and activities; from seabed activities; resulting from transboundary movement of hazardous wastes; airborne pollution; and environmental damage from engineering activities, such as land reclamation and dredging. The Convention requires the establishment of measures that include: delimitation of protected areas; cooperation in combating pollution in cases of emergency; environmental impact assessment of major projects that may cause substantial pollution of, or significant and harmful changes to the Convention area.

The protocols adopted under the Convention are: Protocol Concerning Cooperation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region (1985); Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region (1985); Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities (2010).

The protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities is applied to activities within the territories of the Contracting Parties that may directly or indirectly affect the marine or coastal environment of the Protocol area, including developments that cause physical alteration of the natural state of the coastline or otherwise result in physical alteration or destruction of habitats. The protocol requires the parties to use or promote the best available techniques and best environmental practices and ensure that new or existing activities, developments, programmes, plans, policies and processes that are likely to cause significant adverse impacts to the marine and/or coastal environment are subjected to environmental impact assessment, environmental audit or strategic environmental assessment, as appropriate, and prior authorization by a competent national authority or authorities as a matter of law. In the article 13, the need for EIA is

¹¹⁰The Nairobi Convention was first adopted in 1985 as the “Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region”.

specified: Each Contracting Party shall establish by law or other binding procedure, requirements for environmental impact assessment or evaluation on the possible direct, indirect, immediate, long term, cumulative or transboundary effect of the programmes, projects and activities being planned or undertaken, as appropriate, that are likely to pollute or degrade the marine or coastal environment of the Protocol area. Ports development and dredging activities are among the priority activities for the preparation of actions, programmes, plans and measures.

Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean

The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (the Barcelona Convention)¹¹¹ is a framework instrument which addresses the main sources of pollution and measures to prevent, reduce and combat it, in order to protect the marine and coastal environment. The Parties to the Convention shall apply the precautionary principle, environmental impact assessment and use the best available techniques and best environmental practices¹¹². The cooperation for combating pollution emergencies is specified in the Article 9.

The sources of pollution that are specifically addressed by the Convention are: pollution by dumping from ships and aircraft or incineration at the sea; from ships; resulting from exploration and exploitation of the continental shelf and seabed and its subsoil; from land-based sources; and from the transboundary movements of hazardous wastes and their disposal¹¹³. For each of these types of pollution, protocols establish further provisions for the implementation of the Convention¹¹⁴.

¹¹¹The Regional Seas Programme for the Mediterranean Sea was first established in 1976 through the Convention for the Protection of the Mediterranean Against Pollution.

¹¹²Article 4 of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean.

¹¹³Articles 5, 6, 7, 8 and 11 of the Barcelona Convention

¹¹⁴Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (1976); Protocol on the Protection of the Mediterranean Sea against Pollution from Land-Based Sources (1980); Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (1994); Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal (1996); and Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (2002).

Among the provisions within the Protocols under the Convention, the measures regarding sea ports, dumping of dredged material at the sea, EIA and best available techniques and best environmental practices can be highlighted. For the sea ports, emergency pollution plans or similar arrangements are required, as well as reception facilities that can efficiently limit any impact of ships' discharges at the marine environment¹¹⁵. Also, harbor operations are listed among the priority activities for the preparation of action plans by the Parties to the Protocol on the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources (1980)¹¹⁶. Dredged material cannot be dumped at the sea without a special permit that shall be issued only after consideration of the factors set forth in the Annex of the Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (1976)¹¹⁷. Aspects for the EIA include: the identification of process and categories of activities which have or are likely to have a significant adverse impact on the conservation and sustainable use of biological diversity (and the monitoring of their effects); evaluation of direct and indirect and immediate or long-term impacts over protected areas, including cumulative impacts; consideration of the specific sensitivity of the environment and the inter-relationships between the marine and terrestrial parts of the coastal zone; evaluation of cumulative impacts over the coastal zones, paying due attention, to their carrying capacities; evaluation of negative effects of new activities on coastal erosion; and consideration of possible transboundary effects of new projects and activities¹¹⁸. Criteria for the definition of Best Available Techniques and Best Environmental Practices were established by the Annex IV of the Protocol on the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources.

Regional Seas Programmes not administrated by UNEP:

¹¹⁵Articles 11 and 14 of the Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (2002).

¹¹⁶Annex 1 of the Protocol on the Protection of the Mediterranean Sea against Pollution from Land-Based Sources (1980).

¹¹⁷Articles 5 and 6 of the Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (1976).

¹¹⁸Articles 4 and 17 of the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (1995); and Articles 19, 23 and 29 of the Protocol on Integrated Coastal Zone Management in the Mediterranean (2008).

The Regional Seas Programme includes seven programmes that were established under the auspices of UNEP but are not directly administrated by this United Nations Programme. For these Regional Seas programmes, another (regional) organization hosts and/or provides the Secretariat. In addition, their financial and budgetary services (Trust Funds) are managed by the programme itself¹¹⁹. These programmes cover the following regions:

- South East Pacific;
- South Asian Seas;
- Red Sea and Gulf of Aden;
- North East Pacific;
- Black Sea;
- Pacific; and,
- Marine and coastal areas of Bahrain, Iran, Iraq, Kuwait, Oman, Qatar Saudi Arabia and the United Arab Emirates (ROPME area).

With the exception of the South Asian Regional Seas Programme, all of these programmes were established through framework conventions¹²⁰ and related protocols.

The scope of these Conventions extends to the territorial sea and exclusive economic zones of participating states. All are comprehensive in their inclusive of sources of marine pollution, but the extent to which further protocols have been adopted varies widely¹²¹. Under the six Conventions adopted for the programmes listed above, protocols concerning the cooperation in combating pollution by oil and other harmful

¹¹⁹United Nations Environment Programme, Regional Seas Programme, Non-UNEP Administrated, Available from <http://www.unep.org/regionalseas/programmes/nonunep/default.asp>.

¹²⁰Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (Lima, 1981); The Regional Convention for the Conservation of the Red Sea and the Gulf of Aden Environment (Jeddah, 1982); Convention for Cooperation in the Protection and Sustainable Development of the Marine and Coastal Environment of the Northeast Pacific (Antigua, 2002); Convention on the Protection of the Black Sea Against Pollution (Bucharest, 1992); Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea, 1986); and Kuwait Regional Convention for the Co-operation on the Protection of the Marine Environment from Pollution (Kuwait City, 1978).

¹²¹Patricia Birnie, Alan Boyle, Catherine Redgwell, *International Law and the Environment*, 3rd. ed. (New York, NY, Oxford University Press Inc., 2009).

substances were established¹²², with the exception of the North East Pacific; the prevention and control of pollution from land-based sources was also addressed by specific protocols¹²³ in the Black Sea, Red Sea and Gulf of Aden, ROPME and South East Pacific regions. Other aspects of the protection of the marine and coastal environment were subject to specific protocols such as the prevention of pollution by dumping¹²⁴ and protected areas¹²⁵. Within the instruments previously mentioned, provisions for EIA are addressed, especially regarding the protection of the marine and coastal environment from land-based activities¹²⁶.

¹²²Agreement on Regional Cooperation in Combating Pollution of the South East Pacific by Hydrocarbons or Other Harmful Substances in Cases of Emergency (1981); Complementary Protocol on the Agreement for Regional Cooperation in Combating Pollution in the South East Pacific by Hydrocarbons and other Harmful Substances in Cases of Emergency (1983); Protocol Concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region (1986); Jeddah Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (1982); Kuwait Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (1978); and Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations (1992).

¹²³Protocol on the Protection of the Marine Environment of the Black Sea from Land-Based Sources and Activities (1992, 2009); Protocol Concerning the Protection of the Marine Environment from Land-Based Activities in the Red Sea and Gulf of Aden (2005); Protocol for the Protection of the Marine Environment against Pollution from Land-Based Sources (1990); and Protocol for the Protection of the South East Pacific Against Pollution from Land- Based Sources (1983).

¹²⁴Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (1986) and Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping (1992).

¹²⁵Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden (2005) and Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South East Pacific (1989).

¹²⁶Article 7 of The Regional Convention for the Conservation of the Red Sea and the Gulf of Aden Environment; Article 13 of the Protocol Concerning the Protection of the Marine Environment from Land-Based Activities in the Red Sea and Gulf of Aden (2005); Article 15 of the Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden (2005); Article 8 of the Protocol for the Protection of the Marine Environment against Pollution from Land-Based Sources (1990); Article 8 of the Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (1981); Article 8 of the Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South East Pacific (1989); Articles 4 and 12 of the Protocol on the Protection of the Marine Environment of the Black Sea from

Independent Regional Seas Programmes

Independent programmes were established as Regional Seas Programmes but not under the auspices of UNEP. They cover the following regions:

- Artic;
- Antarctic;
- Baltic Sea;
- Caspian Sea; and,
- North-East Atlantic.

They participate in the global meetings of the Regional Seas, share experiences and exchange policy advice and support to the developing of the Programme ¹²⁷. The provisions of these programmes will not be addressed in this thesis.

Paragraph 2: Action Plans

As previously mentioned, the framework for the Regional Seas Programme include non-binding instruments as the Action Plans.

Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region

This Action Plan established in 1994 covers the marine environment and coastal zones of Democratic People's Republic of Korea, Japan, People's Republic of China, Republic of Korea and Russian Federation. The Action Plan has as main goal the wise use, development and management of the coastal and marine environment so as to obtain the utmost long-term benefits for the human populations of the region, while protecting human health, ecological integrity and the region's sustainability for future generations.

The Action Plan requires Environmental Impact Assessment for proposals and developments which are likely to have consequences for the environment. The Action Plan highlights that the process must not only identify the potential impacts, but it must also evaluate alternative options, seek ways and means of reducing impacts, propose

Land-Based Sources and Activities (2009); Article 16 of the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (1986); and Annex III of the Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (1986).

¹²⁷United Nations Environment Programme, Regional Seas Programme. Available from

<http://www.unep.org/regionalseas/programmes/independent/default.asp>

mitigation measures, plan monitoring procedures, set in place contingency plans, and identify which party is responsible for what activity.

Under the Northwest Pacific Region Action Plan, guidelines for hazardous and noxious substances response operation were approved (MERRAC Technical Report No.6. Hazardous & Noxious Substances (HNS)Response Operation Guidelines, NOWPAP MERRAC, 2009).

Action Plan for the Protection and Sustainable Development of the Marine and Coastal Areas of the East Asian Region

East Asian region adopted in 1981 an Action Plan for the Protection and Sustainable Development of the Marine and Coastal Areas of East Asian seas. The Action Plan, reviewed in 1994, is implemented by ten States.

The action plan requires the implementation of environmental impact assessment in the region in order to prevent or minimize adverse impacts on the marine and coastal environment development. In order to improve the efficiency and effectiveness of environmental impact assessment, managing agencies are urged to monitor the actual impacts of use and development and reconcile them against the predictions in environmental impact assessment.

The Action Plan includes the Regional Programme of Action for the Protection of the Marine Environment of the East Asian Seas from the Effects of Land-based Activities. The Programme proposes strategies to address the priority sources of pollution and, as habitat modification was one of the priority sources of pollution identified in the region, one of the actions proposed is the development of guidelines for port development, land reclamation, forestry, logging and aquaculture to limit habitat destruction and marine pollution effects.

Action Plan for the Protection and Development of the Marine Environment and Coastal Areas of the West and Central African Region

With the adoption of the Abidjan Convention in 1981, an Action Plan for the West and Central African Region was established, intended to provide a framework for an environmentally-sound and comprehensive approach to coastal area development particularly appropriate to the needs of the region. The plan brings provisions regarding the environmental assessment of the region and the importance of the environmental

management for the socioeconomic development on a sustainable basis. In this element, the Plan calls the attention for the need for the reduction of pollution on ports¹²⁸.

Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region

In 1985 the Conference of Plenipotentiaries on the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region¹²⁹ adopted the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region.

The Action Plan is similar to the Action Plan for the West and Central African Region, setting forth provisions for environmental assessment of the marine and coastal environment and environmental management, such as improvement of national capabilities to assess the environmental impact of development proposals and cooperation on preparedness for pollution emergencies and measures to mitigate their consequences.

Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean

The Mediterranean Action Plan adopted in 1975 has the objective to assist the Mediterranean Governments to assess and control marine pollution, to formulate their national environment policies, to improve the ability of governments to identify better options for alternative patterns of development and to make better rational choices for allocation of resources. The Mediterranean Action Plan Phase II, adopted in 1995, addresses several aspects of the protection of the marine environment and sustainable management, including provisions for regional and national level actuation regarding: the integration of environment and development; sustainable management of natural resources; integrated coastal area management; and assessment, prevention and elimination of marine pollution¹³⁰.

¹²⁸Action Plan for the Protection and Development of the Marine Environment and Coastal Areas of the West and Central African Region.

¹²⁹The States Parties to the Convention are: Comoros; France; Kenya; Madagascar; Mauritius; Mozambique; Seychelles; Somalia; South Africa; Tanzania.

¹³⁰Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean.

As previously mentioned, seven Regional Sea Programmes were established by UNEP but are not directly administrated by this United Nations Programme. These Programmes (South East Pacific; South Asian Seas; Red Sea and Gulf of Aden; North East Pacific; Black Sea; Pacific; and ROPME area), also adopted Action Plans in order to guide the implementation of the Conventions¹³¹. The Action Plans have as main objective the conservation of the marine environment and coastal areas. To achieve this objective, measures regarding environment assessment, environment management, legal and institutional arrangements are addressed, as well as the priorities for the region.

Chapter 2: Other Countries Regulation

Section A – United States of America

This section will address the legal instruments of the United States of America (hereinafter “USA”) that are applied to the environmental licensing of ports and dredging activities.

According to Section 10 of the Rivers and Harbors Act of 1899, the United States Army Corps of Engineers (USACE) is responsible for the authorization of any activity that would “excavate or fill, or in any manner alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable water of the United States¹³²”. Therefore, ports and dredging must be authorized or are developed in coordination with the USACE. The environmental permitting for a project or activity in USA may require more than one permit, depending on the environmental aspect that will be affected, or when the regulation requires, other agencies are also involved in the process, such as the United States Environmental Protection Agency (USEPA) and the National Oceanic and Atmospheric Administration (NOAA).

¹³¹Plan of Action for the Protection and Sustainable Development of the Marine and Coastal Areas of the North-East Pacific (2002); Action Plan for the Conservation of the Marine Environment and Coastal Areas of the Red Sea and the Gulf of Aden (1976, revised in 1995); Action Plan for the Protection of the Marine Environment and the Coastal Areas of Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (1978); South Asian Seas Action Plan (1995); Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (1996, revised in 2009); and Pacific Regional Environmental Programme Strategic Plan 2011-2015 (replaces the 2005 – 2009 Action Plan).

¹³² United States of America, Rivers and Harbors Appropriation Act of 1899

The evaluation will address aspects of the regulation related ports and dredging projects and their potential effects over the environment: sea and ocean dumping; threatened and endangered species; environmental impact assessment; oil pollution preparedness and response; air quality; water quality; and marine protected areas. The research will consider the procedures that must be adopted before and after the project is approved or implemented.

Paragraph 1- Procedures prior to the implementation of the Project Sea and Ocean Dumping

Two acts provide the legal framework for the disposal of dredged material in the USA: the Marine Protection, Research and Sanctuary Act (MPRSA), also called the Ocean Dumping Act, for the disposal into ocean waters¹³³; and the Clean Water Act of 1972, also called the CWA, for the discharge of dredged or fill material into waters of the United States¹³⁴. The Code of Federal Regulations (CFR) of the United States of America establishes specific criteria and procedures for permits in this regard¹³⁵. The definition for United States waters is also given by the CFR, under Title 33, part 328 and at the Title 40, part 230 and includes: territorial seas¹³⁶; tidal waters and non-tidal waters. USACE is the largest United States' dredger through its civil work dredging projects¹³⁷ and maintains 926 coastal, Great Lakes, and inland channels and harbors

¹³³There is an overlap of the CWA and the MPRSA on the territorial sea. The discharge of dredged material into the territorial sea is governed by the MPRSA of 1972 (United States of America, *Code of Federal Regulations*, Title 40 part 230, section 230.2 , 2013)

¹³⁴ United States of America, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, *Evaluating Environmental Effects of Dredged Material Management Alternatives - A Technical Framework*, EPA842-B-92-008 (Washington, D.C. 2004).

¹³⁵ United States of America, *Code of Federal Regulations*, Title 33 parts 323 to 325 and Title 40, parts 220 to 233 (2013).

¹³⁶ The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles (United States of America, *Code of Federal Regulations*, Title 33, part 328, section 328.4, 2013).

¹³⁷ United States of America, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, *Identifying, Planning, and Financing Beneficial Use Projects Using Dredged Material: Beneficial Use Planning Manual*, EPA842-B-07-001 (Washington D.C. 2008).

comprising 13,000 miles of channels and 12 locks. In 2012 the USACE dredged 235 million cubic yards of material¹³⁸.

Section 404 of the CWA governs the discharge of dredged or fill material into waters landward of the baseline from which the territorial sea is measured (the “Baseline”). The focus of the Section 404 regulation is that no discharge of dredged or fill material may be permitted if a practicable alternative exists that is less damaging to the aquatic environment. The Baseline generally follows the coastline, but may cut from a point of land across the mouth of bays and other like bodies of waters to another point of land, thus potentially leaving significant areas of coastal waters landward of the Baseline¹³⁹. Any placement of dredged material into waters landward of the baseline must first be authorized by the USACE and must be conducted in compliance with the conditions of such authorization¹⁴⁰. In some cases, however, the disposal of dredging material into United States waters does not require an individual permit: it can either be covered by a general permit or, it can be an exempt activity, not requiring a permit¹⁴¹.

The USACE issues the permit specifying the disposal site, which is determined through the application of guidelines developed by the USEPA in conjunction with USACE¹⁴². The CWA authorizes the USEPA to prohibit, deny or restrict the specification and use of any defined area as a disposal site, whenever it determines the discharge will have unacceptable adverse effects over the environment, water supplies or recreational areas¹⁴³.

¹³⁸ United States of America, U.S. Army Corps of Engineers, *USACE navigation — meeting America's maritime transportation need*, April 10 2008, available from http://www.usace.army.mil/Portals/2/docs/civilworks/budget/strongpt/fy2014sp_navigation.pdf.

¹³⁹ United States of America, U.S. Army Corps of Engineers, *Long Island Sound Dredged Material Management Plan: Federal, State, and Local Regulations and Programs Applicable to Dredged Material Placement in CT, NY, and RI*, August 2011, available from <http://www.nae.usace.army.mil/Portals/74/docs/topics/LISDMMP/FedStateProgramsRegulation.pdf>.

¹⁴⁰ *Ibid.*

¹⁴¹ United States of America, *Code of Federal Regulations*, Title 40 part 232 and Title 33 part 323, section 323.4 (2013).

¹⁴² United States of America, Clean Water Act of 1972, Section 404, Subsection b.

¹⁴³ *Ibid.* Subsection c.

The guidelines for specification of disposal sites for dredged or fill material into waters of the United States established by the USEPA are applied in both federal and states regulatory programs. The USEPA also establishes disposal sites for dredged material.

The guidelines address the general requirements for specification, including: restrictions on discharges; determination of aspects that should be analyzed regarding the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment; potential impacts on physical, chemical and biological characteristics of the aquatic environment; potential impacts on special aquatic sites such as sanctuaries, refuges, wetlands, mud flats, vegetated shallows and coral reefs; and potential impacts on human use characteristics. The guidelines also provide orientation for chemical, biological and physical evaluation and testing of the dredged and fill material in order to gather the information for the analysis of the effects of the disposal of the material in the environment. Other important component of the guidelines is the recommendation of several actions (regarding location of the discharge, material to be discharged, method of dispersion and others) to minimize adverse effects over the environment¹⁴⁴.

The ocean dumping of dredged material is regulated by the MPRSA, which is the act that implements the London Convention of 1972, to which the United States is a party¹⁴⁵. The provisions for the issuance of permits by the USACE for the disposal of dredged material into ocean waters are addressed in section 103. The permits will only be issued if it is determined that “it will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities”¹⁴⁶. Under the MPRSA, USEPA is notified prior to the issuance of a permit by the USACE, and may concur with (either entirely or with conditions) or decline to concur with the determination relating to the environmental impact of the permit¹⁴⁷.

¹⁴⁴ United States of America, *Code of Federal Regulations*, Title 40, part 230 (2013).

¹⁴⁵ Donald C. Baur, Tim Eichenberg, Michael Sutton, *Ocean and Coastal Law and Policy* (Chicago, American Bar Association, 2008).

¹⁴⁶ United States of America, Marine Protection, Research and Sanctuaries Act of 1972, Section 103, Subsection a.

¹⁴⁷ *Ibid*, Subsection c.

The evaluation of environmental impacts of the dumping of the dredged material into ocean waters must consider the effects over the marine environment resources and ecosystems and values, including fisheries, shore lines and beaches and wildlife. The evaluation shall also consider the dispersion of such material and its byproducts through biological, physical, and chemical processes, potential changes in marine ecosystem diversity, productivity, and stability, and the persistence and permanence of the effects of the dumping¹⁴⁸. Detailed aspects of the assessment of the potential impacts are specified by the CFR, Title 40, part 227, sections 227.17 to 227.22.

General permits may be issued for the transportation for dumping, of specified materials or classes of materials determined to have a minimal adverse environmental impact¹⁴⁹. Also, the testing of the dredged material is not required when it meets specific conditions, for example, if it is composed predominantly of sand, gravel, rock, or any other naturally occurring bottom material with particle sizes larger than silt¹⁵⁰.

The analysis of alternative methods and locations for the disposal of the dredged material is required both in the MPRSA and the CFR. The title 40 of the CFR Part 228 sets forth specific criteria to be observed in site selection¹⁵¹. The National Environmental Policy Act (NEPA) of 1969 also requires USACE to evaluate alternatives for discharging dredged material from its Civil Works projects and from those projects for which it issues permits. In 2004, USEPA and USACE published a guidance document titled *Evaluating Environmental Effects of Dredged Material Management Alternatives— Technical Framework* which provides USEPA and USACE personnel with a consistent technical framework for evaluating potential environmental impacts of dredged material management alternatives¹³⁴.

An important aspect of dredged material management is the evaluation of its possible beneficial use. Provisions in this regard are addressed in the section 204 of Water Resources Development Act (WRDA) of 1992, as amended by Section 207 of WRDA 1996 and Section 1135 of the WRDA of 1986 (this section enables USACE to modify the structures and operations of Civil Works projects to redress environmental damage being caused by those projects). Section 216 of the Rivers and Harbors Act and

¹⁴⁸ *Ibid*, Subsection b.

¹⁴⁹ *Ibid*, Section 104, Subsection c.

¹⁵⁰ United States of America, *Code of Federal Regulations*, Title 40, part 227 (2013).

¹⁵¹ *Ibid*, part 228, section 228.6.

Flood Control Act of 1970 authorizes USACE to review the operation of any completed Civil Works project when changed physical or economic conditions warrant it, or for improving the quality of the environment in the overall public interest. The USACE and the USEPA published in 2007 a manual providing practical guidance for project sponsors (e.g., government agencies, port authorities, marinas, industries, and private persons) and their potential partners for identifying, planning, financing, and implementing projects that use dredged material for beneficial purposes¹³⁷.

The procedures to be followed by the USACE to authorize the discharge of dredged or fill material into waters of the United States pursuant to section 404 of the CWA and into ocean waters pursuant to section 103 of the MPRSA are addressed in the CFR title 33 parts 320, 323 and 324. Compliance with other laws, including NEPA, Coastal Zone Management Act, the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and Section 401 of the CWA, are also considered, as part of USACE's processing of permit applications¹⁴⁵.

Endangered, Threatened and Migratory Species

In the USA, threatened and endangered species are protected by the Endangered Species Act of 1973 (ESA). The ESA is administrated jointly by the Secretary of the Interior, acting through the U.S. Fish and Wildlife Service, and the Secretary of Commerce, acting through the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS¹⁵²). The Secretary of Commerce is responsible for marine and anadromous species¹⁴⁵.

Under the ESA, the federal agencies must ensure that:

“The actions they authorize fund or conduct will not to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species”¹⁵³.

If a federal agency action is likely to adversely affect any proposed species¹⁵⁴ or result in the destruction or adverse modification of proposed critical habitat¹⁵⁵, it shall

¹⁵² Currently called as NOAA Fisheries.

¹⁵³ United States of America, Endangered Species Act of 1973, Section 7.2.

¹⁵⁴ A proposed species means any species of fish, wildlife, or plant that is proposed in the United States Federal Register to be listed under section 4 of the Endangered Species Act of 1973.

confer with the NOAA Fisheries or the U. S. Fish and Wildlife Service, for recommendations to avoid or minimize adverse impacts. If the action is likely to adversely affect a listed species or result in the destruction or adverse modification of a critical habitat¹⁵⁶, a consultation process between the agency and the NOAA Fisheries or the U. S. Fish and Wildlife Service occurs¹⁵⁷. The basis for the consultation in the case of major construction activities¹⁵⁸ is the “biological assessment”, which is the information prepared by or under the direction of the Federal agency concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area and the evaluation potential effects of the action on such species and habitat. This study shall be completed before any contract for construction is entered into and before construction is begun and may include, inter alia:

“results of an on-site inspection of the area affected by the action to determine if listed or proposed species are present or occur seasonally; an analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies; and an analysis of alternate actions considered by the Federal agency for the proposed action”¹⁵⁹.

The result of the consultation is the issuance of a biological opinion by the U.S. Fish and Wildlife Service or the NOAA Fisheries as to whether or not a Federal action is likely to jeopardize the continued existence of listed species, or result in the

¹⁵⁵ A proposed critical habitat means habitat proposed in the United States Federal Register to be designated or revised as critical habitat under section 4 of the Endangered Species Act of 1973 for any listed or proposed species.

¹⁵⁶ Critical habitat: specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Act, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

¹⁵⁷ United States of America, *Code of Federal Regulations*, Title 50, part 402 (2013).

¹⁵⁸ Major construction activity is a construction project (or other undertaking having similar physical impacts) which is a major Federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act.

¹⁵⁹ *Ibid*, section 402.12.

destruction or adverse modification of designated critical habitat¹⁶⁰. A statement concerning the incidental take may be provided including the impact (i.e., the amount or extent, of such incidental taking on the species); measures to minimize such impact; and the procedures to be used to handle or dispose of any individuals of a species actually taken¹⁶¹.

According to the section 9 of the ESA, it is unlawful for any person subject to the jurisdiction of the United States to take any such species within the United States, the territorial sea of the United States; and the high seas. The Act defines “take” as: “to harass, harm, pursue, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct”¹⁶². It may include significant habitat destruction that actually kills or injures an endangered species¹⁶³.

The taking of federally listed wildlife or fish may be authorized if such taking occurs incidentally during otherwise legal activities. Section 10(a)(2)(B) of the ESA provides statutory criteria that must be satisfied before an incidental take permit can be issued. The incidental take permits are the mechanism that allows private landowners to pursue development activities despite the presence of listed species habitat¹⁶⁴.

In order to obtain an Incidental take permit (ITP) applicant must prepare a habitat conservation plan (HCP) that reduces the adverse effects of the activity on listed species as much as practicable. The HCP includes: the anticipated impact (i.e., amount, extent, and type of anticipated taking) of the proposed activity on the species, stocks and habitats; actions for monitor, minimize and mitigate the impacts; and the alternative actions to such taking that were considered and the reasons why those alternatives are not being used. To issue the permit, the permitting agency (NMFS or USFWS) will

¹⁶⁰ United States of America, U.S. Fish and Wildlife Service and National Marine Fisheries Service, *Consultation Handbook for the Procedures for Conducting Activities Under Section 7 of the Endangered Species Act* (1998). Available from http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf.

¹⁶¹ United States of America, *Code of Federal Regulations*, Title 50, part 402, section 402.14 (2013).

¹⁶² United States of America, *Endangered Species Act of 1973*, Section 3.19.

¹⁶³ United States of America, *Code of Federal Regulations*, Title 50, part 17 (2013).

¹⁶⁴ Mark W. Schwartz, “The Performance of the Endangered Species Act”, *Annual Review of Ecology, Evolution and Systematics*, 9:279–99 (2008).

consider the following: the status of the affected species or stocks; the potential severity of direct, indirect, and cumulative impacts on the species or stocks and habitat as a result of the proposed activity; the availability of effective monitoring techniques; the use of the best available technology for minimizing or mitigating impacts; and the views of the public, scientists, and other interested parties knowledgeable of the species or stocks or other matters related to the application¹⁶⁵. The permit will be issued if the permitting agency determines that conducting the activity under the terms of the HCP is not likely to appreciably reduce the species' likelihood of survival and recovery¹⁶⁶.

Marine Mammals have a specific regulatory instrument: The Marine Mammal Protection Act of 1972. In this matter, if an endangered species or threatened species of a marine mammal is involved, the taking is authorized pursuant to section 101(a)(5) of this Act.

Such as for marine mammals, a specific instrument was enacted for the protection of migratory birds: the Migratory Bird Treaty Act (MBTA) of 1918. The treaty establishes closed seasons for hunting and prohibits taking of nests or eggs (except for scientific purposes) for three groups of migratory birds. According to Atwell *et al.* (2011), "while the MBTA take prohibition covers more than hunting or poaching, so far no federal court has concluded that indirect incidental harm to migratory birds caused by habitat modification or degradation alone imposes liability under the MBTA, unlike under the ESA"¹⁶⁷. Today, there is no incidental take permit program to authorize, for example, indirect, unintentional bird deaths caused by industrial activities¹⁶⁸.

Environmental Impact Assessment

¹⁶⁵ United States of America, *Code of Federal Regulations*, Title 50, Part 222, section 222.307 (2013).

¹⁶⁶ Erin E. Seney, Melanie J. Rowland, Ruth Ann Lowery, Roger B. Griffis, Michelle M. McClure, "Climate Change, Marine Environments, and the U.S. Endangered Species Act", *Conservation Biology*, Volume 27, No. 6, 1138–1146, 2013.

¹⁶⁷ Jonathan W. Atwell, Jeffrey B. Hyman and Vicky J. Meretsky 2011 "Migration and conservation: frameworks, gaps, and synergies in science, law, and management", *Environmental Law*, 41.2, p. 447, 2011.

¹⁶⁸ Alexander K. Obrecht, "Migrating towards an incidental take permit program: overhauling the Migratory Bird Treaty Act to comport with modern industrial operations", *Natural Resources Journal*, 54.1, p107, 2014.

The United States National Environmental Policy Act of 1970 (NEPA) is recognized as the first instrument that incorporated the environmental impact assessment in the decision making process of projects with potential negative effects¹⁶⁹. Under the NEPA, all agencies of the Federal Government shall

“Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment”¹⁷⁰.

The NEPA process (or “the environmental impact assessment process”) is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment¹⁷¹. To implement the section 102.2 of the NEPA, regulations by the Environmental Quality Council (CEQ) were enacted to guide federal agencies on what they must do to comply with the procedures and achieve the goals of the Act. Also, as the policies and goals set forth at the NEPA are supplementary to those set forth in existing authorizations of Federal agencies, the CEQ regulations called for agencies to create their own implementing procedures that supplement the minimum requirements based on each agency’s specific mandates, obligations, and missions¹⁷².

The NEPA process is based on two types of documents: environmental assessment and the environmental impact statement (EIS). Both documents must address the environmental impact assessment of the proposed action¹⁷³. The environmental assessment is a concise public document sufficient evidence and analysis

¹⁶⁹ Luis Enrique Sánchez, *Avaliação de Impacto Ambiental: conceitos e métodos*, 2nd ed., (São Paulo, Oficina de Textos, 2013).

¹⁷⁰ United States of America, National Environment Policy Act of 1969, Section 102 (2013).

¹⁷¹ United States of America, *Code of Federal Regulations*, Title 40, Part 1500 (2013).

¹⁷² *Ibid.*

¹⁷³ Actions include new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals. It also includes the approval of specific projects, such as construction or management activities located in a defined geographic area. Projects include actions approved by permit or other regulatory decision as well as federal and federally assisted activities.

for determining whether to prepare an EIS or a finding of no significant impact. It also includes brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted¹⁷⁴. An EIS is required for every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, indicating:

“the environmental impact of the proposed action; any adverse environmental effects which cannot be avoided should the proposal be implemented; alternatives to the proposed action; the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented”¹⁷⁰.

To determine whether or not the proposed action will “*Significantly*” affect the quality of the human environment, the agency must consider the context and intensity of the impact. According to the CFR

“*Context* means the evaluation of the action considering the society as a whole (human, national), the affected region, the affected interests, and the locality. Both short- and long-term effects are relevant. *Intensity* refers to the severity of impact. The evaluation shall consider: beneficial and adverse impacts; effects on public health or safety; unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas; effects on the quality of the human environment that are likely to be highly controversial, uncertain and involve unknown risks; if the action may establish a precedent for future actions with significant effects; cumulative significant impacts; effects on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources; adversely effects of endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973; possible

¹⁷⁴ *Ibid*, Part 1508 (2013).

violation of Federal, State, or local law or requirements imposed for the protection of the environment”¹⁷⁵.

The environmental impact assessment of the proposed action shall address:

“direct and indirect effects and their significance; possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned; the environmental effects of alternatives including the proposed action; energy requirements and conservation potential of various alternatives and mitigation measures; natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures; urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures; means to mitigate adverse environmental impacts”¹⁷⁶.

Other agencies which have jurisdiction by law or special expertise with respect to any environmental impact involved or which is authorized to develop and enforce environmental standards may comment on the EIS¹⁷⁷. Mitigation and other conditions established in the environmental impact statement or during its review and committed as part of the decision shall be implemented by the lead agency or other appropriate consenting agency. These conditions shall be included in grants, permits or other approvals¹⁷⁸. The NEPA process can be summarized by this flow chart:

¹⁷⁵ Ibid.

¹⁷⁶ Ibid, Part 1502.

¹⁷⁷ Ibid.

¹⁷⁸ Ibid, part 1505

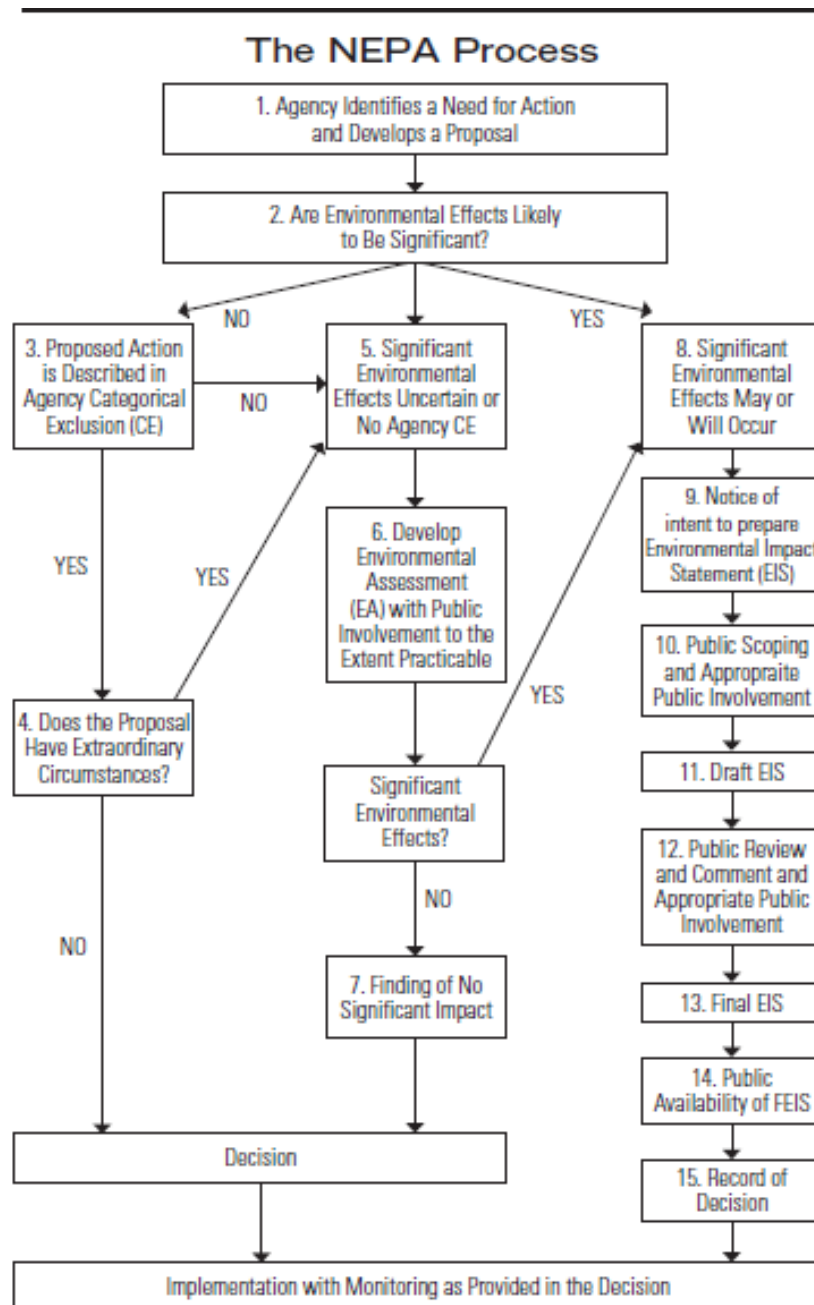


Figure 5: Summary of the NEPA process.

(Source: Council on Environmental Quality¹⁷⁹)

Oil Emergency Preparedness and Response

The CWA of 1972 prohibits “any discharge of oil or hazardous substances into or upon the navigable waters of the United States, adjoining shorelines, or into or upon

¹⁷⁹ United States of America, Council on Environmental Quality, *Citizen’s Guide to the National Environmental Policy Act (NEPA)* (2007). Available from http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-CitizensGuide.pdf

the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States”¹⁸⁰.

In 1990 the Oil Pollution Act amended certain provisions of the CWA and expanded the prevention and preparedness activities, improved the response capabilities, ensured that shippers and owners or operators of facilities that handle oil pay the costs of discharges that do occur, expanded research and development programs, and established an Oil Spill Liability Trust Fund¹⁸¹.

The institutional responsibility is shared among the federal agencies: USEPA is responsible for non-transportation-related facilities located landward of the coastline (e.g., inland lakes and rivers, including certain piping and coastal areas landward of the low water mark). The U.S. Coast Guard (USCG) is responsible for deepwater ports and transportation-related facilities located landward of the coastline. A facility with both transportation-related and non-transportation-related activities is regulated by both agencies, and as such, it is a *complex* and must comply with all the regulatory requirements of both agencies¹⁸². A marine terminal is an example of a “complex” subject to both USCG and USEPA jurisdiction. The USCG regulates the pier structures, transfer hoses, hose-piping connection, containment, controls, and transfer piping associated with the transfer of oil between a vessel and an onshore facility. USEPA regulates the tanks, internal piping, loading racks, and vehicle/rail operations that are completely within the non-transportation portion of the facility¹⁸¹.

The Oil Pollution Prevention regulation has two sets of requirements. The first set of requirements is the Spill Prevention, Control, and Countermeasure (SPCC) rule. The second set of requirements is the Facility Response Plan (FRP) rule.

¹⁸⁰ United States of America, Clean Water Act of 1972, Section 311.

¹⁸¹ United States of America, U.S. Environmental Protection Agency, *SPCC guidance for Regional Inspectors*, 16 December 2013, available from http://www.epa.gov/emergencies/docs/oil/spcc/guidance/SPCC_Guidance_fulltext.pdf

¹⁸² United States of America, U.S. Environmental Protection Agency, *Facility Response Planning: Compliance Assistance Guide*, August 2002, available from <http://www.epa.gov/emergencies/docs/oil/frp/frpguide.pdf>

Oil SPCC Plans are required to non-transportation facilities if there is a reasonable expectation that oil can be discharged to navigable water in quantities that may be harmful, and if a facility has underground oil storage capacity exceeding a total of 42,000 U.S. gallons or aboveground oil storage capacity exceeding a total of 1320 U.S. gallons. The purpose of an SPCC Plan is to form a comprehensive oil spill prevention program that minimizes the potential for discharges¹⁸¹.

The SPCC Plan must address all relevant spill prevention, control, and countermeasures necessary at the specific facility. It includes: “the type of oil in each fixed container and its storage capacity; discharge prevention measures including procedures for routine handling of products; discharge or drainage controls such as secondary containment around containers and other structures, equipment, and procedures for the control of a discharge; countermeasures for discharge discovery, response, and cleanup; methods of disposal of recovered materials”. The regulation also indicates specific discharge prevention and containment procedures to be adopted for each type of facility¹⁸³.

The FRPs are required when facility that, because of its location, could reasonably be expected to cause substantial harm¹⁸⁴ to the environment by discharging oil into or on the navigable waters or adjoining shorelines and economic exclusive zone. The FRP prepares the facility owner or operator to respond to an oil spill and no facility may handle, store, or transport oil unless it is operating in full compliance with a submitted response plan.

Both USEPA and USCG have established regulations regarding the content of the FRP. The plan must include, inter alia: the facility’s spill mitigation procedures and response activities; disposal plan; training and exercises; description of immediate measures to secure the source of the discharge, and to provide adequate containment and drainage of discharged oil; plans for evacuation of the facility and a reference to community evacuation plans, as appropriate; Response planning level for different scenarios; and discharge detection systems¹⁸⁵.

¹⁸³ United States of America, *Code of Federal Regulations*, Title 40, Part 112 (2013).

¹⁸⁴ A flowchart for the evaluation of potential substantial harm is presented in United States of America, *Code of Federal Regulations*, Title 40, Part 112, Appendix C (2013).

¹⁸⁵ *Ibid*, Part 112, Section 112.20 and Appendix F; Title 33, Part 154.

Air Quality

The Clean Air Act (CAA) is the main federal statute regulating emissions of air pollutants into the ambient air from sources such as power plants, cars, and industry¹⁸⁶. Under the CAA, National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment are established by the USEPA. If an area has violated (or contributed to a violation of) the NAAQS, it is designated as “nonattainment” and is subject to certain requirements to reduce pollution, including adoption of a State Implementation Plan (SIP) that describes an approach for the region to attain the NAAQS.

The CAA requires that the actions engaged, licensed or approved by federal agencies comply with the SIP¹⁸⁷. In the case of ports any construction project that involves use of federal funds or federal agency approval, such as a wharf construction or a dredging project, must not result in emissions that will exceed *de minimis* levels¹⁸⁸.

The assurance of conformity to such an implementation plan shall be an affirmative responsibility of the head of such department, agency, or instrumentality. Conformity to an implementation plan means:

“conformity to an implementation plan’s purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not— (i) cause or contribute to any new violation of any standard in any area; (ii) increase the frequency or severity of any existing violation of any standard in any area; or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area”¹⁸⁹.

For larger industrial and commercial sources that release pollutants into the air an operating permit is required. Operating permits include information on which pollutants are being released, how much may be released, and what kinds of steps the

¹⁸⁶ Donald C. Baur, Tim Eichenberg, Michael Sutton, *Ocean and Coastal Law and Policy* (Chicago, American Bar Association, 2008).

¹⁸⁷ Called “General Conformity Rule”.

¹⁸⁸ United States of America, U.S. Environment Protection Agency, Emission Reduction Incentives for Off-Road Diesel Equipment Used in the Port and Construction Sectors (U.S. Environmental Protection Agency, 2005), available from http://www.epa.gov/sectors/pdf/emission_20050519.pdf.

¹⁸⁹ United States of America, Clean Air Act of 1970, Section 176.c.

source's owner or operator is required to take to reduce the pollution. Permits must include plans to measure and report the air pollution emitted¹⁹⁰. The permits can be issued by states and local authorities¹⁹¹ or by the USEPA¹⁹².

According to the CAA, the USEPA shall review and comment in writing on the environmental impact of any matter relating to the provisions of the CAA, contained in any legislation proposed by any Federal department or agency, newly authorized Federal projects for construction and any major Federal agency action (other than a project for construction) and proposed regulations published by any department or agency of the Federal Government¹⁹³.

Water Quality

The CWA of 1972 established that “the discharge of any pollutant¹⁹⁴ into waters of the United States by any person is unlawful, unless it complies with the act”¹⁹⁵. Pollutants can enter water via a variety of pathways including agricultural, domestic and industrial sources. For regulatory purposes, these sources generally are categorized as either point sources or nonpoint sources¹⁹⁶.

A comprehensive program exists to regulate land-based point sources of pollution. Under the CWA, such sources are subject to permitting, effluent limitations, monitoring and reporting requirements. It can be enforced through federal, state, or citizen action¹⁸⁶.

Section 402 of Title IV of the CWA, “Permits and Licenses”, created the system for permitting wastewater discharges, known as the NPDES (National Pollutant

¹⁹⁰ United States of America, U.S. Environment Protection Agency, *The Plain English Guide to the Clean Air Act*, EPA-456/K-07-001 (Office of Air Quality Planning and Standards, Research Triangle Park, NC, 2007).

¹⁹¹ United States of America, *Code of Federal Regulations*, Title 40, Part 70 (2013).

¹⁹² *Ibid*, Part 71.

¹⁹³ United States of America, Clean Air Act of 1970, Section 309.

¹⁹⁴ Discharge of pollutant means any addition of any pollutant to navigable waters from any point source or any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.

¹⁹⁵ United States of America, Clean Water Act of 1972, Section 301.

¹⁹⁶ United States of America, U.S. Environment Protection Agency, *National Pollutant Discharge Elimination System (NPDES) Permit Writers' Manual* (Office of Wastewater Management, Washington, DC, 2010).

Discharge Elimination System) program. Under the requirements of the program, a point source may be authorized to discharge pollutants into waters of the United States by obtaining a permit¹⁹⁷.

The NPDES permits specify which pollutants the source must control, sets numerical or narrative limits for those pollutants, establishes how often the source must monitor each pollutant, and in some cases limits the maximum allowable daily and/or average monthly emissions. The permits can be based on either technology or water quality. Technology-based permits can apply either national effluent guidelines or the best professional judgment of the permit writer. For specific pollutants not covered by effluent guidelines and for situations in which a technology-based permit proves insufficiently protective of surface waters, more stringent permit limits may be imposed to meet relevant water-quality criteria¹⁹⁸. To issue the permit, first is considered the technology-based effluent limitations; following that step, the permit writer derives effluent limitations that are protective of state water quality standards as needed. Both are compared and an anti-backsliding analysis is conducted if necessary, then, the final limitations applied in the NPDES permit¹⁹⁶. A certification by the state in which the discharge originates or will originate is required for federally permitted activities that may result in any discharge into states waters, including the waters of the territorial sea. A federal agency cannot issue the permit if the state denies the certification. For example, construction projects along the coast authorized by the USACE are subject to the section 401 certification requirement¹⁴⁵.

The issuance of a NPDES permit must, also, meet the provisions of the NEPA and its regulation. An environmental assessment must be prepared for a proposed action that is expected to result in environmental impacts and the significance of the impacts is not known and shall provide sufficient information and analysis for determining whether to prepare an EIS or to issue a FONSI (finding of no significant impact). The issuance of new source NPDES permit for a new major industrial discharge usually require an EIS¹⁹⁹.

¹⁹⁷ *Ibid.*

¹⁹⁸ Richard Iovannaa, Charles Griffiths, "Clean water, ecological benefits, and benefits transfer: A work in progress at the U.S. EPA", *Ecological Economics*, 60 4 7 3 – 4 8 2 (2006).

¹⁹⁹ United States of America, *Code of Federal Regulations*, Title 40, Part 6 (2013).

In some cases a general permit may be issued covering one or more categories or subcategories of discharges or sludge use or disposal practices or facilities²⁰⁰. The sources within a covered subcategory of discharges are either: (i) storm water point sources; or (ii) one or more categories or subcategories of point sources other than storm water point sources²⁰¹.

Storm water discharges are regulated under the CWA and associated federal regulation. Discharges associated with industrial activity or construction sites with one acre or more are subject to this regulation. Most stormwater discharges associated with construction activities that result in the disturbance of one acre or more are covered under a general permit issued by EPA or the authorized state¹⁹⁶. These permits, generally, can be thought of as umbrella permits that cover all stormwater discharges associated with construction activity in a given state for a designated time period, usually 5 years. Operators of individual constructions sites then apply for coverage under this permit²⁰².

For the issuance of a stormwater permit for discharges associated with industrial activity are required: a map showing site drainage; an estimate of the area of impervious surfaces and the total area drained by each outfall; a narrative description of material management practices and control measures; a certification that separate storm water outfalls have been tested or evaluated for non-storm water discharges; existing information regarding significant leaks or spills of toxic or hazardous pollutants at the facility that have taken place within the three years prior to the submittal of the application; and sampling data for specified parameters²⁰³.

Marine Protected Areas

²⁰⁰ *Ibid*, Part 122, Section 122.28.

²⁰¹ *Ibid*.

²⁰² United States of America, U.S. Environment Protection Agency, *Developing Your Stormwater Pollution Prevention Plan: a Guide for Construction Sites*, EPA 833 R 06 004 (2007).

²⁰³ United States of America, U.S. Environment Protection Agency, *Guidance Manual For the Preparation of NPDES Permit Applications For Stormwater Discharges Associated With Industrial Activity*, (Office of Wastewater Enforcement and Compliance, Washington, D.C., 1991).

The Marine Protected Areas (MPAs) are recognized as an important management tool for mitigating impacts on the oceans. In the USA, the MPAs have been established by over 100 legal authorities, with some federal and state agencies managing more than one MPA program, each with its own legal purpose²⁰⁴. At the national level, the instruments include: the Executive Order n° 13,158 of 2000; the MPRSA of 1972; the Magnuson-Stevens Fishery Conservation and Management Act of 1976; the Coastal Zone Management Act (CZMA) of 1972; the CWA of 1972; the ESA of 1973; the National Park Service Organic Act of 1916; the National Wildlife Refuge System Act of 1966; and the Coastal Barrier Resources Act of 1982.

The Executive Order n° 13,158 created the National System of MPAs, which includes all MPAs established by the Federal agencies whose authorities provide for the establishment or management of MPAs. Among these are the National Marine Sanctuaries (established under the MPRSA); National Estuarine Research Reserves (established under the CZMA); National Wildlife Refuges (established under the National Wildlife Refuge System Act); Essential fish habitats (established under the Magnuson-Stevens Fishery Conservation and Management Act), Critical habitat areas for threatened and endangered species (established under the ESA), and National Parks, Monuments, and Seashores (established under the National Park Service Organic Act). MPA's provide various degrees of protection and permit or prohibit different uses. The agencies have established regulations regarding permitted activities in the MPAs and authorization procedures when applicable.

Paragraph 2: Procedures after the implementation of the project **Sea and Ocean Dumping**

According to the Section 102.c.3 of the MPRSA, a site management plan for each site shall be developed and must include:

“a baseline assessment of conditions at the site; a program for monitoring the site; special management conditions or practices to be implemented at each site that are necessary for protection of the environment; consideration of the quantity of the material to be disposed of at the site, and the presence, nature, and bioavailability of the contaminants in the material; consideration of the

²⁰⁴ United States of America, National Oceanic and Atmospheric Administration, *Framework for the National System of Marine Protected Areas System of the United States of America* (National Marine Protected Areas Center, Silver Spring, MD, 2008).

anticipated use of the site over the long term, including the anticipated closure date for the site, if applicable, and any need for management of the site after the closure of the site; and a schedule for review and revision of the plan (which shall not be reviewed and revised less frequently than 10 years after adoption of the plan, and every 10 years thereafter)”.

The monitoring program of the disposal site has the purpose of assess the extent and trends of environmental impact. The program should be designed to provide the following: information indicating whether the disposal activities are occurring in compliance with the permit and site restrictions; information indicating the short-term and long-term fate of materials disposed of in the marine environment; and information concerning the short-term and long-term environmental impacts of the disposal²⁰⁵.The criteria for evaluating the environmental impact include:

“movement of materials into estuaries or marine sanctuaries, or onto oceanfront beaches, or shorelines; movement of materials toward productive fishery or shellfishery areas; absence from the disposal site of pollution-sensitive biota characteristic of the general area; progressive, non-seasonal, changes in water quality or sediment composition at the disposal site, when these changes are attributable to materials disposed of at the site; progressive, non-seasonal, changes in composition or numbers of pelagic, demersal, or benthic biota at or near the disposal site, when these changes can be attributed to the effects of materials disposed of at the site; accumulation of material constituents (including without limitation, human pathogens) in marine biota at or near the site”²⁰⁶.

Threatened and Endangered Species

The incidental take of endangered species is authorized for otherwise legal activities authorized, funded or carried out by federal agencies or conducted by private project owners. After the authorization of the incidental take, the action agencies and

²⁰⁵ United States of America, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, *Guidance Document for Development of Management Plans for Ocean Dredged Material Disposal Site* (1996). Available from http://water.epa.gov/type/oceb/oceandumping/dredgedmaterial/upload/1996_smmp_guidance.pdf

²⁰⁶ United States of America, *Code of Federal Regulations*, Title 40, Part 228 (2013).

the permittees are required to implement the mitigation measures to reduce the impact of the taking and report the progress of the action and its impact on the species in order to monitor the impacts of the incidental take²⁰⁷.

The monitoring programs resulting from interagency consultations should be designed to: detect adverse effects resulting from a proposed action, assess the actual level of incidental take in comparison with the anticipated incidental take level documented in the Biological Opinion, detect when the level of anticipated incidental take is exceeded, and determine the effectiveness of reasonable and prudent measures and their implementing terms and conditions²⁰⁸. If during the course of the action the amount or extent of incidental taking is exceeded, the Federal agency must reinstate consultation immediately²⁰⁹.

The monitoring and mitigating programs to be implemented under section 10 permits are established in the HCP. Mitigation actions under HCPs usually take one of the following forms: avoiding the impact (to the extent practicable); minimizing the impact; rectifying the impact; reducing or eliminating the impact over time; or compensating for the impact²¹⁰.

Environment Management Plan

The NEPA requires mitigation to minimize the potential adverse impacts of the agencies actions. In this regard, the agencies must ensure that there are sufficient legal authorities and resources to implement it and the mitigation commitments are made on the basis of the NEPA analysis, especially by specifying a timeframe for the action and the mitigation measures in its decision documents²¹¹.

²⁰⁷ Ibid, Title 50, Part 222, Section 222.307 and Part 402, Section 402.14.

²⁰⁸ United States of America, U.S. Fish and Wildlife Service and National Marine Fisheries Service, *Consultation Handbook for the Procedures for Conducting Activities Under Section 7 of the Endangered Species Act* (1998). Available from http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf.

²⁰⁹ United States of America, *Code of Federal Regulations*, Title 40, Part 402, Section 402.14 (2013).

²¹⁰ United States of America, U.S. Fish and Wildlife Service and National Marine Fisheries Service, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (1996). Available from http://www.nmfs.noaa.gov/pr/pdfs/laws/hcp_handbook.pdf.

²¹¹ United States of America, Council on Environmental Quality, *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact*

According to the regulations, a monitoring and enforcement program shall be adopted²¹² and is fundamental for ensuring the implementation and effectiveness of mitigation commitments, meeting legal and permitting requirements, and identifying trends and possible means for improvement. The monitoring program must include: “a review process and a system for reporting results; tracking if the mitigation commitments are being performed as described in the NEPA and related decision documents, and whether the mitigation effort is producing the expected outcomes and resulting environmental effects; environmental data collection and analysis prior to project implementation provides an understanding of the baseline conditions for reference”²¹¹. For mitigation commitments that warrant rigorous oversight, the Council of Environmental Quality understands that an Environmental Management System (EMS) could serve as useful way to integrate monitoring efforts effectively²¹¹. The EMS can track and monitor the commitments and mitigation measures established in NEPA decision documents and improve the NEPA process by supporting an adaptive management approach for projects that face uncertain or unforeseen conditions during implementation. The EMS could monitor to ensure the mitigation was implemented, and assess whether the mitigation is performing as expected²¹³.

The monitoring shall be integrated with other agencies responsible for overseeing land management and impacts to specific resources and provide public access to the mitigation monitoring information.

Air Quality

USEPA has regulated emissions from non-road engines used in most construction and port cargo handling equipment since 1999 and established exhaust emissions standards for marine and non-road diesel engines. Also, through the “Ports Initiative”, USEPA explores effectively partnering with port stakeholders to identify opportunities and find solutions that create more sustainable ports systems by:

(2011). Available from http://energy.gov/sites/prod/files/NEPA-CEQ_Mitigation_and_Monitoring_Guidance_14Jan2011.pdf.

²¹² United States of America, *Code of Federal Regulations*, Title 40, Part 1505 (2013).

²¹³ United States of America, Council on Environmental Quality, *Aligning National Environmental Policy Act Processes with Environmental Management Systems: A Guide for NEPA and EMS Practitioners* (2007). Available from http://energy.gov/sites/prod/files/CEQ_NEPA_EMS_Guide-04-2007_1.pdf (Accessed in 12 December 2014).

“encouraging environmental progress at ports and reducing climate risk; supporting operational and technological improvements to increase efficiency; improving community health and air quality”²¹⁴. In 2009 the agency published a guide on the Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, providing orientation to port authorities in the development of emissions inventory, in order to understand and quantify the air quality impacts of current port operations and to plan mitigation strategies²¹⁵. Among the strategies that Port Authorities can adopt to reduce the impact on air quality the agency recommends: Substitute rail or barge for trucking; substitute electric power for diesel power; develop educational programs on air pollution and emissions reductions for terminal operators and fleet owners; develop an Environmental Management System; retrofit with verified technologies, use cleaner fuels and operate more efficiently; Establish anti-idling policies; Expand off-peak operations hours to avoid congestion²¹⁶.

Some of these strategies are already implemented in American ports, such as: Port of Los Angeles and Port of Long Beach²¹⁷; and Port of New York and New Jersey²¹⁸.

Water quality

The NPDES permits require the implementation of monitoring programs. In the establishment of the monitoring, these aspects are considered: applicability of effluent limitations guidelines and standards (effluent guidelines); waste stream and process variability; access to sample locations; pollutants discharged; effluent limitations;

²¹⁴ United States of America, U.S. Environmental Protection Agency, “Ports Initiative”. Available from <http://www.epa.gov/otaq/ports>. (Accessed in 19 September 2014).

²¹⁵ United States of America, U.S. Environmental Protection Agency, *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories* (2009). Available from <http://epa.gov/cleandiesel/documents/ports-emission-inv-april09.pdf>.

²¹⁶ United States of America, U.S. Environmental Protection Agency, “National Clean Diesel Campaign (NCDC): Ports and Marine”. Available from <http://www.epa.gov/cleandiesel/sector-programs/ports-portauth.htm> (Accessed in 19 September 2014).

²¹⁷ Genevieve Giuliano, Alison Linder, “Motivations for self-regulation: The clean air action plan”, *Energy Policy*, 59 513–522 (2013).

²¹⁸ The Port Authority of New York and New Jersey, “A Clean Air Strategy for the Port of New York & New Jersey: 2013 Implementation Report” (2013). Available from http://www.panyj.gov/about/pdf/CAS_Implementation_Report.pdf

discharge frequencies (e.g., continuous versus intermittent); effect of flow or pollutant load or both on the receiving water; characteristics of the pollutants discharged; permittee's compliance history²¹⁹. Elements of the monitoring program include: the mass (or other measurement specified in the permit) for each pollutant limited in the permit and the volume of effluent discharged from each outfall²²⁰. In the case of stormwater permits, a Stormwater Pollution Prevention Plan must be implemented identifying the potential sources of stormwater pollution at the construction site; describing practices to reduce pollutants in stormwater discharges from the construction site (reduction of pollutants is often achieved by controlling the volume of stormwater runoff) and identifying procedures the operator will implement to comply with the terms and conditions of a construction general permit²²¹.

Section B – Republic of South Africa

According to the Section 24 (a) of the Bill of Rights in the South African Constitution (Act 108 of 1996), everyone has the right: to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development²²².

South Africa does not have an integrated environmental permitting system. In this regard, the implementation of a project may require more than one environmental license, depending on the environmental aspect involved. This section will address the procedures for the issuance of licenses related to aspects that are part of ports and dredging projects or affected by them: sea and ocean dumping; threatened and

²¹⁹ United States of America, U.S. Environment Protection Agency, *National Pollutant Discharge Elimination System (NPDES) Permit Writers' Manual* (Office of Wastewater Management, Washington, DC, 2010).

²²⁰ United States of America, *Code of Federal Regulations*, Title 40, Part 122, section 122.44 (2013).

²²¹ United States of America, U.S. Environment Protection Agency, *Developing Your Stormwater Pollution Prevention Plan: a Guide for Construction Sites*, EPA 833 R 06 004 (2007).

²²² South Africa, Department of Environmental Affairs and Tourism, *Overview of Integrated Environmental Management, Integrated Environmental Management, Information Series 1* (Pretoria, 2004). Available from https://www.environment.gov.za/documents/strategicdocuments?q=content/integrated_environmentalmanagement_informationseries.

endangered species; environmental impact assessment; oil pollution preparedness and response; air quality; water quality; marine protected areas. The evaluation will consider the procedures before and after the approval/implementation of the project.

Paragraph 1: Procedures prior to the implementation of the project

Sea and Ocean Dumping

South Africa is a Contracting Party to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Protocol) and gave effect to the provisions of this instrument through the National Environmental Management: Integrated Coastal Management Act (ICMA) of 2008²²³. The ICMA also addresses all elements applicable to coastal management (coast is managed as a unit)²²⁴.

The ICMA only allows dumping at the coastal waters or the Economic Exclusive Zone with the issuance of a dumping permit (except in an emergency situation)²²⁵. Seven categories of wastes may be dumped at the sea under a dumping permit, including dredged material²²⁶. According to the Department of Environmental Affairs of South Africa, “the largest volume of material that requires disposal in offshore waters is dredged material, predominantly from the maintenance and capital dredging in Ports”²²³.

To require a permit, an applicant must assess the characteristics of both the material and the proposed dump site or dump sites, such as physical, chemical, biochemical and biological properties; composition; toxicity; persistence accumulation and biotransformation in biological materials or sediments. The ICMA also requires a

²²³ South Africa, Department of Environmental Affairs, *Review and Update of South Africa's National Action List for the Screening of Dredged Sediment Proposed for Marine Disposal* (2010). Available from https://www.environment.gov.za/sites/default/files/docs/nationalactionlist_marinedisposal_technicalreport.pdf.

²²⁴ Bronwyn J. Goble, Melissa Lewis, Trevor R. Hill, Mike R. Phillips, “Coastal management in South Africa: Historical perspectives and setting the stage of a new era”, *Ocean and Coastal Management*, 91 (February 2014) p. 32 – 40.

²²⁵ South Africa, National Environmental Management: Integrated Coastal Management Act, Act n° 24 of 2008, Chapter 8, Section 70.

²²⁶ Ibid, Section 71.

comparative risk assessment involving both dumping at sea and other alternatives to the dumping. The information must also include the proposed disposal techniques and specify the potential effects on the environment, human health, living resources, amenities and other legitimate uses of the sea. It must define the nature, temporal and spatial scales and duration of expected impacts based on reasonably conservative assumptions²²⁷. If the dumping is likely to cause irreversible or long-lasting adverse effects that cannot satisfactorily be mitigated, seriously affect fishing or navigation, or interfere with the coastal management programme of the area, the license will not be issued²²⁶.

In conformity with the London Protocol provisions, the ICMA requires the establishment of a National Action List, for the screening of waste material on the basis of potential impact over human health and marine environment²²⁸. The list provide criteria for the decision for the disposal of the waste, in the case of dredged material, whether it will be disposed in open water without further testing, must undergo detailed testing before the decision or cannot be disposed in open water. The South African National Action List was first issue in 1995 and was adapted by the Department of Environmental Affairs and today is under revision.

An important provision within the ICMA is the establishment of the focus for control of the contamination of dredged material on the identification and control of point and non-point sources of pollution²²⁷.

Threatened and endangered species

The National Environmental Management Act: Biodiversity Act of 2004 establishes the provisions for the conservation and management of biodiversity in South Africa. It is a comprehensive Act which gives effect to international agreements regarding biodiversity that South Africa is a party and includes the protection of threatened species and ecosystems and a permit system for the use of the biodiversity²²⁹.

²²⁷ Ibid, Schedule 2.

²²⁸ Ibid, Section 73.

²²⁹ South Africa, National Management Act: Biodiversity Act, Act n° 10 of 2004.

The permit system is applied to restrict activities²³⁰ (e.g. hunting, farming, importing and exporting) involving listed threatened or protected species²³¹, alien species or listed invasive species.

Environmental Impact Assessment

The EIA process in South Africa became mandatory with the enactment of the Environment Conservation Act (Act 73 of 1989). In 1998 regulations were published enforcing EIA, in terms of the Environment Conservation Act. The publication of the National Environmental Management Act (Act 107 of 1998) (NEMA) followed shortly and today, NEMA provides the framework for co-operative environmental governance in South Africa and promotes the application of environmental assessment and management tools to ensure integrated environmental management of activities²³². In 2006 and 2010, regulations under the NEMA were published to enforce the application of the EIA in South Africa.

The NEMA defines the environmental management principles for South Africa, which include, inter alia, the sustainable development with the avoidance or minimization of environmental impacts. The government departments are required to adopt environmental implementation and management plans, with the objective of co-ordinate the environmental policies and plans of national departments that may affect the environment or are entrusted with powers and duties aimed at the achievement, promotion and protection of a sustainable environment; secure the protection of the environment across the country as a whole; and prevent unreasonable actions by provinces in respect of the environment that are prejudicial to the economic or health interests of other provinces or the country as a whole²³³.

²³⁰ The definition of “restricted activity” is given by the National Environmental Management: Biodiversity Act, Chapter 1, section 1.

²³¹ The list of threatened species was published in the Government Gazette n° 29657, No. R. 151, 23 February 2007.

²³² South Africa, Department of Environmental Affairs and Tourism, *Overview of Integrated Environmental Management, Integrated Environmental Management, Information Series 0* (Pretoria, 2004). Available from <https://www.environment.gov.za/sites/default/files/docs/series0%20overview.pdf>.

²³³ South Africa, National Environmental Management Act, Act n° 107 of 1998, Chapter 3, Sections 11 and 12.

The integrated environmental management described in chapter 5 of the NEMA is the tool to “identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage; the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts; maximizing benefits; and promoting compliance with the principles of environmental management”²³⁴. The impacts over the environment must be investigated prior to the implementation of the activities which require authorization by the law. Other provisions within chapter 5 describe the mandatory aspects of the assessment of the environmental impacts of the activities. In 2006 specific regulations for the EIA were enacted under the NEMA, being updated and replaced in 2010²³⁵.

The 2010 EIA regulations set out the processes that have to be followed in order to obtain an Environmental Authorization. Also, it provides the lists of activities that require a Basic Assessment Report and EIA and indicates the competent authorities to conduct the procedures²³⁶.

In South Africa the “construction or earth moving activities in the sea, an estuary, or within the littoral active zone or a distance of 100 meters inland of the high-water mark of the sea or an estuary, whichever distance is the greater, in respect of: facilities associated with the arrival and departure of vessels and the handling of cargo; piers; breakwater structures; and coastal harbors or ports²³⁷,” require an environmental authorization prior the implementation of the project and an EIA (Scoping and Environmental Impact Report – S&EIR) as the basis for the decision making²³⁸. Environmental authorization are also required for dredging activities at the sea, seashore

²³⁴ Ibid, Chapter 5, Section 23

²³⁵ Campion Benjamin Betey, Essel Godfred, “Environmental Impact Assessment and Sustainable Development in Africa: A Critical Review”, *Environment and Natural Resources Research*, Vol. 3, No. 2 (February 2013).

²³⁶ Bryony Walmsley, Saphira Patel, *Handbook on environmental assessment legislation in the SADC region*, 3rd edition (Pretoria, Development Bank of Southern Africa in collaboration with the Southern African Institute for Environmental Assessment, 2011).

²³⁷ With the exception of the construction of structures within existing ports or harbors that will not increase the development footprint or throughput capacity of the port or harbor.

²³⁸ South Africa, National Environmental Management Act, Listing Notice n° 2, R. 545, Government Gazette 33306, 2010.

and the littoral active zone, an estuary or a distance of 100 meters inland of the high water mark of the sea or an estuary, whichever distance is the greater, but in this case must be conducted a basic assessment report (BAR)²³⁹.

Both the S&EIR and the BAR must be developed by an independent Environmental Assessment Practitioner (EAP) with experience in conducting environmental impact assessment and appointed by the applicant²⁴⁰.

The BAR for any activity must include: description and location of the activity (with coordinates); description of the environment that may be affected by the proposed activity and how it may be affected, considering geographical, physical, biological, social, economic and cultural aspects; analysis of feasible and reasonable alternatives to the proposed activity including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected; assessment of the significance of any environmental impacts including: cumulative impacts; the nature, probability, extent and duration of the impact; the degree to which the impact can be reversed; the degree to which the impact may cause irreplaceable loss of resources; and the degree to which the impact can be mitigated; environmental management and mitigation measures. The BAR must also contain a reasoned opinion as to whether the activity should or should not be authorized, and if the opinion is that it should be authorized, any conditions²⁴¹.

If an activity must follow the EIA process, two documents will be submitted to the competent authority: the Scoping Report and the Environmental Impact Report. The Scoping Report addresses the issues that will be relevant for consideration of the application including the description of the environment where the activity will take place, potential environmental impacts of the proposed activity and alternatives to the proposed activity that are feasible and reasonable. The Scoping Report also presents the plan of study for environmental impact assessment²⁴².

²³⁹ South Africa, National Environmental Management Act, Listing Notice n° 1, R. 544, Government Gazette 33306, 2010.

²⁴⁰ South Africa, National Environmental Management Act, Government Notice R. 543, Government Gazette, 33306, 2010, Sections 16 and 17.

²⁴¹ Ibid, Section 22.

²⁴² Ibid, Section 28.

After the approval of the Scoping Report by the competent authority, the EIA is developed and its findings are presented in the Environmental Impact Report. This report must contain all information that is necessary for the competent authority to reach a decision, including all the elements that are mandatory of the BAR and also:

“a description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures; description and comparative assessment of all alternatives identified during the environmental impact assessment process; and summary of the findings and recommendations of the specialist report^{243,,244}.

The procedure for the issuance of the Environmental Authorization requires interested and affected parties participation: the competent authority must consult with every State department that administers a law relating to a matter affecting the environment relevant²⁴⁵. Moreover, the regulation requires public participation during the BAR, Scoping Report and Environmental Impact Report elaboration.

In the case of activities that will take place at the coastal zone, the ICMA requires the competent authority to consider:

“whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development or activity is consistent with the purpose for establishing and protecting those areas; the estuarine management plans, coastal management programmes and coastal management objectives applicable in the area; the socio-economic impact if the activity; the likely impact of the proposed activity on the coastal environment, including the cumulative effect of its impact together with those of

²⁴³ Specialist report: Whenever is necessary, an applicant or the EAP managing an application may appoint a person to carry out a specialist study or specialized process; the findings will be presented in a specialist report or a report on a specialized process.

²⁴⁴ South Africa, National Environmental Management Act, Government Notice R. 543, Government Gazette, 33306, 2010, Section 31.

²⁴⁵ Ibid, section 6.

existing activities; and the likely impact of coastal environmental processes on the proposed activity”²⁴⁶.

A summary of the EIA process in South Africa is represented in Figure 6.

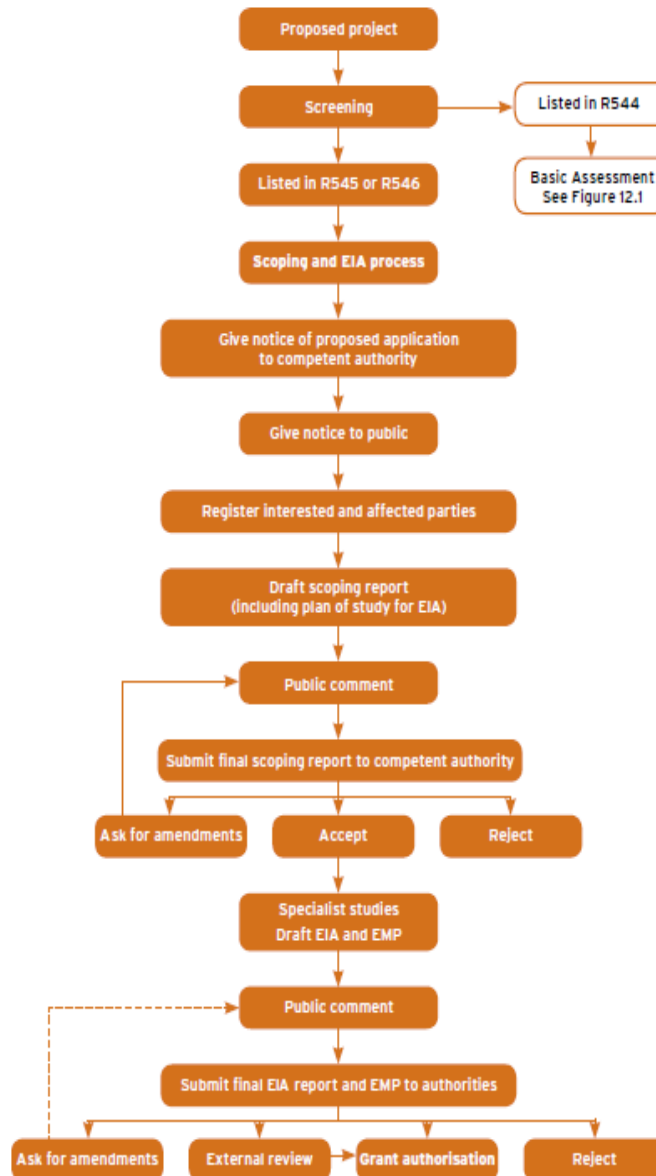


Figure 6: Scoping and EIA process in South Africa²⁴⁷.

²⁴⁶ South Africa, National Environmental Management: Integrated Coastal Management Act, Act n° 24 of 2008, Chapter 7, Section 63.

²⁴⁷ Source: Bryony Walmsley, Saphira Patel, *Handbook on environmental assessment legislation in the SADC region*, 3rd edition (Pretoria, Development Bank of Southern Africa in collaboration with the Southern African Institute for Environmental Assessment, 2011).

In 2013 the Infrastructure Development Bill was enacted “to provide facilitation and co-ordination of public infrastructure development which is of significant economic or social importance to the Republic and to ensure that infrastructure development in the Republic is given priority in planning, approval and implementation”. Under this Bill every organ of state must ensure that its future planning or implementation of infrastructure or its future spatial planning and land use is not in conflict with any strategic integrated project (one or more installation, structure, facility, system, service or process relating to infrastructure projects, such as Ports, if designated as integrated strategic project by the Presidential Infrastructure Coordinating Commission)²⁴⁸. The Bill ensures that whenever an environmental assessment is required in respect of an integrated strategic project, such assessment must be done in terms of the NEMA²⁴⁹, but in this case, the time-frames established by the Bill may not be exceeded²⁵⁰.

Air quality

The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), provides the specific legal framework for the air pollution control in South Africa. The Air Quality Act (AQA) was promulgated in 2005 as the updated approach to air pollution control, introducing air quality management (AQM) as the control strategy²⁵¹. The Act provides reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; and provides for national norms and standards regulating air quality monitoring²⁵².

²⁴⁸ South Africa, Infrastructure Development Bill of 2013, Part 1, Section 8.

²⁴⁹ Ibid, Part 5, Section 18.

²⁵⁰ Some authors understand that the Bill seeks to streamline the regulatory decision making for the strategic projects, including EIA, and it would lead to different EIA practices among the projects. Alan Bond, Jenny Pope, Angus Morrison-Saunders, Francois Retief, Jill A.E. Gunn, “Impact assessment: Eroding benefits through streamlining?”, *Environmental Impact Assessment Review*, 45 (December 2014) p. 46–53.

²⁵¹ . Y. Nicer, R.D. Diab, M. Zunckel, E.T. Hayes, “Introduction of local Air Quality Management in South Africa: overview and challenges”, *Environmental Science & Policy*, 17 (January 2012) p. 62 - 71.

²⁵² South Africa, Department of Environmental Affairs, *Annual Report 2012/13* (Pretoria 2013). Available from https://www.environment.gov.za/sites/default/files/docs/environmental_affairs2012_2013_annualreport.pdf.

Under the AQA, a list of activities which result in atmospheric emissions and which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage is issued (either in national²⁵³ or provincial level) and, as a consequence, no person may conduct the listed activity without a provisional atmospheric emission license or an atmospheric emission license²⁵⁴.

According to the AQA, governance responsibilities of air quality are shared between national, provincial and local government²⁵⁵, but it has acknowledged local government as the most appropriate government level to implement the majority of control measures¹²⁵, including the licensing of the listed activities.

The chapter 5 of the AQA establishes the procedures for the atmospheric emission licensing (AEL) system by the municipalities. It highlights that the AEL must comply with the National Environmental Management Act. In some cases, the AEL process runs parallel with the EIA process (joint process). In general, all development applications involving listed activities will be required to undergo an EIA and will require a specialist Air Quality Impact Assessment study²⁵⁶.

Aspects that must be considered by the licensing authorities for the issuance of licenses include: applicable minimum standards set for ambient air and point source emissions; the pollution being or likely to be caused by the carrying out of the listed activity applied for and the effect or likely effect of that pollution on the environment, including health, social conditions, economic conditions, cultural heritage and ambient

²⁵³ The national list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published in 2010 by the Department of Environmental Affairs, Government Gazette 33064, 2010, n° 348.

²⁵⁴ South Africa, National Environmental Management: Air Quality Act, Act n° 39 of 2004, Chapter 4, Sections 21 and 22.

²⁵⁵ South Africa, Department of Environmental Affairs, *Atmospheric Emission Licence: Manual for Licensing Authorities* (Pretoria 2009). Available from <http://www.tshwane.gov.za/Services/EnvironmentalManagement/Environmental%20Management%20Documents/Atmospheric%20Emission%20Licence%20Manual%20for%20Licensing%20Authorities.pdf>

²⁵⁶ South Africa, Department of Environmental Affairs, *National Framework for Air Quality Management in the Republic of South Africa* (2012). Available from <http://govza.gcis.gov.za/ts/documents/national-environmental-management-air-quality-act-2007-national-framework-air-quality>.

air quality; the best practicable environmental options available that could be taken-to prevent, control, abate or mitigate that pollution and to protect the environment, including health, social conditions, economic conditions, cultural heritage and ambient air quality, from harm as a result of that pollution²⁵⁷.

If after the considerations the licensing authority decides to grant the license, it will first issue a provisional atmospheric emission license. If the facility has been in full compliance with the conditions and requirements of the provisional atmospheric emission license for a period of at least six months, it is entitled to an atmospheric emission license. Both the provisional and the atmospheric emission license will specify: the maximum allowed amount, volume, emission rate or concentration of pollutants that may be discharged in the atmosphere under normal working conditions and under normal start-up, maintenance and shut-down conditions; operating requirements relating to atmospheric discharges, including non-point sources and fugitive emissions; point source emission measurement and reporting requirements; on-site ambient air quality measurement and reporting requirements; greenhouse gas emission measurement and reporting requirements²⁵⁸. When setting emission standards in an AEL, the Listed Activities and national minimum emission standards and the national ambient air quality standards²⁵⁹ must be considered²⁵⁵.

Water quality

In terms of control and management of pollution on the aquatic resources, including freshwater, coastal and marine environments, South Africa is recognized as a country with one of the most advanced legislation within the African continent²⁶⁰. The legal framework for the water quality protection includes: the already mentioned

²⁵⁷ South Africa, National Environmental Management: Air Quality Act, Act n° 39 of 2004, Chapter 5, Section 39.

²⁵⁸ Ibid, Section 43.

²⁵⁹ The National Ambient Air Quality Standards were published by the Department of Environmental Affairs, Government Gazette 32816 of 2009, n° 1210.

²⁶⁰ Angel Borja, Suzanne B. Bricker, Daniel M. Dauer, Nicolette T. Demetriades, João G. Ferreira, Anthony T. Forbes, Pat Hutchings, Xiaoping Jia, Richard Kenchington, João Carlos Marques, Changbo Zhu, "Overview of integrative tools and methods in assessing ecological integrity in estuarine and coastal systems worldwide", *Marine Pollution Bulletin*, 56 (2008) p. 1519–1537.

NEMA (1998); the National Water Act (NWA), which amended the NEMA, in 1998; and the ICMA of 2008.

Among the provisions for the water management in South Africa, the NWA sets out the principles to control the use of the water resources, which include: “taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering a watercourse, removing water found underground for certain purposes, and recreation. In general, the water use must be licensed”²⁶¹. The ICMA regulates the discharge of effluent into the coastal environment from a land-based process, which also must be authorized in terms of section 69 of the Act. In the case of ports and land-based activities that qualify as a water use within harbor or estuary areas, the National Ports Authority, as the landowner, is responsible for ensuring that developments and activities meet the requirements of national law, such as those required under the NWA and the ICMA ²⁶².

To issue a permit under the NWA, the competent authority will consider, inter alia: “existing lawful water uses; efficient and beneficial use of water in the public interest; the socio-economic impact; the likely effect of the water use to be authorized on the water resource and on other water users; the class and the resource quality objectives of the water resource; the strategic importance of the water use to be authorized; the probable duration of any undertaking”²⁶³.

The coastal water discharge permit, which is issued under the ICMA, will be granted after the consideration of these factors, among others: “the interests of the whole community; the socio-economic impact if the disposal; the coastal management programmes and estuarine management plans applicable in the area; the likely impact of the proposed disposal on the coastal environment, including, the cumulative effect of its

²⁶¹ South Africa, National Environmental Management: National Water Act, Act n° 36 of 1998.

²⁶² South Africa, Department of Environmental Affairs, *National Guideline for the Discharge of Effluent from Land-based Sources into the Coastal Environment*. (Pretoria 2014). Available from https://www.environment.gov.za/sites/default/files/legislations/nationalguideline_landbasedinfluent_dischargecoastal.pdf.

²⁶³ South Africa, National Environmental Management: National Water Act, Act n° 36 of 1998, Chapter 4, Section 27.

impact together with those of existing point and non-point discharges²⁶⁴; and the impacts over existing and proposed Marine Protected Areas.

In the case of discharge of land-based effluent to the coastal environment from an activity that is subject to the applicable environmental authorization issued under the NEMA regulations (2010), the coastal water discharge permit will not be issued without the environmental authorization. The applicable impact studies and public participation processes conducted by the applicant will assist the coastal water discharge permit application process²⁶².

The environmental authorisation process does not necessarily guarantee the issuing of the coastal water discharge permit, and the permit may not be granted if the activity is likely: “to cause irreversible or long-lasting adverse effects that cannot satisfactorily be mitigated; to prejudice significantly the achievement of any coastal management objective contained in a coastal management programme; or to be contrary to the interests of the whole community”²⁶⁴.

Marine Protected Areas

In South Africa, although the National Environmental Management: Protected Areas Act of 2003 is the central piece of the national system of protected areas, marine protected areas are declared in terms of the Marine Living Resources Act of 1998, and recognised by the Protected Areas Act. They are regulated by both acts, but the Marine Living Resources Act prevails if there is a conflict over marine living resources²⁶⁵. If, however, the marine protected area has been included in a special nature reserve, national park or nature reserve²⁶⁶, such area must be managed and regulated as part of the special nature reserve, national park or nature reserve in terms of the Protected Areas Act of 2003²⁶⁷.

²⁶⁴ South Africa, National Environmental Management: Integrated Coastal Management Act, Act n° 24 of 2008, Chapter 8, Section 69.

²⁶⁵ South Africa, *National Protected Area Expansion Strategy for South Africa 2008: Priorities for expanding the protected area network for ecological sustainability and climate change adaptation* (Pretoria 2010). Available from https://www.environment.gov.za/sites/default/files/docs/nationalprotected_areasexpansion_strategy.pdf.

²⁶⁶ Special nature reserve, national park and nature reserve are types of protected areas as established in the Section 9 of Chapter 2 of the Protected Areas Act of 2003.

²⁶⁷ South Africa, National Environmental Management: Protected Areas Act, Act n° 57 of 2003 as amended by the Act n° 31 of 2004.

The Marine Protected Areas are established especially for the protection of the fauna, flora (or a particular species) and the physical features on which they depend. According to the Marine Living Resources Act, activities such as dredging, dumping of waste and the construction of any structure on or over land and water within the marine protected area, or other activities that may adversely impact a marine protected area are prohibited unless they are authorized²⁶⁸.

The ICMA also gives special protection to areas within the coastal zone, named “Special Management Areas”. An area may be declared as a special management area if, for example, environmental in that area require the introduction of measures to conserve, protect or enhance coastal ecosystems and biodiversity in the area. According to the act, some activities may be prohibited within those areas²⁶⁹.

Paragraph 2: Procedures after the implementation of the project Sea and Ocean Dumping

Under the ICMA, monitoring is required to evaluate the compliance of the activity with the terms of the dumping permit and that the measures adopted and the site selection were adequate to protect the environment and the human health²⁷⁰. The legislation does not specify the content of the monitoring plan, but requires it to have clearly defined objectives and be determined prior to issuance of the permit.

Environmental Management Plan

In South Africa, mitigation measures and environmental management plans are mandatory for all applications for Environmental Authorizations²⁷¹. The NEMA establishes as one of the requirements for the EIA process, the “investigation and formulation of arrangements for the monitoring and management of impacts, and the assessment of the effectiveness of such arrangements after their implementation”²⁷².

²⁶⁸ South Africa, Marine Living Resources Act of 1998, Act n° 18 of 1998, Chapter 4, Section 43.

²⁶⁹ South Africa, National Environmental Management: Integrated Coastal Management Act, Act n° 24 of 2008, Chapter 2, Section 23.

²⁷⁰ Ibid, Schedule 2.

²⁷¹ Campion Benjamin Betey, Essel Godfred, “Environmental Impact Assessment and Sustainable Development in Africa: A Critical Review”, *Environment and Natural Resources Research*, Vol. 3, No. 2 (February 2013).

²⁷² South Africa, National Environmental Management Act, Act n° 107 of 1998, Chapter 5, Section 24.

The Environmental Management Plan is recognized as the tool that can provide the assurance that the project proponent has made suitable provision for mitigation²⁷³.

The aspects that must be addressed in the environmental management plan include:

“information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in respect of: planning and design, pre-construction and construction activities, operation or undertaking of the activity, rehabilitation of the environment, and closure, where relevant; proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon; as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state; measures to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation and comply with any prescribed environmental management standards or practices; and time periods within which the measures contemplated in the environmental management programme must be implemented”²⁷⁴.

Air quality

As AELs are issued by local authorities, compliance monitoring and enforcement measures are effectively implemented locally. Applicants are issued with six-month provisional licenses, following which they are converted to full licenses if compliance is maintained. These are valid for four years, allowing for regular updates and monitoring²⁷⁵.

²⁷³ South Africa, Department of Environmental Affairs and Tourism, *Environmental Management Plans, Integrated Environmental Management, Information Series 12* (Pretoria 2004). Available from https://www.environment.gov.za/sites/default/files/docs/series12_environmental_managementplans.pdf.

²⁷⁴ South Africa, National Environmental Management Act, Government Notice R. 543, Government Gazette, 33306, 2010, Section 33.

²⁷⁵ Y. Naiker, R.D. Diab, M. Zunckel, E.T. Hayes, “Introduction of local Air Quality Management in South Africa: overview and challenges”, *Environmental Science & Policy*, 17 (January 2012) p. 62 - 71.

The AEL must be reviewed at intervals specified in the license and for this purpose an atmospheric impact report may be required²⁷⁶. Some of the information that may be included in the atmospheric impact report are: individual process details including a balance sheet of inputs, outputs and emissions; detailed information on point source and fugitive emissions, and a summary of emissions under emergency and upset conditions; impact of the activity on ambient air quality in the area; statistics on respiratory illnesses and complaints in the area and a comparison with national averages; compliance history; and current or planned air quality interventions²⁷⁷.

Water quality

The permit processes under the NWA and section 69 of the ICMA require long-term monitoring plans, which must allow the evaluation of:

“the effectiveness of management strategies and actions to comply with the licence conditions and design criteria (Compliance monitoring and System Performance monitoring); and the trends and status of changes in the environment in terms of the health of important ecosystems and designated beneficial uses in order to respond to and also to evaluate if the environmental responses that were predicted during the assessment process match the actual responses (Environmental monitoring)”²⁷⁸.

The results need to be presented in a clear format and to provide feedback to authorities and other interested and affected parties on the performance of the disposal practice, and to enable informed debate on operations, and operations modifications, where appropriate.

²⁷⁶ South Africa, National Environmental Management: Air Quality Act, Act n° 39 of 2004, Chapter 5.

²⁷⁷ South Africa, Department of Environmental Affairs, *National Framework for Air Quality Management in the Republic of South Africa* (2012). Available from <http://govza.gcis.gov.za/ts/documents/national-environmental-management-air-quality-act-2007-national-framework-air-quality>.

²⁷⁸ South Africa, Department of Environmental Affairs, *National Guideline for the Discharge of Effluent from Land-based Sources into the Coastal Environment*. (Pretoria 2014). Available from https://www.environment.gov.za/sites/default/files/legislations/nationalguideline_landbasedinfluent_dischargecoastal.pdf; South Africa, Department of Water Affairs, *Operational policy for the disposal of land-derived water containing waste to the marine environment of South Africa: Guidance on Implementation, Sub-Series No. MS 13.3 Section 7: Monitoring* (2004). Available from http://www.dwaf.gov.za/Dir_WQM/docs/marine/MarineWasteImplementationOct04Sec7.pdf.

Both the NWA and ICMA permits monitoring programmes follow the guidelines of the *Policy for the disposal of land-derived water containing waste to the marine environment of South Africa: Guidance on Implementation*, issued by the Department of Waters Affairs and Forestry of South Africa.

The document establishes the criteria to be evaluated in the three types of monitoring: compliance monitoring; system performance monitoring and environmental monitoring. The compliance monitoring assess continuously whether these license requirements are being followed. Its parameters include: flow, composition of wastewater and toxicity testing. The system performance monitoring comprises two main components: physical inspections of the outfall system (for marine outfalls); and hydraulic performance. The Environmental monitoring aspects (parameters, spatial and temporal scale) will depend on the type of wastewater discharge and the variability in its waste loads, as well as the site-specific physical, biogeochemical and ecological characteristics of the receiving environment and the variability thereof²⁷⁹.

Part 2 – The Brazilian Case

Chapter 1 – The current situation

Section A: Brazilian federal environmental licensing of ports and dredging activities

The article 225 of the Brazilian Constitution of 1988 ensures to the citizens the right to a preserved environment, essential to healthy quality of life. The Constitution indicates the ways for the Government to achieve and ensure this right, one of them being the requirement of environmental studies prior to the installation of projects that may cause harm to the environment²⁸⁰.

Under the Brazilian Constitution, the duty to protect the environment, prevent and control pollution is shared among the three levels of government: federal, state and local²⁸¹. The Supplementary Law 140/2011 regulates the respective responsibilities in this regard. The environmental licensing may occur in either one of the three levels,

²⁷⁹ South Africa, Department of Water Affairs, *Operational policy for the disposal of land-derived water containing waste to the marine environment of South Africa: Guidance on Implementation, Sub-Series No. MS 13.3 Section 7: Monitoring (2004)*. Available from http://www.dwaf.gov.za/Dir_WQM/docs/marine/MarineWasteImplementationOct04Sec7.pdf.

²⁸⁰ Brazil, Constitution of the Federative Republic of Brazil of 05 October 1988, Article 225.

²⁸¹ Ibid, Article 23.

depending on the type of activity and location. Until 2011, the decision regarding the competent authority to conduct the environmental licensing procedure was based on the range of the impact and location.

Ports and dredging activities may be licensed by federal or states' environmental agencies. The provisions of the Supplementary Law 140/2011 in this regard still lacks of further regulatory instrument²⁸². The federal environmental licensing is conducted by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA).

This section will address the federal procedures for the environmental licensing of ports and dredging activities considering the aspects and environmental elements related to these projects: sea and ocean dumping, threatened and endangered species, environmental impact assessment, oil pollution preparedness and response, air quality, water quality and marine protected areas. The procedures required prior and after the approval/implementation of the project will be considered.

Paragraph 1: Procedures prior to the implementation of the project Sea and Ocean Dumping

In Brazil, activities that may cause pollution are subject to environmental licensing and may only take place with an environmental permit. Ports and dredging operations are listed among the activities which must be submitted to the environmental licensing procedures²⁸³.

Brazil is a party to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention), ratified by the country in 1982²⁸⁴, therefore, any deliberate disposal at sea of wastes or other matter, such as dredged material, must be authorized by a permit, as regulated by the Convention (Brazil is not a party to the 1996 London Protocol).

To receive a permit for the disposal at the sea of dredged material, the applicant must follow the environmental licensing procedure as established in the National Environmental Council (CONAMA) Resolution 237/1997. In addition, CONAMA has issued the Resolution 454/2012 with specific procedures for the management of dredged material.

²⁸²Brazil, Supplementary Law 140 of 8 December 2011, article 7.

283 Brazil, National Environment Council Resolution 237 of 19 December 1997, article 1 and annex.

284 Brazil, Decree 87,566 of 16 December 1982.

Under the CONAMA Resolution 454/2012, a dredging plan must be submitted for the environmental licensing of the dredging activity, including: location and bathymetry of dredging and proposed disposal sites; volume of material to be dredged; equipment which will be used; schedule of the activity; characteristics of the dredged material²⁸⁵.

The evaluation of the dredged material must consider the amount of material to be dredged, spatial and vertical distribution²⁸⁶. A sampling plan, specifying the methodology for the evaluation of the dredged material, is submitted for approval of the environmental agency before the evaluation starts²⁸⁷.

The dredged material is evaluated in three aspects: physical, chemical and toxicity. The physical aspect is basically a granulometry analysis and the result will determine whether or not the chemical aspects of the material must be analyzed²⁸⁸. The Resolution specifies the chemical components to be measured²⁸⁹ and the decision for the approval of the disposal into waters under national jurisdiction will be based on the presence and quantity of each one²⁹⁰ and on the results of toxicity tests, required when the quantity of certain chemical components is higher than the limits²⁹¹ established by the Resolution²⁹². In some cases, the result of the toxicity test may lead to the requirement by the environmental agency of further testing, such as bioaccumulation tests²⁹³.

285 Brazil, National Environment Council Resolution 454 of 1st. November 2012, articles 3 and 4.

286 In some cases, the evaluation of the dredged material is not required (e.g. emergency situations and dredged material from areas that are regularly monitored).

287 Brazil, National Environment Council Resolution 454 of 1st. November 2012, article 5.

288 Brazil, National Environment Council Resolution 454 of 1st. November 2012, articles 7 and 8.

289 The definition of which chemical components will be measured is given by the environmental agency in the approval of the sampling plan.

290 Brazil, National Environment Council Resolution 454 of 1st. November 2012, annex 1.

291 The limits established in the Resolution are based on international standards (National Environment Council Resolution 454 of 1st. November 2012, annex 1, table III).

292 Brazil, National Environment Council Resolution 454 of 1st. November 2012, articles 10 and 12.

293 Ibid, article 20.

The decision regarding the disposal of the dredged material will also consider the alternatives proposed for the disposal, including the characteristics of proposed sites and the possible beneficial use of the material. The study of the proposed sites must address, inter alia: economic costs; the existence of environmental relevant and protected areas; the existence of national security areas; the chemical, physical and biological aspects of the sediment and water and dispersion studies through computational modeling²⁹⁴.

Threatened and endangered species

In 2002 Brazil enacted a National Biodiversity Policy, addressing principles and guidance for the conservation of the biodiversity based on the Convention of the Biological Diversity, Rio Declaration, Federal Constitution and national legal instruments regarding this matter²⁹⁵. The policy aims to enhance the conservation of species, especially the endangered, through actions such as: the improvement of the authorization system for the capture of specimens and the establishment of new protected areas considering the needs of endangered species²⁹⁶. Actions for the evaluation, prevention and mitigation of impacts over the biodiversity are also included in the policy²⁹⁷.

The main legal statute that regulates the protection of the fauna in Brazil is the Law 5,197/67. This law states that all wild specimens of the fauna belong to the State and forbids the hunting, take and use of species²⁹⁸, unless those are authorized. The law is applied for all species of the fauna, not only the endangered species.

In order to meet the principles of the Convention on Biological Diversity, the National Biodiversity Policy and the Law 5,197, the Ministry of Environment issued the National List of Endangered Fauna Species²⁹⁹.

294 Ibid, article 25.

295 Brazil, Decree 4,339 of 22 August 2002, annex.

296 Ibid, item 11.3.

297 Ibid, item 13.2.

298 Brazil, Law 5,167 of 3 January 1967, article 1.

299 Brazil, Ministry of Environment Normative Instructions 03 of 26 May 2003, 05 of 21 May 2004 and 52 of 08 November 2005.

Within the federal environmental licensing of ports and dredging activities, a specific type of authorization for fauna is required: the authorization for capture and transport of fauna specimens during the execution of the environmental studies required in the environmental licensing procedures. The issuance of the authorization occurs during the scoping phase, based on a sampling plan submitted to the environmental agency. In terms of marine and coastal threatened and endangered species, the IBAMA may consult with the Chico Mendes Institute for the Conservation of Biodiversity (ICMBio) if the project has potential to cause impact over a threatened or endangered species. The ICMBio issues an opinion, which is not binding to the environmental licensing procedure³⁰⁰. In the case of projects that may affect beaches with sea turtles nesting sites, the IBAMA must consult with the ICMBio's Center for Sea Turtles, in accordance with the CONAMA Resolution 10/1996³⁰¹.

Environmental Impact Assessment

The National Environmental Policy of Brazil was enacted in 1981 to ensure the preservation, improvement and recovery of the environmental quality in the country³⁰². The environmental licensing of activities that may cause pollution on the environment and the environmental impact assessment are included among the instruments of the National Environmental Policy³⁰³.

According to the Decree 99.274/1990, which regulates the implementation of the National Environmental Policy, three types of environmental licenses are issued during the environmental licensing procedure³⁰⁴: the preliminary license; installation license; and operational license³⁰⁵.

The general procedures to be followed during the environmental licensing are described in the CONAMA Resolution 237/1997, Supplementary Law 140/2011 and, in

300 Brazil, Portaria MMA 55 of 18 February 2014, article 14.

301 Brazil, National Environment Council Resolution 10 of 07 November 1996, article 1.

302 Brazil, Law 6,938 of 31 August 1981, article 2.

303 Ibid, article 9.

304 Under the CONAMA Resolution 237/1997, the environmental agency may adopt a simplified procedure for projects with minor potential to cause environmental impacts.

305 Brazil, Decree 99,274 of 06 June 1990, article 19.

the federal level, IBAMA Normative Instruction 184/2008³⁰⁶. The environmental impact assessment is required during the first phase of the process to provide the basis for the analysis and issuance of the preliminary license.

The first step in the environmental licensing procedure, according to the CONAMA Resolution 237/1997, is the definition by the environmental agency responsible for the licensing of the type of environmental study to be submitted by the applicant³⁰⁷. The studies are elaborated by professionals with experience, at the cost of the applicant³⁰⁸.

If the project may cause significant impact over the environment an EIS is required³⁰⁹. If this is the case, the EIS must address three main topics: status of the proposed site; description of the project and alternatives; environmental impact assessment³¹⁰. The CONAMA issued a Resolution with guidance for the elaboration of the EIS, but the specific aspects that must be addressed on the EIS are determined by the environmental agency through a Term of Reference (scoping) for each project³¹¹. In the federal level, the Term of Reference is developed after site visits and consultation with other government agencies that have jurisdiction by law or special expertise with respect to any environmental impact involved and with the applicant³¹². According to the CONAMA Resolution 01/1986, the EIS must include, inter alia: characteristics of the proposed site and adjacent areas, including physical, biological, social and economic aspects; environmental impact assessment of the project and alternatives; mitigating measures for the negative environmental impacts identified; and proposal of monitoring

306 The CONAMA has established specific environmental licensing procedures for different types of projects. In 2011 the Ministry of the Environment has also set specific procedures for the federal environmental licensing of roads, oil and gas and other projects.

307 Brazil, National Environment Council Resolution 237 of 19 December 1997, article 10.

308 Ibid, article 11.

309 Ibid, article 3. The CONAMA Resolution 01/1986 specified some activities which require the elaboration of an EIS during the environmental licensing process. The list includes ports and terminals that operate with mineral, oil and chemical products.

310 Brazil, Decree 99,274 of 06 June 1990, article 17.

311 Brazil, National Environment Council Resolution 01 of 23 January 1986, article 5.

312 Brazil, Brazilian Institute of Environment and Renewable Natural Resources Normative Instruction 184 of 17 July 2008, article 10.

programme. The environmental impacts must be analyzed regarding: timing, extent, type of effect (positive or negative), duration and cumulative aspects³¹³.

After the environmental study is submitted to IBAMA, it will be verified if it addresses all the topics of the Term of Reference³¹⁴ and determined whether or not to provide public hearings³¹⁵. The project must have the approval of the city in which it will be implemented, regarding potential impacts on land use and spatial planning³⁰⁷, and of other agencies which have jurisdiction by law with respect to any environmental impact involved³¹⁶. The analysis of the environmental study by IBAMA may result in: request of more information; approval or rejection of the project.

Oil Pollution Emergency

The control of pollution of waters under national jurisdiction by oil and noxious substances is regulated by the Law 9,966/2000. Under the law, ports and terminals must provide appropriate means for the reception of wastes and for the prevention of pollution by oil and noxious substances³¹⁷. In addition, an Emergency Plan for the control of incidents involving oil and noxious substances is required and must be submitted for the approval of the environmental agency³¹⁸.

The Emergency Plans for the control of incidents with oil must be designed following the provisions of the CONAMA Resolution 398/2008 and its approval shall occur prior the operation of the port³¹⁹.

Air Quality

In 1989 Brazil developed the National Programme for Air Quality with three objectives: to improve the air quality; compliance with the limits of emissions; and

313 Brazil, National Environment Council Resolution 01 of 23 January 1986, article 6.

314 Brazil, Brazilian Institute of Environment and Renewable Natural Resources Normative Instruction 184 of 17 July 2008, article 18.

315 Public hearings are usually performed when an EIS is required. The procedure is regulated under the CONAMA Resolution 09 of 03 December 1987.

316 Brazil, Brazilian Institute of Environment and Renewable Natural Resources Normative Instruction 184 of 17 July 2008, article 21; Brazil; Portaria Interministerial 419 of 26 October 2011.

317 Brazil, Law 9,966 of 28 April 2000, article 5.

318 Ibid, article 7.

319 Brazil, National Environment Council Resolution 398 of 12 June of 2008, article 3.

conservation of air quality in preserved areas³²⁰. The strategy to achieve these goals is to control and limit the emissions of different sources³²¹. Moreover, the sources of emissions must be submitted to the environmental licensing, in order to prevent and control the deterioration of the air quality³²².

One of the instruments of the National Programme for the Air Quality is the establishment of air quality standards³²³. In this regard, the CONAMA issued the Resolution 03/1990 with the limits of pollutants in the air and the methods for monitoring³²⁴. Other CONAMA Resolution addressed the limits of emissions for specific sources, such as stationary sources³²⁵ and vehicles³²⁶.

In 2009 Brazil enacted the National Policy for Climate Change, with the objectives, inter alia: to meet the provisions of the United Nations Framework Convention on Climate Change (UNFCCC); to adapt in order to reduce the effects of the climate change; to reduce the causes of the climate change³²⁷. Under the National Policy for Climate Change, Brazil adopted one important commitment: to reduce in 36.1% to 38.9% the greenhouse gases emissions projected until 2020, through the adoption of mitigating measures and control of the emissions³²⁸. To achieve the objectives, eighteen instruments were defined to implemented, including the environmental impact assessment over the microclimate and macroclimate³²⁹. Specific aspects of the National Policy for Climate Change are regulated by the Decree 7,390/2010.

320 Brazil, National Environment Council Resolution 05 of 17 October 1989,item 1.

321 Ibid, item 2.

322 Ibid, item 2.5.

323 Ibid, item 3

324 The air monitoring in this case does not refer to environmental licensing monitoring and its states' responsibility.

325 Brazil, National Environment Council Resolution 382 of 26 December 2006.

326 Brazil, National Environment Council Resolution 432 of 13 July 2011.

327 Brazil, Law 12,187 of 29 December 2009, article 5.

328 Ibid, article 12.

329 Ibid, article 6.

The air quality issues, in the light of the National Programme for Air Quality and the National Policy for Climate Change, are addressed during the environmental licensing procedure, within the environmental studies required and monitoring programme, therefore, there is no specific permitting procedure for it. Prior to the approval of the project, the applicant is required to study the aspects of the proposed site, which include the evaluation of air quality conditions. With this information, the environmental impact assessment will address the potential changes that might be caused in the air quality due to the installation and operation of the project. In the federal level, the environmental licensing of projects that may generate the emission of greenhouse gases must propose mitigating measures or compensation³³⁰.

Water Quality

The general regime of the water in Brazil is provided by the Decree 24,643 of 10 July 1934, known as “The Water Code”. The Decree addresses aspects of the use and management of water and its provisions are regulated by other legal instruments.

In the environmental licensing of ports and dredging activities two CONAMA Resolutions may be applied: the CONAMA Resolution 357/2005, which establishes standards for the characterization of water bodies, including marine and coastal waters; and the CONAMA Resolution 430/2011, that defines the conditions for discharge of effluents into water.

The evaluation of the environmental quality of the proposed project site is required during the environmental licensing procedure, in the case of marine and coastal waters, this characterization must follow the provisions of the CONAMA Resolution 357/2005. Under this Resolution, the water is classified according to water quality standards and the recommendation for use is determined based on that³³¹. Marine and coastal water are evaluated according to toxicity tests, physical, chemical and biological aspects³³². The results are included in the environmental study submitted to the environmental agency and are considered in the environmental impact assessment and in the decision making process for the issuance of an environmental permit.

330 Brazil, Brazilian Institute of Environment and Renewable Natural Resources Normative Instruction 12 of 23 November 2010.

331 Brazil, National Environment Council Resolution 357 of 17 March 2005, Article 3.

332 Ibid, articles 18, 19 and 20.

The CONAMA Resolution 430/2011 addresses the conditions and standards for effluent discharge into water. The effluent discharge is authorized by the environmental agency, during the environmental licensing process, which establishes the limits of contaminants on the effluent to be disposed. The analysis and decision is based on the characteristics of the water which will receive the effluent, classified according to the CONAMA Resolution 357/2005, characteristics of the effluent and on the evaluation of the cumulative effect of the discharge³³³. The conditions for appropriate discharge of effluent into water include the compliance with the quality standards presented in the Resolution³³⁴.

Marine Protected Areas

The legal framework for protected areas in Brazil includes different types of instruments such as laws, decrees and CONAMA Resolutions but, among them, the most comprehensive is the Law 9,985/2000, which established the National System of Protected Areas (SNUC). The SNUC includes federal, state and municipal protected areas³³⁵ and the different categories, as defined by the law: Ecologic Station, Biological Reserve, Park, Natural Monument and Wild Life Refuge, which are known as “full protection” protected areas and have a more rigorous regime of protection³³⁶; and Environmental Protected Area, Area of Relevant Ecological Interest, National Forest, Extractive Reserve, Fauna Reserve, Sustainable Development Reserve and Natural Heritage Private Reserve, which are “sustainable use” areas³³⁷. Any project or activity that may significantly affect the environment within or which may affect the protected area must be authorized by the institution responsible for the management of the protected area³³⁸ (federal³³⁹, state or municipal).

333 Brazil, National Environment Council Resolution 430 of 13 May 2011, article 7.

334 Ibid, articles 16, 18 and 21.

335 Brazil, Law 9,985 of 18 July 2000, article 3.

336 Ibid, articles 7 and 8.

337 Ibid, article 14.

338 Ibid, article 36, paragraph 3.

339 Federal Protected Areas are managed by the Chico Mendes Institute for the Conservation of the Biodiversity.

The CONAMA Resolution 428/2010 specifies the procedures to be followed for the authorization of a project that may affect a protected area. The authorization is required by the environmental agency which is conducting the environmental licensing to the institution responsible for the management of the protected area, for those projects that must develop an Environmental Impact Statement (EIS). First, the environmental agency consults about the scoping (term of reference), regarding the issues that must be addressed on the EIS about the protected area. After the EIS is concluded, the environmental agency submits to the institution responsible for the management of the protected area for final opinion³⁴⁰ which can be: the issuance of the authorization; the requirement for further studies; the requirement for a new alternative site for the project; and the denial of the authorization. If the project is approved, the conditions must be addressed on the environmental license³⁴¹.

When a project may affect a protected area but an EIS is not required, the environmental agency must inform the institution responsible for the management of the protected area³⁴².

Paragraph 2: Procedures after the implementation of the project Sea and Ocean Dumping

In the case of the disposal of dredged material into waters under national jurisdiction, a monitoring plan must be established, based on the information of the dredged material and the disposal site submitted for the issuance of the environmental permit³⁴³.

Threatened and Endangered Species

After the approval of the project, the execution of monitoring programmes which involve the take fauna specimens (not only threatened or endangered species) requires an authorization of capture and transport of fauna specimens. The issuance occurs after the approval of the environmental management programme in accordance with the terms of the programme.

Environmental Management Plan

340 Brazil, National Environment Council Resolution 428 of 17 December 2010, articles 1 and 2.

341 Ibid, article 3.

342 Ibid, article 5.

343 Brazil, National Environment Council Resolution 454 of 1st. November 2012, article 26.

As the project is approved and an environmental preliminary license is issued, the applicant must require the license for installation in order to start the construction. The issuance of this type of license occurs based on a plan with the environmental management measures³⁴⁴, submitted with the other documents required on the preliminary license.

The environmental management plan usually includes: the monitoring plan; mitigating measures; compensation measures and measures to enhance the positive impacts of the projects. The monitoring plan must be effective in detecting the environmental impacts resulting from the project, either on the physical, biological, social and economic aspects, during the installation and operation, in order to verify if it is in accordance with the environmental impact assessment. Mitigating measures have the objective to avoid or reduce the environmental impacts of the project. The environmental management plan may also include measures to recover the environment affected by the project. In some cases, when the environmental impact cannot be avoided or reduced, or even with mitigating measures it will still have significant effects over the environment, measures to compensate the impact may be required³⁴⁵. The environmental management plan is specific for the construction and operation of the project. To require the license to start the operation, the applicant must submit a final report of the implementation of the environmental management plan, which is analyzed by the IBAMA in order to verify the compliance with the conditions of the license for installation. In the case of approval, specific measures to be implemented during the operation will be established. Other agencies which have jurisdiction by law with respect to the environmental impact involved also participate during the issuance of the installation and operation licenses³⁴⁶.

Ports that were implemented prior to the environmental regulation have a specific environmental licensing procedure enacted in 2011 by the Ministry of the

344 In the federal environmental licensing this plan is called “Basic Environmental Project”.

345 Luis Enrique Sánchez, *Avaliação de Impacto Ambiental: conceitos e métodos*, 2nd ed., (São Paulo, Oficina de Textos, 2013).

346 Brazil, Portaria Interministerial 419 of 26 October 2011, article 7.

Environment, in order to order comply with the National Environmental Policy and other environmental legal instruments³⁴⁷. The procedure is applied in the federal level.

In this specific procedure, only one license is issued, the license for operation³⁴⁸. The analysis is based in the “Environmental Control Report” which is document that includes the environmental study and environmental management plan to be implemented on the port³⁴⁹ and must follow the guidelines of a term of reference established by the environmental agency. The Environmental Control Report must address the physical, biological and social aspects of the area, and environmental management plan containing: a monitoring programme for water, air and sediment quality and aquatic flora and fauna; a programme for the recovery of damaged areas; programme for the management and control of wastes and emissions and effluent discharges; programme for management of risks and emergency plan, in accordance with the CONAMA Resolution 398/2008; dredging plan; social communication and environmental education programmes³⁵⁰.

Oil Pollution Emergency

After the installation of the project, an Emergency Plan must be submitted for the approval of the environmental agency before the operation starts³⁵¹. The CONAMA Resolution 398/2008 established the minimum content of the Emergency Plan for the control of oil emergencies.

The Emergency Plan is a descriptive document addressing all the steps that will be adopted in the case of an oil spill emergency. The plan must describe, inter alia: alert systems for oil spills; response procedures, including material and equipment; procedures for the interruption of the oil spill; procedures for the oil recovery and dispersion; actions for the protection of the population, fauna and important ecosystems; cleaning strategies³⁵². The CONAMA Resolution requires the plan to be based on

347 Brazil, Portaria Interministerial 425 of 26 October 2011 and Portaria 424 of 26 October 2011.

348 Brazil, Portaria 424 of 26 October 2011, article 5.

349 Ibid, article 2.

350 Ibid, article 7.

351 Brazil, National Environment Council Resolution 398 of 12 June of 2008, article 3.

352 Ibid, annex 1.

specific information (e.g. risk analysis)³⁵³ and to be updated whenever those conditions or the facilities features change³⁵⁴.

The use of chemical dispersant for the control of an oil spill is regulated by the CONAMA Resolution 269/2000. The resolution establishes the criteria to be observed to decide whether or not to use chemical dispersant. Within those criteria, the resolution indicates when and where the substances should not be applied, such as in estuaries, mangroves and coral reefs. If the use of the dispersant is allowed, the application must observe the methods indicated in the Resolution³⁵⁵.

Air Quality

An Air Quality monitoring programme is required in order to verify the compliance with the limits of the legislation and conditions of the license.

Water quality

The monitoring of coastal and marine water is required after the approval of the project, with parameters based on the environmental impact assessment and according to the CONAMA Resolution 357/2005 standards. In the case of the effluent discharge into waters, the monitoring is also required³⁵⁶.

Marine Protected Areas

If a project or activity that may significantly affect a protected area is approved by the environmental agency, it is submitted to the “environmental compensation”, which is a financial support to the implementation of the protected areas. The environmental compensation corresponds to no more than 0,5% of the project cost³⁵⁷. The amount that is due is calculated based on the definition of the Impact factor (GI) of the project, which is based on the negative impacts identified on the EIA, and is by no means a rationale for valuing directly the damages caused. The environmental compensation is primarily inverted for land tenure issues, development of management plans of PA, and one of the major sources of funds for consolidating the SNUC,

353 Ibid, annex 2.

354 Ibid, article 6.

355 Brazil, National Environment Council Resolution 269 of 14 September 2000, annex.

356 Brazil, National Environment Council Resolution 430 of 13 May 2011, article 24.

357 Brazil, Law 9,985 of 18 July 2000, article 36.

guaranteeing the perpetuity of areas that protect natural characteristic of the site affected by projects³⁵⁸.

Section B: Comparative analysis

This section will provide a comparative analysis among the legal instruments and environmental licensing procedures evaluated in this thesis. The comparative analysis will be organized by aspect or environmental element related to ports and dredging projects adopted by each country (USA, South Africa and Brazil). The United Nations and other international instruments will be part of the comparison based on their relevance to the topic. The participation of the countries in the main global conventions evaluated in this thesis is summarized in Table 1:

INSTRUMENT	United States of America	Republic of South Africa	Federative Republic of Brazil
United Nations Convention on the Law of the Sea	Not a party	Party	Party
Convention on Biological Diversity	Signed, but did not ratify	Party	Party
Convention on Wetlands of International Importance	Party	Party	Party
Convention for the Prevention of Pollution from Ships	Party	Party	Party
Convention on the Prevention of the Marine Pollution by Dumping of Wastes and Other Matter	Party	Party	Party
Protocol to the Convention on the Prevention of the Marine Pollution by Dumping of Wastes and Other Matter	Signed, but did not ratify	Party	Signed, but did not ratify

358 Moara Menta Giasson, Sergio Henrique Collaço de Carvalho, “Mecanismo de compensação ambiental federal no Brasil: impactos negativos e os recursos revertidos para unidades de conservação”, available from http://avaliacaodeimpacto.org.br/wp-content/uploads/2012/10/030_compensacao.pdf (Accessed in 29 October 2014).

Convention on Migratory Species	Not a Party	Party	Not a party
Convention on Oil Pollution Preparedness, Response Cooperation	Party	Party	Party
Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances	Not a party	Not a party	Not a party

Table 1: Countries participation in global Conventions

Paragraph 1: Procedures prior to the implementation of the project
Sea and Ocean Dumping

UNCLOS and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter and the 1996 Protocol (London Convention and London Protocol) address the protection of the marine and coastal environment against pollution from sea and ocean dumping. UNCLOS calls the States to adopt laws, regulations and other measures to prevent, reduce and control pollution of the marine environment by dumping, emphasizing that the dumping must be authorized by the State (by the coastal State if it will occur within the territorial sea or the exclusive economic zone) and the national laws, regulations shall be no less effective than the global rules and standards in this regard³⁵⁹.

The London Convention is the multilateral agreement that specifically addresses the prevention and control of pollution of the marine environment by dumping³⁶⁰, and, as UNCLOS, calls the Contracting Parties to adopt measures to prevent and control this type of pollution³⁶¹ and determines that the dumping must be authorized by a permit³⁶². To issue the permit, the London Convention requires the consideration of aspects set

359 United Nations Convention on the Law of the Sea, article 210.

360 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, article 1.

361 Ibid, article 2.

362 Ibid, article 4.

forth on annex III³⁶³, regarding: characteristics and composition of the matter to be dumped (amount, physical, chemical and biological properties, toxicity, persistence, possible change or interactions in the environment, accumulation on biological materials or sediment); characteristics of dumping site and method of deposit (location, location related to other significant areas, rate of disposal per period, dispersal characteristics, water and bottom characteristics and dumping background of the site, assessment of the consequences of the dumping, considering seasonal variations); and general considerations and conditions (possible effects on amenities, marine life, fish and shellfish culture, fish stocks and fisheries, seaweed harvesting and culture and other uses of the sea, practical availability of alternative land-based methods of treatment, disposal or elimination, or of treatment to render the matter less harmful for dumping at sea)³⁶⁴.

Under the Brazilian regulation, the requirements for the issuance of dredging permits (including the disposal of the dredged material into waters of national jurisdiction), are similar to those set forth on the annex III of the London Convention. The specific Brazilian procedures for environmental licensing of dredging activities were updated in 2012³⁶⁵, prior to the latest instrument issued under the London Convention for the management of dredged material, the “Revised Specific Guidelines for the Assessment of Dredged Material”, approved by the Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol in 2013³⁶⁶.

The guidelines address all the steps prior and after the issuance of a permit. First, it establishes three overarching considerations to guide the planning and permitting activities related to dredged material management: the beneficial use of the dredged material; the selection of management options for dredged material guided by "a comparative risk assessment involving both dumping and the alternatives; and ensure

363 Ibid.

364 Ibid, annex III

365 Brazil, National Environment Council Resolution 454 of 1st. November 2012.

366 Report on Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol, London, 14 – 18 October 2013.

that the environmental disturbance and detriment are minimized and the benefits maximized³⁶⁷.

According to the guidelines, the reduction of wastes that can harm the marine environment can be accomplished through three strategies: controlling and reducing sources of contamination to water and sediments; maximizing, to the extent practicable, the use of dredged sediments for beneficial purposes; minimizing the volumes of sediment that must be dredged by using improved engineering practices (e.g. use of engineering to reduce sedimentation within navigation channels). In the control and reduction of contamination sources, if its verified that opportunities exist for waste prevention at source, it is recommended that the applicant formulates and implements a waste prevention strategy in collaboration with relevant local and national agencies³⁶⁸.

Regarding the management of waste, the guidelines recommend that a permit to dump wastes or other matter shall be refused if the permitting authority determines that appropriate opportunities exist to reuse, recycle or treat the waste without undue risks to human health or the environment or disproportionate costs. The decision of the management of the dredged material should be based in the comparative risk assessment, that will evaluate the management alternatives under consideration by using a set of relevant criteria, such as human health risks, environmental costs, hazards, economics and exclusion future uses. Again, the beneficial use of the dredged material is highlighted, and documents from the U.S. Army Corps of Engineers are indicated to serve as reference for the planning and execution of beneficial use projects. If the disposal at the sea is adopted, a set of actions (engineering and operational controls) are described to be taken in order reduce the environmental disturbance and detriment³⁶⁹.

Provisions for the assessment of the dredged material and the disposal sites are provided in the guidelines. Three main lines of evidence are the basis of the assessment: physical, chemical and biological aspects, and specific procedures for each one are described in the document. After the assessment of the material and proposed site, the

367 Ibid, annex II.

368 Ibid, annex II, item 2

369 Ibid, annex II, item 3

guidelines present the considerations to be taken into account during the assessment of potential effects of the dumping³⁷⁰.

Some aspects in the guidelines are also addressed by the Brazilian legislation, but not with the same depth (e.g. the beneficial use of the dredged material, required by the CONAMA Resolution 454/2012). In this regard, some of the measures presented to help in the decision making process, for the management of the dredged material and for the reduction of the of wastes that can harm the marine environment (such as the control of contamination sources) may complement the Brazilian procedures in order to prevent and reduce the marine pollution by dumping.

The London Convention recommends the Contracting Parties with common interests to protect in the marine environment in a given geographical area to enter into regional agreements taking into account characteristic regional features³⁷¹. The Regional Seas Programme was an instrument for the adoption of protocols regarding the prevention and control of pollution by dumping, i.e., Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (1976); Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (1986); and Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping (1992). The protocols follow the structure and principles of the London Convention, with a few specific regional aspects. Brazil is not a party to any regional protocol regarding this matter within the Regional Seas Programme.

The United States is a party to the London Convention and has two main legal instruments that regulate the dumping of dredged material into the sea: the Marine Protection, Research and Sanctuary Act (MPRSA), also called the Ocean Dumping Act, and the Clean Water Act (CWA). In the light of these acts, the ocean dumping of dredged material is only authorized after the evaluation of the environmental effects³⁷². If the disposal will occur landward of the baseline, the procedures will follow the guidelines for the selection of disposal site³⁷³. The guidelines include, inter alia, the

370 Ibid, annex II, items 4, 6 and 7.

371 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, article 8.

372 United States of America, *Code of Federal Regulations*, Title 40, part 227 (2013).

373 United States of America, Clean Water Act of 1972, Section 404, Subsection b.

methods for evaluation of the dredged material and assessment of potential impacts. Actions to minimize adverse effects are also detailed³⁷⁴ and may serve as reference for Brazil in the decision making process or in the establishment of the conditions of a dredging permit, as those measures are not detailed in the Brazilian regulation.

The United States has issued two documents which can be a reference for the management of dredged material: the 2004 USEPA/USACE guidance document “*Evaluating Environmental Effects of Dredged Material Management Alternatives—Technical Framework*” and the 2008 guide “*Identifying, Planning, and Financing Beneficial Use Projects Using Dredged Material: Beneficial Use Planning Manual*”. The observance of the second document is recommended in the London Convention’s 2013 Revised Guidelines. As previously mentioned, although the beneficial use is required in the Brazilian regulation, this aspect is not detailed in the legislation. Therefore, the documents can serve as a source of information (taking into account regional differences) for the analysis of the beneficial use of the dredged material in the environmental licensing procedure of dredging activities.

In South Africa, the procedures to be adopted for the issuance of a dumping permit are established in the National Environmental Management: Integrated Coastal Management Act (ICMA) of 2008, in accordance with the provisions of the 1996 London Protocol, to which the country is a party. The applicant is required to assess the characteristics of both the material and the proposed dump site or dump sites and to do the comparative risk assessment among alternatives for the management of the dredged material. In general, the procedures are similar to those adopted in Brazil, but, one important aspect emphasized by the ICMA is the establishment of the focus for control of the contamination of dredged material on the identification and control of point and non-point sources of pollution³⁷⁵.

Threatened and endangered species

The UNCLOS addresses the importance of the adoption of measures to protect and preserve threatened or endangered species and other forms of marine life³⁷⁶. The

374 United States of America, *Code of Federal Regulations*, Title 40, part 230 (2013)

375 South Africa, National Environmental Management: Integrated Coastal Management Act, Act n° 24 of 2008.

376 United Nations Convention on the Law of the Sea, article 194 (5).

Convention on the Biological Diversity (CBD) is a more comprehensive instrument in this regard, providing different strategies to be implemented for the protection of the biodiversity. Within the CBD, the “Jakarta Mandate on Marine and Coastal Biological Diversity” provided the basis for the establishment of a framework programme for the conservation and sustainable use of the marine biodiversity³⁷⁷.

Within the Regional Seas Programme, protocols were adopted to enhance the protection of endangered and threatened species³⁷⁸. Under these protocols, the Parties are required to adopt national and cooperative measures to regulate and, where appropriated, prohibit activities that may have adverse effects over threatened and endangered species and their habitats. The protocols also include³⁷⁹ the list of species of concern in the regions to which they are applied.

Brazil has different legal instruments that comply and implement the principles of UNCLOS and CBD and that are aligned with the Protocols adopted under the Regional Seas Conventions, such as the National Biodiversity Policy, the Law 5,197/1967, the National Environment Policy and the national threatened and endangered species lists. Within the federal environmental licensing procedures for ports and dredging activities, aspects can be related to the protection and conservation of the endangered species are: the authorization for capture and transport of fauna specimens during the execution of the environmental studies (which is applied to all species of fauna); the evaluation of the impacts of the project over the species (including threatened and endangered species); and the consultation with the Chico Mendes Institute for the Conservation of Biodiversity regarding the impacts of the project over

377 Report of the second meeting of the Conference of the Parties to the Convention on Biological Diversity, Jakarta, 6-17 November 1995.

378 Protocol Concerning Specially Protected Areas and Wildlife of the Wider Caribbean; Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean; Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region; The Black Sea Biodiversity and Landscape Conservation Protocol to the Convention on the Protection of the Black Sea Against Pollution; Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden; and Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific.

379 With the exception of the Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific.

endangered species, whenever decided by the IBAMA³⁸⁰ and regarding nesting areas of sea turtles, in accordance with the CONAMA Resolution 10/1996.

In the United States, if a federal agency action is likely to adversely affect a listed species (threatened or endangered) or result in the destruction or adverse modification of a critical habitat, a consultation process between the agency and the NMFS occurs³⁸¹ and results in a biological opinion. South Africa is a party to the CBD and has the National Environmental Management Act: Biodiversity Act of 2004, as one of the instruments to implement the provisions of the Convention within country³⁸². The Act establishes measures to protect and regulates the activities that may have effects over threatened and endangered species.

The protection of migratory species is the focus of both global and regional multilateral agreements. Under the Convention on Migratory Species (“Bonn Convention”), parties are required to conserve habitats of the species and prevent, remove, compensate or minimize adverse impacts of activities that could seriously impede or prevent the migration³⁸³. The convention calls the attention for the anthropogenic impacts over the migratory species, such as oil pollution and ocean noise³⁸⁴. In the regional level, agreements were adopted for the protection for specific groups of species, such as marine mammals and birds. In the light of the agreements, documents were developed to help the countries in the implementation of the provisions (e.g. “Guidelines on how to avoid, minimize or mitigate the impact of infrastructure developments and related disturbance affecting waterbirds and “Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area”). In addition,

380 Brazil, Portaria MMA 55 of 18 February 2014, article 14.

381 United States of America, *Code of Federal Regulations*, Title 50, part 402 (2013).

382 South Africa, National Management Act: Biodiversity Act, Act n° 10 of 2004.

383 Convention on Migratory Species, article 3.

384 Report of the Seventh Meeting of the Conference of the Parties to Convention on Migratory Species, Bonn, Germany, 18 - 24 September 2002, Resolution 7.3; Report of the Ninth Meeting of the Conference of the Parties to Convention on Migratory Species, Rome, Italy, 1 – 5 December 2008, Resolution 9.19; and Report of the Tenth Meeting of the Conference of the Parties to Convention on Migratory Species, Bergen, Norway, 20 – 25 November 2011, Resolution 10.24.

the protocols for the protection of threatened and endangered species adopted under the Regional Seas Programme also establish provisions for migratory species³⁸⁵.

United States and South Africa adopted measures to protect migratory species (i.e. the United States Migratory Bird Treaty Act; South Africa is a party to the Agreement on the Conservation of African-Eurasian Migratory Waterbirds), but specific procedures regarding those species within the environmental licensing of ports and dredging were not identified. Brazilian regulation also does not establish a specific procedure for migratory species in the environmental licensing of ports and dredging, but the applicants are required to assess the impacts of the proposed project over migratory species. Brazil is not a party to the Bonn Convention but is a range state, therefore, species listed on the appendixes of the convention may be affected by the development activities in the coastal areas. The list can be a reference to focus the assessment of the impacts of the project over migratory species and the guidelines adopted in regional agreements may be used as reference documents whenever the group of migratory species is identified within the project site or adjacent areas.

Environmental Impact Assessment

The environmental impact assessment (EIA) is addressed in the article 206 of UNCLOS. Under this article, states are required to assess the potential effects of activities that may cause substantial pollution on the marine environment. Other conventions also contain references to environmental impact assessments, including some of the Regional Seas Conventions, the Convention on Wetlands of International Importance (Ramsar Convention) and the CBD. These conventions have approved, in their Conferences of Contracting Parties, guidelines for the inclusion of wetlands and biodiversity perspectives during the environmental impact assessment of projects³⁸⁶.

The guidelines are structured in accordance with the internationally accepted sequence of procedural steps of the environmental impact assessment, establishing provisions for the: screening; scoping; assessment of impacts and development of

385 With the exception of the Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific.

386 Resolution X.17 of the Tenth Meeting of the Conference of Parties to the Convention on Wetlands of International Importance, Changwon, Republic of Korea, 28 October-4 November 2008; Decision 28 of the Eighth meeting of the Conference of Parties to the Convention on Biological Diversity, Curitiba, Brazil, 20-31 March 2006; and Decision 18 of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012.

alternatives; reporting; review; decision making; and monitoring. For each phase, recommendations to guide the decisions are addressed and may be incorporated to complement the existing regulation in Brazil, where appropriated.

The environmental impact assessment procedure in the United States, South Africa and Brazil follow a similar structure. The screening phase defines if the project must be subject to an environmental impact assessment and the level of the assessment required. In South Africa, the legislation provides a list of projects that are subject to EIA and the Scoping and Environmental Impact Report, which includes coastal ports³⁸⁷. In the United States, if significant impacts may or will occur, the applicant must prepare an Environmental Impact Statement (EIS). According to the regulation, to determine whether the project will significantly affect the environment, the context and intensity of the impact must be considered, with the observance of the aspects defined in the Code of Federal Regulations. The evaluation and decision regarding the significance of the impact may require the development of an environmental assessment, which is a concise public document sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact³⁸⁸. In Brazil, projects and activities that may cause significant impact over the environment must prepare an EIS. The CONAMA Resolution 01/1986 establishes a list of projects that must prepare an EIS, which includes ports and terminals that operate with mineral, oil and chemical products, but it is not specified in the regulation which aspects must be considered in order to determine if other types of projects will have significant impacts over the environment³⁸⁹.

The scoping phase is the definition of the content of the EIS or Environmental Impact Report. In South Africa, the legislation requires the development of a scoping report by the applicant, including the description of the environment where the activity will take place, potential environmental impacts of the proposed activity, alternatives to the proposed activity that are feasible and reasonable and a plan of study for

387 South Africa, National Environmental Management Act, Listing Notice n° 2, R. 545, Government Gazette 33306, 2010.

388 United States, Code of Federal Regulations, Part 1508 (2013).

389 Specific regulation for certain types of activities or location of the project, such as the Law 11.428/2006 (Atlantic Forest Law), also bring provisions regarding the type of environmental study must be developed.

environmental impact assessment which is submitted for the approval of the environmental agency³⁹⁰. In United States and Brazil, the agency responsible for the environmental licensing determines the scope of the study (In Brazil called “Term of reference”), with participation of the applicant and other agencies as appropriated. In the United States the scoping phase includes public participation, unlike the federal environmental licensing in Brazil, where public participation occurs during the analysis of the EIS.

The EIS and Environmental Impact Report content is similar among the three countries. The evaluation of the effects of the project on the environment must consider the different aspects of the impacts and all of the proposed alternatives and include mitigation measures.

Oil Pollution Preparedness and Response

The adoption of measures for preventing accidents and dealing with emergencies in the marine environment is required in article 194 of the UNCLOS. In addition, the IMO adopted in 1990 the Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), establishing the framework for preparedness and response to oil pollution incidents through national and regional systems and international co-operation. Under the OPRC, “the Parties shall require that authorities or operators in charge of such sea ports and oil handling facilities under its jurisdiction as it deems appropriate have oil pollution emergency plans”³⁹¹. This provision was implemented by the Brazilian Law 9,966/2000, article 7. The plans are submitted to the environmental agency during the environmental licensing procedure, after the installation of the project and its approval is a requirement for the authorization of the operation³⁹².

As part of the Regional Seas Programme, States adopted protocols for the cooperation in combating pollution by oil and other harmful substances³⁹³, including

390 South Africa, National Environment Management Act, Government Notice R. 543, Government Gazette, 33306, 2010.

391 International Convention on Oil Pollution Preparedness, Response and Co-operation, article 3.

392 Brazil, National Environment Council Resolution 398 of 12 June of 2008, article 3.

393 Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region; Protocol Concerning Co-operation in Combating Pollution in Cases of Emergency under the Abidjan Convention; Protocol concerning cooperation in preventing Pollution from Ships and, in cases of Emergency, combating Pollution of the Mediterranean Sea; Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region; Protocol on

measures to be implemented for the preparedness and response to emergencies at the national level and to ensure the cooperation at the regional level. The means include, inter alia, contingency plans and emergency plans.

As parties to the OPRC and, in the case of South Africa, to the Abidjan Convention and Nairobi Convention, the USA and South Africa implemented provisions for preparedness and response to oil emergencies, including the requirement for Oil Spill Prevention, Control, and Countermeasure plan and the Facility Response Plan in United States, and the National Contingency Plan in South Africa.

Air Quality

The concern with the contribution of the international shipping to climate change has been exposed in the UNCTAD Reviews of Maritime Transport since 2009. The international efforts to address the question of emissions of greenhouse gases from ships are currently lead by IMO, as required under the UNFCCC. The focus of the IMO strategy is on the ships, under the Annex VI of MARPOL. Under international multilateral agreements, there is no specific action for the ports in this regard.

Strategies to improve air quality and mitigate climate change are identified within the countries' national legal framework. In the United States, the Clean Air Act (CAA) requires that actions engaged, licensed or approved by federal agencies (i.e. a dredging project or a wharf construction) comply with the State Implementation Plan, which is the approach to be adopted in the region to attain the National Ambient Air Quality Standards (this procedure is called “conformity rule”). Also, for larger industrial and commercial sources that release pollutants into the air an operating permit is required. In South Africa, activities which result in atmospheric emissions and have or may have a significant detrimental effect on the environment must receive an

Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations; Protocol Concerning Regional Co-Operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency in the Red Sea and Gulf of Aden; Protocol concerning Regional Co-operation in Combating Pollution by Oil and other Harmful Substances in Cases of Emergency ROPME area; Agreement on Regional Cooperation in Combating Pollution in the South East Pacific by Hydrocarbons and other Harmful Substances in cases of Emergency and the Complementary Protocol on the Agreement for Regional Cooperation in Combating Pollution in the South East Pacific by Hydrocarbons and other Harmful Substances in Cases of Emergency ; Protocol Concerning Co-operation in Combating Pollution Emergencies in the South Pacific Region.

atmospheric emission license (AEL) in order to operate³⁹⁴. In some cases, the procedure to obtain an AEL runs parallel with the EIA process.

Brazil has two framework regulatory instruments addressing the issues of air quality and climate change: the National Programme for the Air Quality and the National Policy for Climate Change. The provisions of those instruments do not establish the need for specific license for the air quality aspect such as South Africa, but the evaluation of the impacts in this regard and compliance with the national standards is conducted by the environmental agency during the procedure for the issuance of the environmental license for the project as a whole. To support this analysis, Brazil has a set of regulations, most of them are CONAMA Resolutions, with limits and standards to be applied for different sources of pollution. An important aspect of the Brazilian regulation is that in the federal environmental licensing, projects that may generate the emission of greenhouse gases must propose mitigating measures or compensation³⁹⁵.

Water quality

Land-based activities are important sources of marine and coastal waters pollution. Under UNCLOS, States are required to adopt laws and regulation to prevent and control pollution from land-based sources³⁹⁶ and to establish measures to enforce those instruments³⁹⁷. The concern with this type of pollution led to the adoption of the Washington Declaration and the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) in 1995. The provisions on the GPA address, inter alia, specific approaches to be adopted for main source categories: sewage; persistent organic pollutants (POPs); radioactive substances; heavy metals; oils (hydrocarbons); nutrients; sediment mobilization; litter; and physical alterations and destruction of habitats. International conventions regulate aspects of these sources, such as the Stockholm Convention on Persistent Organic

394 South Africa, National Environmental Management: Air Quality Act, Act n° 39 of 2004, Chapter 4, Sections 21 and 22.

395 Brazil, Brazilian Institute of Environment and Renewable Natural Resources Normative Instruction 12 of 23 November 2010.

396 United Nations Convention on the Law of the Sea, articles 194 and 207.

397 Ibid, article 213.

Pollutants , but the control of land-based sources of pollution relies mostly on regional and national regulation.

Within the Regional Seas Programme, the Wider Caribbean, Eastern African, Mediterranean, Black Sea, Red Sea and Gulf of Aden, ROPME area and the South East Pacific regions adopted protocols for the protection of the marine environment against pollution from land-based sources³⁹⁸. The protocols apply to different sources of pollution and activities, including point and diffuse sources and developments that cause physical alteration of the natural state of the coastline or otherwise result in physical alteration or destruction of habitats. The protocols define substances of concern in the region and require the states to assess the environmental impacts of new sources of pollution. Provisions for the evaluation of discharges wastes into the coastal waters are specifically addressed in some of the protocols.

The development of ports and dredging activities can contribute to the land-based sources of pollution by causing physical alterations and destruction of habitats and the release of sewage, heavy metals, oils (hydrocarbons) and nutrients from regular operations (i.e. effluent discharges) or accidents (i.e. oil spills). The control of physical alteration and destruction of habitats and pollution by oil resulting from accidents is part of the environmental licensing of ports and dredging and the provisions for that are further discussed in the topics “Environmental Impact Assessment” and “Oil Pollution Preparedness and Response”.

Effluent discharges and stormwater runoff of port areas may contribute to pollution of the marine and coastal waters. The effluent discharges into waterbodies are regulated by national legal instruments: in the United States by the Clean Water Act; in South Africa through the National Water Act and the Integrated Coastal Management Act; in Brazil by the CONAMA Resolutions 357/2005 and 430/2011.

398 The Protocol Concerning Pollution from Land-Based Sources and Activities of the Wider Caribbean; Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities; Protocol on the Protection of the Mediterranean Sea against Pollution from Land-Based Sources; Protocol on the Protection of the Marine Environment of the Black Sea from Land-Based Sources and Activities; Protocol Concerning the Protection of the Marine Environment from Land-Based Activities in the Red Sea and Gulf of Aden; Protocol for the Protection of the Marine Environment against Pollution from Land-Based Sources in the ROPME area; and Protocol for the Protection of the South East Pacific Against Pollution from Land- Based Sources.

In the United States and South Africa the discharge of effluent into coastal waters requires a specific permit³⁹⁹, while in Brazil the procedure is integrated in the environmental license for the project as a whole. Stormwater runoff (from point sources) is also subject to permitting in the United States and South Africa, under the National Pollutant Discharge Elimination System in the United States and the Section 21 of the National Water Act in South Africa. In Brazil, the stormwater runoff is subject to the monitoring programme.

Marine Protected Areas

Under article 192 of UNCLOS, States have the obligation to protect and preserve the marine environment. Within the measures to be taken by the States for the protection of the marine environment against pollution, UNCLOS emphasizes the need to protect and preserve rare or fragile ecosystems and the habitat of depleted, threatened and endangered species⁴⁰⁰. The protection of the biological diversity, including marine ecosystems and important habitats, can be achieved through the establishment of marine protected areas, strategy referred in the CBD as “*in situ* conservation”⁴⁰¹. The marine protected areas are one of the thematic areas of the programme of work under the Jakarta Mandate on Marine and Coastal Biological Diversity.

The establishment of marine protected areas is one of the provisions for the protection of biodiversity adopted within the protocols under the Regional Seas Programme⁴⁰². Other provisions addressed in the protocols for protected areas include the adoption of measures to prevent, reduce and control pollution of protected areas (i.e. prohibition of activities such as dumping of wastes) and the evaluation of the possible

399 National Pollutant Discharge Elimination System permit in the United States and coastal water discharge permit in South Africa.

400 United Nations Convention on the Law of the Sea, article 194(5).

401 Convention on Biological Diversity, article 8.

402 Protocol Concerning Specially Protected Areas and Wildlife of the Wider Caribbean; Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean; Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region; The Black Sea Biodiversity and Landscape Conservation Protocol to the Convention on the Protection of the Black Sea Against Pollution; Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden; and Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South East Pacific.

direct or indirect environmental impacts of projects and activities that could significantly affect protected areas.

The provisions of the protocols are aligned with the CBD. The Convention requires the Parties to “Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas”⁴⁰⁰ and to require the environmental impact assessment of projects that are likely to have significant adverse effects on the biological diversity⁴⁰³.

These aspects are reflected in the environmental licensing procedure for ports and dredging, which requires the assessment of potential environmental impacts of the projects over the marine protected areas.

The United States and South Africa have implemented the protection of marine and coastal areas within their boundaries through several legal instruments. The legislation in both countries requires that, in the case of activities that may adversely impact a marine protected area, the agency responsible for the implementation of the protected area must be consulted and the activity authorized when applicable. Brazil follows a similar approach, as the activities that may significantly affect a protected area must be authorized by the institution responsible for the management of the protected area⁴⁰⁴.

Paragraph 2: Procedures after the implementation of the project

Sea and ocean dumping

The London Convention requires the Contracting Parties to keep records of the nature and quantities of all matter permitted to be dumped and the location, time and method of dumping⁴⁰⁵. The “Revised Specific Guidelines for the Assessment of Dredged Material” also bring provisions for the monitoring programme for the disposal of dredged material into the sea. According to the document, the monitoring programme must be able to verify if the conditions on the permit are met (compliance monitoring) and if the assumptions made during the permit review and site selection process were correct and sufficient to protect the environment and human health (field

403 Convention on Biological Diversity, article 14.

404 Brazil, Law 9,985 of 18 July 2000, article 36.

405 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, article 4.

monitoring)⁴⁰⁶. Provisions for the monitoring programme of disposal sites are also addressed in the United States disposal site monitoring regulation. The primary purpose is to evaluate the impact of the disposal on the marine environment, with the focus on types of effects referred in the regulation⁴⁰⁷ and based on a baseline survey⁴⁰⁸. In Brazil, the monitoring plan is required for the disposal of dredged material into waters on national jurisdiction⁴⁰⁹.

In this regard, the recommendations of the Revised Specific Guidelines for the Assessment of Dredged Material and the consideration of types of effects of the United States regulation may be considered on the development of the monitoring plan, after the approval of the project.

Threatened and endangered species

Monitoring programmes for endangered species are required after the approval of the project. In the United States, the programme is based on the Biological Opinion, with the objective to detect adverse effects resulting from a proposed action, assess the actual level of incidental take in comparison with the anticipated incidental take level⁴¹⁰. In Brazil the programme is integrated in the environmental management plan, and also focus in the assessment of the adverse effects of the activity over the species.

Environmental Management Plan

The Environmental Management Plan, which include mitigation measures and monitoring programmes, is required under the regulation of the United States⁴¹¹, South

406 Report on Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol, London, 14 – 18 October 2013, annex II, item 9.

407 United States, Code of Federal Regulations, Title 40, Part 228, Sections 228.9 and 228.10 (2013).

408 Ibid, Section 228.13.

409 Brazil, National Environment Council Resolution 454 of 1st. November 2012, article 26.

410 United States of America, U.S. Fish and Wildlife Service and National Marine Fisheries Service, *Consultation Handbook for the Procedures for Conducting Activities Under Section 7 of the Endangered Species Act* (1998). Available from http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf.

411 United States of America, *Code of Federal Regulations*, Title 40, Part 1505 (2013).

Africa⁴¹² and Brazil⁴¹³ and have as main objectives the monitoring and management of impacts, verifying the compliance with permit commitments and effectiveness of mitigation measures. Provisions for the monitoring programmes are addressed in the documents issued by the Conference of Contracting Parties to the Ramsar Convention and CBD⁴¹⁴, providing perspectives regarding wetlands and biodiversity to be observed in the development of the environmental management plans.

Oil Pollution Preparedness and Response

The measures to be adopted in the case of an accident resulting in oil spill are compiled in the oil pollution emergency plan. In Brazil, as previously mentioned, this plan is submitted during the environmental licensing procedure by the project owner to the environmental agency after the installation.

The mandatory content of the plan is determined in Brazil by the CONAMA Resolution 398/1998 and it is similar to the requirements for the Facility Response Plan in the United States⁴¹⁵. Some topics of the emergency plan required in the legislation were subject to discussion by the Marine Environment Protection Committee (MEPC) of the IMO, which approved documents that provide orientation in aspects regarding oil spill response.

The documents approved by the MEPC can serve as a reference during the analysis of the emergency plan, for aspects with no specific regulation. The MEPC approved in 2008 the Manual on Assessment of Oil Spill Risks and Preparedness⁴¹⁶, which may provide elements to help in the evaluation of the risk analysis that is one of

412 South Africa, National Environmental Management Act, Government Notice R. 543, Government Gazette, 33306, 2010.

413 Brazil, National Environment Council Resolution 01 of 23 January 1986, article 6; Brazil, Brazilian Institute of Environment and Renewable Natural Resources Normative Instruction 184 of 17 July 2008; and Brazil, Portaria MMA 424 of 26 October 2011.

414 Resolution X.17 of the Tenth Meeting of the Conference of Parties to the Convention on Wetlands of International Importance, Changwon, Republic of Korea, 28 October-4 November 2008; Decision 28 of the Eighth meeting of the Conference of Parties to the Convention on Biological Diversity, Curitiba, Brazil, 20-31 March 2006; and Decision 18 of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012.

415 United States, Code of Federal Regulations, Part 112, Section 112.20 and Appendix F; Title 33, Part 154.

416 Report on the Fifty Eighth Session of Marine Environment Protection Committee, London, 6-10 October 2008.

the basis of the plan. Another document that can contribute as a reference for the analysis of the emergency plan is the Guidance Document on the Implementation of an Incident Management System⁴¹⁷, which is related to the item 3.3 of Annex I of the CONAMA Resolution 398/2008. In specific cases, may also be considered the Guideline for Oil Spill Response in Fast Currents, approved by the MEPC in 2011⁴¹⁸, for the control of oil spill in a fast water environment.

The use of chemical dispersant for the control of an oil spill is regulated by the CONAMA Resolution 269/2000. In 2013, the IMO guidelines for the use of these substances during the oil spill response were updated, during the 65th session of the MEPC⁴¹⁹.

Air quality

In South Africa, the AEL are reviewed in specific intervals and atmospheric impact reports may be required for this purpose⁴²⁰. The legislation does not specify the content of the atmospheric impact report, but according to the National Framework for Air Quality Management in the Republic of South Africa, the reports may include: individual process details including a balance sheet of inputs, outputs and emissions; detailed information on point source and fugitive emissions, and a summary of emissions under emergency and upset conditions; impact of the activity on ambient air quality in the area; statistics on respiratory illnesses and complaints in the area and a comparison with national averages; compliance history; and current or planned air quality interventions⁴²¹. In Brazil, the compliance with the conditions established in the environmental license is verified through the air quality monitoring programme. The

417 Report on the Sixty-First Session of Marine Environment Protection Committee, London, 27 September to 1 October 2010.

418 Report on the Sixty-second Session of Marine Environment Protection Committee, London, 11 – 15 July of 2011

419 Report on the Sixty-fifth Session of Marine Environment Protection Committee, London, 13 -17 May 2013.

⁴²⁰ South Africa, National Environmental Management: Air Quality Act, Act n° 39 of 2004, Chapter 5.

⁴²¹ South Africa, Department of Environmental Affairs, *National Framework for Air Quality Management in the Republic of South Africa* (2012). Available from <http://govza.gcis.gov.za/ts/documents/national-environmental-management-air-quality-act-2007-national-framework-air-quality>.

requirements of the monitoring programme are established by the environmental agency based on the environmental impact assessment and the specific regulation for the contamination sources within the project. The air quality monitoring programme is mandatory for ports that were constructed prior to the implementation of the environmental regulation in Brazil.

In the United States, an initiative was implemented by the USEPA in order to identify opportunities and find solutions that create more sustainable ports systems, focusing on the reduction of the risks of climate change and improve air quality. The “Ports Initiative” is based on the effectively partnering with port stakeholders, to discuss and implement solutions. In 2009 the agency published a guide on the *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories*⁴²², providing orientation to port authorities in the development of emissions inventory, in order to understand and quantify the air quality impacts of current port operations and to plan mitigation strategies. Based on the emissions inventory, the discussions on the possible measures to be adopted are conducted. Some of the possible strategies to be implemented to reduce the impact on air quality were proposed by the agency within the “National Clean Diesel Campaign (NCDC): Ports and Marine”⁴²³. The United States initiative may be used as a reference for the implementation of air quality monitoring programmes in Brazil, especially for ports implemented prior to the environmental regulation and need to comply with its provisions.

Water quality

The countries regulations require monitoring plans for the control of effluent discharges and set forth aspects to be implemented in those programmes. In United States and South Africa, one of the objectives of the monitoring programme is to verify the compliance with the permit. Although Brazil does not have a specific permit for effluent discharges and stormwater runoff in coastal and marine waters, provisions for the control of impacts resulting from these activities may be specified in the

422 United States of America, U.S. Environmental Protection Agency, *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories* (2009). Available from <http://epa.gov/cleandiesel/documents/ports-emission-inv-april09.pdf>.

423 United States of America, U.S. Environmental Protection Agency, “National Clean Diesel Campaign (NCDC): Ports and Marine”. Available from <http://www.epa.gov/cleandiesel/sector-programs/ports-portauth.htm> (Accessed in 19 September 2014).

environmental license and must comply with the CONAMA Resolutions 357/2005 and 430/2011. The coastal and marine waters quality programmes may be improved in Brazil through the evaluation, where applicable, of the requirement of a special focus on the aspects of two initiatives of the GPA, the Global Partnership on Nutrient Management and Global Partnership for Wastewater Management, and by using the reference of programmes implemented in other countries, such as Stormwater Pollution Prevention Plan for construction sites of the United States.

Marine Protected Areas

Activities that may affect marine protected areas have to comply with the conditions established by the authorization of the authority responsible for the management of the area. In Brazil, if a project will significantly affect a protected area the “environmental compensation” is required.

Chapter 2: Way forward

Section A: Opportunities of improvement

Based on the above review of global and regional instruments and the study of the environmental licensing procedures in South Africa and United States, including a comparative analysis, this thesis identifies elements to improve the Brazilian procedures for the environmental licensing of ports and dredging activities.

Paragraph 1: Procedures prior to the approval of the project

Within the procedures for the environmental licensing of dredging activities, the London Convention and the United States regulations can contribute to the improvement of aspects of the Brazilian regulation. The London Convention’s Revised Specific Guidelines for the Assessment of Dredged Material (London Convention’s 2013 Revised Guidelines)⁴²⁴ provide elements to be observed before and after the approval of the activity. One important aspect is the requirement for the reduction of wastes that can harm the marine environment. To accomplish that, three strategies are recommended: controlling and reducing sources of contamination to water and sediments; maximizing, to the extent practicable, the use of dredged sediments for

424 Report on Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol, London, 14 – 18 October 2013.

beneficial purposes; minimizing the volumes of sediment that must be dredged by using improved engineering practices.

The control and reduction of contamination sources is specially important for port areas that constantly require dredging activities to maintain the depth on the channel and berths to ensure regular operation of the port. According to the London Convention's 2013 Revised Guidelines, the first step in the control and reduction of contamination sources is the identification of point and non-point sources of pollution, which include industrial and residential discharges; storm water; surface runoff from agricultural areas; sewage and waste-water treatment effluents; and transport from upstream contaminated sediments. The identification of the sources may reveal opportunities to the control and reduction of pollution. As the strategies to be adopted involve different sectors, not only the responsible for the dredging, the plan shall be implemented in collaboration with relevant local and national agencies.

The beneficial use of the dredged material is addressed in the Brazilian regulation, but not in the same depth as the guidelines from the London Convention and in the United States documents. The U.S. Environmental Protection Agency and U.S. Army Corps of Engineers document "*Identifying, Planning, and Financing Beneficial Use Projects Using Dredged Material: Beneficial Use Planning Manual*"⁴²⁵ may be used as a reference during the environmental analysis of a dredging activity, regarding the possibilities for the beneficial use of the dredged material. The document identifies, i.e., beneficial uses most compatible with dredged material of a given composition or contamination status. In order to further implement the beneficial use of dredged material, the document addresses the main challenges to be overcome, which include: lack of familiarity with beneficial uses; logistics; and coordination of financial components. Also, factors considered as the most relevant for the planning and execution are: engineering considerations; operational factors; cost; environmental suitability; additional environmental effects; environmental benefits produced. The environmental licensing of dredging activities may take into consideration those aspects in order to incorporate measures to enhance the beneficial use of the material, especially in areas where dredging is required on annual basis.

425 United States of America, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, *Identifying, Planning, and Financing Beneficial Use Projects Using Dredged Material: Beneficial Use Planning Manual*, EPA842-B-07-001 (Washington D.C. 2008).

The procedural steps followed for the development of the environmental impact assessment are similar among the countries and incorporated in the international instruments. The CBD and the Ramsar Convention provided guidelines⁴²⁶ for the inclusion of biodiversity and wetlands perspectives on each phase of the environmental impact assessment procedure which may be observed for the improvement of the Brazilian procedure. Moreover, aspects identified in the United States and South Africa regulation may contribute to the procedures in Brazil as well, especially in the screening and scoping phase, considered critical stages in the environmental impact assessment process⁴²⁷.

In Brazil the screening phase for ports and dredging activities in the federal environmental licensing is based on the observation of the list on the CONAMA Resolution 01/1986 and in the evaluation of whether or not the project may cause significant impact over the environment⁴²⁸. The legislation does not specify the criteria for the analysis of the “significant impact over the environment”. In this regard, the evaluation may be complemented, where applicable, with the observance of national biodiversity strategies and action plans, which provide, according to the CBD guidelines, important information for developing screening criteria related to marine areas under national jurisdiction, such as conservation priorities and on types and conservation status of ecosystems. The guidelines also recommend that the screening criteria to be developed observe the three levels of biodiversity: ecosystem, species and genetic diversity. Other aspects of the screening criteria that may be complemented in Brazil are: the design a biodiversity screening map indicating areas in which EIA is required; and the definition of threshold values to distinguish between full, limited/undecided, or no EIA, based on the biodiversity values (including valued ecosystem services) and activities that might have an impact on drivers of change of

426 Resolution X.17 of the Tenth Meeting of the Conference of Parties to the Convention on Wetlands of International Importance, Changwon, Republic of Korea, 28 October-4 November 2008; Decision 28 of the Eighth meeting of the Conference of Parties to the Convention on Biological Diversity, Curitiba, Brazil, 20-31 March 2006; and Decision 18 of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012.

427 Decision 18 of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012

428 Brazil, National Environment Council Resolution 237 of 19 December 1997, article 3.

biodiversity⁴²⁹. Those aspects shall take into consideration the possible effects on wetlands.

The screening phase may also be improved with the clarification of which aspects should be considered to determine if the potential impact over the environment is “significant”. In this regard, two elements from the United States regulation can provide examples to be observed: the definition of the aspects to be considered to determine “significant effect”; and the environmental assessment. According to the United States regulation, in order to determine if the project will significantly affect the environment, the context and the intensity must be taken into consideration.

“*Context* means the evaluation of the action considering the society as a whole (human, national), the affected region, the affected interests, and the locality. Both short- and long-term effects are relevant. *Intensity* refers to the severity of impact. The elements of the intensity aspect include: beneficial and adverse impacts; effects on public health or safety; unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas; effects on the quality of the human environment that are likely to be highly controversial, uncertain and involve unknown risks; if the action may establish a precedent for future actions with significant effects; cumulative significant impacts; effects on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources; adversely effects of endangered or threatened species; possible violation of Federal, State, or local law or requirements imposed for the protection of the environment”⁴³⁰.

The screening phase may be complemented with the environmental assessment, which is the concise document with sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact. The document includes brief

429 Decision 18 of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012

430 United States of America, Code of Federal Regulations, Part 1508 (2013).

discussions of the need for the proposal, of alternatives, of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted⁴³¹.

In Brazil the federal environmental licensing of ports and dredging activities uses “terms of reference” to establish the scope of the environmental study. The term of reference is specific for each project and is developed by the environmental agency in consultation with the applicant and other government agencies when applicable. In order to provide further information for the development of the term of reference and, consequently, improve the quality of the environmental study to be submitted, a “scoping report” could be required during the scoping phase, as South Africa requires in its environmental impact assessment procedures. The “scoping report” of South Africa includes the description of the environment where the activity will take place, potential environmental impacts of the proposed activity, alternatives to the proposed activity that are feasible and reasonable and a plan of study for environmental impact assessment⁴³². With this information, the environmental agency will be able to identify the main impacts that need focus on the environmental study, identify alternatives that may not be suitable for the project, analyze and make recommendations on the plan of study and prevent the development of unnecessary environmental studies.

The guidelines from CBD and from the Ramsar Convention provide recommendations on the aspects that must be addressed on the environmental study, and those may be observed to guide the establishment of the scope of the study⁴³³ as well.

Brazil is not a party to the Bonn Convention, but the evaluation of impacts of the projects on migratory species is required during the environmental licensing procedure. To improve the evaluation on this regard, it could be required a special focus of the impact assessment on the species that are part of the appendixes of the Bonn Convention and have Brazil as range state. The guidelines adopted in regional

431 United States, Code of Federal Regulations, Part 1508 (2013).

432 South Africa, National Environment Management Act, Government Notice R. 543, Government Gazette, 33306, 2010.

433 Decision 18 of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012, item 25; Resolution X.17 of the Tenth Meeting of the Conference of Parties to the Convention on Wetlands of International Importance, Changwon, Republic of Korea, 28 October-4 November 2008, item 25.

agreements may be used as reference documents whenever the group of migratory species is identified within the project site or adjacent areas. The references could be the “Guidelines on how to avoid, minimize or mitigate the impact of infrastructure developments and related disturbance affecting waterbirds”⁴³⁴ and “Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area”⁴³⁵.

Paragraph 2: Procedures after the implementation of the project

In the case of the approval of the disposal of dredged material into sea and ocean waters, the environmental licensing may implement measures in order to minimize environmental disturbance and detriment, as listed on the London Convention’s 2013 Revised Guidelines. The measures include engineering and operational controls, such as: selection of the most appropriate dredging equipment; use of equipment, such as diffusers to perform submerged discharge and silt curtains to limit transport and mixing in the water column; use of turtle-excluding dredge heads to protect large marine fauna; treatment of the dredged material; use of capping techniques for confined aquatic disposal (CAD); scheduling of operations to avoid impacts to breeding or migrating organisms; modifications to the timing of disposal operations (e.g. undertaking operations during specific parts of the tidal cycle or during specific river discharges can reduce the extent of dispersal of resuspended sediment); modifications to the rate of discharge of the dredged material; selection of the disposal site, or the location of discharge within the selected disposal site; use of field monitoring as a basis for adjusting operations; suspended sediment monitoring, turbidity, light attenuation); use of sensing systems and observers to detect the presence of marine turtles and mammals in the vicinity of dredging operations. Some of these measures are already adopted in environmental licensing procedures in Brazil, but their use may be applied to a broader context within the country.

In Brazil, the monitoring plan is required for the disposal of dredged material into waters on national jurisdiction. Both the London Convention’s 2013 Revised

434 Report of the 4th Session of the Meeting of the Parties (MOP4) to the African-Eurasian Migratory Waterbird Agreement (AEWA), 15 – 19 September 2008, Antananarivo, Madagascar, Resolution 4.13 (UNEP/AEWA/MOP4).

435 Report on the Fourth Meeting of the Contracting Parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area, concluded under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), Monaco, 9th -12 th November 2010, Resolution 4.17.

Guidelines and the United States Regulation have provisions that may be observed as reference for the design of monitoring plans in Brazil. The plan must provide information to evaluate whether the impacts of the dredging project are occurring as predicted and if the conditions of the permits are met. The plan shall include a sequence of measurements in space and time that gauges both the spatial scale and magnitude of any observable changes⁴³⁶. The United States regulation specifies types of effects that are considered to determine the extent of impact on the marine environment, and those could be examples of possible aspects to be focus on the monitoring plan:

“movement of materials into estuaries or marine sanctuaries, or onto oceanfront beaches, or shorelines; movement of materials toward productive fishery or shellfishery areas; absence from the disposal site of pollution-sensitive biota characteristic of the general area; progressive, non-seasonal, changes in water quality or sediment composition at the disposal site, when these changes are attributable to materials disposed of at the site; progressive, non-seasonal, changes in composition or numbers of pelagic, demersal, or benthic biota at or near the disposal site, when these changes can be attributed to the effects of materials disposed of at the site; accumulation of material constituents (including without limitation, human pathogens) in marine biota at or near the site”⁴³⁷.

The concern with the contribution of the international shipping to climate change has been raised over the years and is subject to international efforts. In Brazil, the environmental management plan of ports include the air quality monitoring programme, which is mandatory for ports that were built before the environmental regulation was enacted⁴³⁸. The design of the programme is based on the environmental impact assessment of the project or on the environmental control report⁴³⁹, considering possible effects of the activities on the air quality.

436 Report on Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol, London, 14 – 18 October 2013, annex II, item 9.

437 United States, Code of Federal Regulations, Title 40, Part 228, Section 228.10 (2013).

438 Brazil, Portaria 424 of 26 October 2011, article 7.

439 Ibid, article 3.

The air quality monitoring programme can be improved in order to be more focused on the implementation of measures to reduce and control the emissions from port activities. The example from the United States can provide a reference to be implemented in Brazil. The first aspect that may be applied is the “Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories”⁴⁴⁰, which is the basis for the development of the emission reduction strategy. The document provide guidance for the development of an inventory of mobile emission sources at ports, including oceangoing vessels, harbor craft, and cargo handling equipment, as well as other land-side mobile emission sources at ports, such as locomotives and on-highway vehicles.

After all the ports emissions are measured, mitigating actions can be proposed, and those include: substitute rail or barge for trucking; substitute electric power for diesel power; develop educational programs on air pollution and emissions reductions for terminal operators and fleet owners; develop an Environmental Management System; retrofit with verified technologies, use cleaner fuels and operate more efficiently; establish anti-idling policies; and expand off-peak operations hours to avoid congestion⁴⁴¹.

In Brazil, ports are required to prepare an oil pollution emergency plan, which establishes the measures to be adopted in the case of an accident resulting in oil spill. Some of the elements that are mandatory in the plan, as determined by the CONAMA Resolution 398/2008, were subject to discussion in the Marine Environment Protection Committee (MEPC) of the IMO, and may provide references to be observed during the analysis of the plan by the environmental agency. In this regard, three aspects that are part of the emergency plan may be improved by using the guidance documents from the MEPC as reference.

The risk analysis is required to serve as basis for the emergency plan. To complement the requirements and help the analysis of the emergency plan, the

440 United States of America, U.S. Environmental Protection Agency, *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories* (2009). Available from <http://epa.gov/cleandiesel/documents/ports-emission-inv-april09.pdf>.

441 United States of America, U.S. Environmental Protection Agency, “National Clean Diesel Campaign (NCDC): Ports and Marine”. Available from <http://www.epa.gov/cleandiesel/sector-programs/ports-portauth.htm> (Accessed in 19 September 2014).

environmental agency may observe the Manual on Assessment of Oil Spill Risks and Preparedness⁴⁴², which provides guidance on how to assess whether the preparedness arrangements that are in place are appropriate in light of the potential for an oil spill incident and its consequences, and includes orientation for the development of the risk assessment, analysis and management. The Guidance Document on the Implementation of an Incident Management System⁴⁴³ is related to the item 3.3 of annex I of the CONAMA Resolution 398/2008, therefore, may be considered during the development and analysis of the emergency plan. In specific cases, for ports where the accident may occur in a fast water environment, the emergency plan may consider the Guideline for Oil Spill Response in Faster Currents⁴⁴⁴, which provides essential information for developing fast water response strategies.

The use of chemical dispersant is one of the tools for the control of an oil spill. The use of chemical dispersant as a strategy to combat oil spill must comply, in Brazil, with the CONAMA Resolution 269/2000. The IMO also has guidelines for the use of these substances during the oil spill response and those guidelines were updated in 2013⁴⁴⁵. Given the fourteen years since the issuance of the CONAMA Resolution 269/2000, the IMO Guidelines for the Use of Dispersants for Combating Oil Pollution at Sea from 2013 may provide elements to update of the Brazilian regulation in this regard, where appropriated.

The environmental licensing of ports can be a tool for the implementation of strategies to meet the initiatives of the GPA to control the sources of marine pollution. In this regard, stormwater runoff may contribute with the reduction of the marine and coastal waters quality as it may contain pollutants such as oil, heavy metals, organic chemicals and other elements washed over the surface of ports areas. In the United States, a Stormwater Pollution Prevention Plan is required for industrial areas and

442 Report on the Fifty Eighth Session of Marine Environment Protection Committee, London, 6-10 October 2008.

443 Report on the Sixty-First Session of Marine Environment Protection Committee, London, 27 September to 1 October 2010.

444 Report on the Sixty-second Session of Marine Environment Protection Committee, London, 11 – 15 July of 2011.

445 Report on the Sixty-fifth Session of Marine Environment Protection Committee, London, 13 -17 May 2013.

construction sites under the NPDES. In order to guide the development of these plans, two documents were issued by the USEPA: “Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators”⁴⁴⁶ and “Developing Your Stormwater Pollution Prevention Plan: a Guide for Construction Sites”⁴⁴⁷. In the case of the Stormwater Pollution Prevention Plan for Construction Sites, the focus is to implement measures to prevent stormwater contamination and control sedimentation and erosion. For industrial stormwater control plans, the main elements are the assessment of potential stormwater pollution sources, the selection of appropriate control measures that minimize the discharge of pollutants during storm events for each of these sources; and the development of procedures for conducting required inspection/monitoring activities, as well as regular maintenance of control measures. The documents may provide elements to be observed in order to improve the stormwater control and monitoring programme required in the environmental licensing of ports in Brazil.

Section B: Implementation of proposed improvements

The procedures for the federal environmental licensing of ports and dredging in Brazil are set forth in different types of legal instruments, which include: Normative Instructions from the Ministry of Environment and the Brazilian Institute of Environment and Renewable Natural Resources; “Portarias” from the Ministry of Environment; CONAMA Resolutions; Decrees; and Laws. The implementation of the proposal established in Section A must be aligned with the Brazilian regulation, which, for some aspects, may require the development of new legal instruments. If, however, the aspect it is not specified under any legal instrument, it may be adopted within the current procedures, with the authorization of the Directorate for Environmental Licensing of the IBAMA.

In this light, some changes may be implemented in the short term and others in the medium or long term, due to the need for new legal instrument, which may require a significant amount of time depending on the type of instrument and legal requirements for its approval. Also, some changes applied in the short term within the current federal

446 United States of America, U.S. Environment Protection Agency, *Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators*, EPA 833 B 09 002 (2009).

447 United States of America, U.S. Environment Protection Agency, *Developing Your Stormwater Pollution Prevention Plan: a Guide for Construction Sites*, EPA 833 R 06 004 (2007).

environmental licensing procedures could be later brought to a broader context within the country, if its implementation is successful, under a legal instrument of national range, therefore, applicable to the states' environmental licensing of ports and dredging.

Paragraph 1: Short term

Changes applicable in short term are those that are not specifically addressed in the current regulation and may be applied within the environmental licensing procedures of ports and dredging conducted by IBAMA, under the authorization of the Directorate for Environmental Licensing and the President of the IBAMA. Aspects that require a Normative Instruction from the IBAMA also will be considered as short time, because Normative Instructions have a simpler procedure for its development than other types of legal instruments.

For the federal environmental licensing of dredging activities, four aspects were identified as possible improvements for the Brazilian procedures: the control and reduction of sources of contamination to water and sediments on areas that constantly require dredging activities; maximizing, to the extent practicable, the use of dredged sediments for beneficial purposes; the adoption of measures to minimize environmental disturbance due to the dumping of dredged material into the sea; and the observance of aspects for the design of monitoring programmes to be developed after the approval of dredging activities.

The control and reduction of sources of contamination to water and sediment of dredging areas depends on the identification of the sources of pollution. For new ports that may require regular dredging activities after the implementation, the identification of sources of contamination could be required at the environmental study, prior to the preliminary license, or afterward, prior to the installation or operation licenses.

The expected result of the study is not only to provide the information regarding the sources of pollution, but also to identify opportunities to the control and reduction of pollution. In developing the strategy to address the control and reduction of sources of pollution, the London Convention's 2013 Revised Guidelines⁴⁴⁸ recommend these factors to be taken into account: the risks posed by contaminants and the relative contributions of the individual sources to these risks; existing source control

448 Report on Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and Eighth Meeting of Contracting Parties to the London Protocol, London, 14 – 18 October 2013.

programmes and other regulations or legal requirements; technical and economic feasibility; evaluations of the performance or effectiveness of measures taken; and consequences of not implementing source control. As the strategies to be adopted may involve multiple sectors (e.g. industry, federal, state and local government) the implementation of this aspect may only be achieved through a new legal instrument, with a broader range than the environmental licensing of a specific port or dredging activity.

The beneficial use of the dredged material is already required under the Brazilian regulation. This practice could, though, be enhanced within the environmental licensing of dredging activities. The observation of the The U.S. Environmental Protection Agency and U.S. Army Corps of Engineers document “*Identifying, Planning, and Financing Beneficial Use Projects Using Dredged Material: Beneficial Use Planning Manual*”⁴⁴⁹ may be used as a reference regarding the possibilities for the beneficial use of the dredged material. For new ports, the term of reference that establishes the scope of the environmental study may be more detailed in requiring specific information to be addressed in this regard. During the analysis of the study, the manual can provide examples of criteria to be observed in order to evaluate the applicability of beneficial use projects. The analysis will determine if the beneficial use is possible and under which conditions. In some cases, the beneficial use of the dredged material may not be immediate but it could become a part of a programme after the issuance of the environmental license, specially for ports that require regular dredging activities. In this case, the focus of the programme would be to identify potential uses for the dredged material resulting from maintenance dredging activities.

If the dredging is authorized and the disposal into waters of national jurisdiction is necessary, the IBAMA may consider the application of engineering and operational measures to reduce the environmental disturbance, as proposed by the London Convention’s 2013 Revised Guidelines and referred in section A of this chapter. If the measures are applicable, they will be part of the conditions of the environmental license of the project.

449 United States of America, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, *Identifying, Planning, and Financing Beneficial Use Projects Using Dredged Material: Beneficial Use Planning Manual*, EPA842-B-07-001 (Washington D.C. 2008).

The monitoring programmes have to follow up the impacts of dredging projects and may also be improved with the observance of the requirements of the United States regulation and the London Convention's 2013 Revised Guidelines. The objective would be the development of monitoring programmes more focused on important environmental aspects that may be affected by dredging activities. The current requirements for these programmes in Brazil would be compared to those on the United States regulation and the Revised Specific Guidelines for the Assessment of Dredged Material, in order to evaluate which provisions may contribute to the improvement of the programmes. This proposal can be applicable in the design of monitoring programmes for new ports and for ongoing monitoring programmes.

As regards the environmental impact assessment procedures in Brazil, most of the aspects proposed to improve the procedures would require new legal instruments or the amendment of existing instruments. Some, however, can be implemented in short term, especially because they constitute elements to be included in the terms of reference for environmental studies. The guidelines from CBD and from the Ramsar Convention⁴⁵⁰ provide recommendations on the aspects that must be addressed on the environmental study and those may be observed to contribute to the terms of reference in order to emphasize the attention with wetlands and biodiversity. Also, whenever applicable, the term of reference may require a special focus of the impact assessment on the species that are part of the appendixes of the Bonn Convention and have Brazil as range state. If migratory species are identified in the project site or adjacent area, two guidelines may provide references for the analysis of the study: "Guidelines on how to avoid, minimize or mitigate the impact of infrastructure developments and related disturbance affecting waterbirds"⁴⁵¹ and "Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area"⁴⁵².

450 Resolution X.17 of the Tenth Meeting of the Conference of Parties to the Convention on Wetlands of International Importance, Changwon, Republic of Korea, 28 October-4 November 2008; Decision 28 of the Eighth meeting of the Conference of Parties to the Convention on Biological Diversity, Curitiba, Brazil, 20-31 March 2006; and Decision 18 of the Eleventh Meeting Conference of Parties to the Convention on Biological Diversity, Hyderabad, India, 8-19 October 2012.

451 Report of the 4th Session of the Meeting of the Parties (MOP4) to the African-Eurasian Migratory Waterbird Agreement (AEWA), 15 – 19 September 2008, Antananarivo, Madagascar, Resolution 4.13 (UNEP/AEWA/MOP4).

452 Report on the Fourth Meeting of the Contracting Parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area, concluded under the

The air quality programmes of the ports may provide opportunities to improve the emissions control and reduction in port areas. As these programmes are already required, they could be improved with observation of successful examples from the United States. The first step would be to compare the requirements of ongoing programmes to the document “Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories”⁴⁵³, which is the basis for the development of the emission reduction strategy in the United States. The objective is to have enough elements to study and propose alternatives and measures to be adopted in order to reduce the emissions of port operations. The implementation of the measures, however, will require time for adaptation of the operations and funding, therefore, probably would be implemented in medium and long term.

The mandatory scope of the emergency plans is established in the CONAMA Resolution 398/2008⁴⁵⁴. Three guidance documents from the MEPC may provide reference for the analysis and elements to be incorporated to the emergency plan for the response to oil spill emergencies: Manual on Assessment of Oil Spill Risks and Preparedness⁴⁵⁵, Guidance Document on the Implementation of an Incident Management System⁴⁵⁶ and Guideline for Oil Spill Response in Faster Currents⁴⁵⁷. The observation of these documents would occur during the analysis of the plans by the IBAMA, and whenever applicable, recommendations would be made to improve the emergency plans.

auspices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), Monaco, 9th -12 th November 2010, Resolution 4.17.

453 United States of America, U.S. Environmental Protection Agency, *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories* (2009). Available from <http://epa.gov/cleandiesel/documents/ports-emission-inv-april09.pdf>.

454 Brazil, National Environment Council Resolution 398 of 11 June 2008.

455 Report on the Fifty Eighth Session of Marine Environment Protection Committee, London, 6-10 October 2008.

456 Report on the Sixty-First Session of Marine Environment Protection Committee, London, 27 September to 1 October 2010.

457 Report on the Sixty-second Session of Marine Environment Protection Committee, London, 11 – 15 July of 2011.

The control of pollution of coastal and marine waters from land-based activities, in this case, ports and terminals, is an important aspect that may be improved through the environmental licensing procedure. Brazil already has legal instruments regarding water quality applied to the environmental licensing procedure, but the control of pollution could be enhanced by the improvement of existing procedures. The requirements for the Stormwater Pollution Prevention Plan for industrial areas and construction sites may serve as reference to the development and implementation of these plans in Brazil, which are part of the environmental management plan of ports. The comparative analysis between the elements of the existing plans in Brazil and the documents issued by the USEPA: “Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators”⁴⁵⁸ and “Developing Your Stormwater Pollution Prevention Plan: a Guide for Construction Sites”⁴⁵⁹ could lead to the establishment of new requirements in order to implement even more effective plans, aligned with the existing Brazilian regulation.

Paragraph 2: Medium and long term

The medium and long term measures will require, if approved, the adoption of new legal instruments (or the amendment of existing instruments) and/or the coordination among different institutions in order to be implemented. The decision regarding the type of instrument that should be adopted (e.g. a CONAMA Resolution, a decree, new law) for the implementation of a new element to the environmental licensing procedures must consider several aspects, including, the range of the application of the aspect (i.e. national, only federal), if the aspect is already regulated under other legal instrument, and the need to involve multiple sectors.

The control and reduction of sources of pollution in areas that are subject to regular dredging activities is a complex issue, as the contribution to the pollution of these areas comes from point and diffuse sources, which are located not only in the coastal and marine zones but also within the continental part of the country⁴⁶⁰. The

458 United States of America, U.S. Environment Protection Agency, *Developing Your Stormwater Pollution Prevention Plan: A Guide for Industrial Operators*, EPA 833 B 09 002 (2009).

459 United States of America, U.S. Environment Protection Agency, *Developing Your Stormwater Pollution Prevention Plan: a Guide for Construction Sites*, EPA 833 R 06 004 (2007).

460 Brazil, Ministry of Environment, available from <http://www.mma.gov.br/gestao-territorial/gerenciamento-costeiro/a-zona-costeira-e-seus-m%C3%BAltiplos-usos>

control of the pollution sources would require the consideration of the multiple uses of the coastal zones, such as tourism, industrial activities, urban expansion and also the connection with the continental part, which may also affect the coastal and marine environment. With this in mind, the control and reduction plan for each area would have to be implemented under a broad legal instrument that shall be able to integrate all the sectors involved. Under this perspective, the measures to be adopted for the control of pollution sources could be integrated in the strategies established under the Coastal Management. The National Plan for Coastal Management was established by Law 7,661/1988⁴⁶¹ and by Decree 5,300/2004⁴⁶². The Coastal Management involves different sectors and has different levels of implementation (national, state and local); one of the objectives is the control of the sources of pollution or environmental degradation that threaten the quality of life in the coastal zone⁴⁶³. The integration of the control of sources of pollution in areas that are subject to regular dredging activities and the actions of the coastal management will depend on the result of the studies of the identification of the sources of pollution and the discussion with all the sectors involved.

The environmental impact assessment within the environmental licensing may be target to the implementation of new elements that might improve current procedures. The screening phase in the Brazilian federal environmental licensing addresses two aspects: the list of the CONAMA Resolution 01/1986⁴⁶⁴ and the evaluation of whether or not the project may cause significant impact over the environment⁴⁶⁵. The implementation of new criteria or the clarification of existing ones could lead more objective screening phase, preventing similar projects to be conducted in different ways and to have the level of the environmental impact assessment objectively linked to specific environmental criteria.

In light of the above, the CBD and the Ramsar Convention guidelines have provided recommendations for the development of screening criteria related to marine

461 Brazil, Law 7661 of 16 May 1988.

462 Brazil, Decree 5300 of 07 December 2004.

463 Ibid, articles 6 and 7.

464 Brazil, National Environment Council Resolution 01 of 23 January 1986.

465 Brazil, National Environment Council Resolution 237 of 19 December 1997, article 3.

areas under national jurisdiction and wetlands, such as conservation priorities and types and conservation status of ecosystems. The development of the criteria must take into consideration national features. Other than the development of new screening criteria, the clarification of the term “significant impact” may contribute to the screening phase. In this regard, a new legal instrument could be enacted to specify what aspects must be taken into consideration in order to evaluate if the potential impacts to the environment are significant or not. This would require discussions with different sector involved in the environmental licensing procedures, but a proposal may have as reference the United States regulation on the definition of the aspects to be considered to determine “significant effect” over the environment⁴⁶⁶, aligned with the analysis of Brazilian features.

Another element that can contribute to the screening phase is the adoption of a concise document to provide the basis for the analysis and determination o level of assessment, such as the environmental assessment required in the United States⁴⁶⁷. The objective would be to have enough information of the project and proposed site to have a more precise definition of the level of environmental impact assessment needed. As the CONAMA Resolution 237/1997⁴⁶⁸ and the Normative Instruction 184/2008⁴⁶⁹ establish the environmental licensing procedures, these legal instruments would have to be amended in order to authorize the implementation of a new step among those currently required by the legislation. This would also be the case for the requirement of a document similar to the “scoping report”, which is part of South Africa's environmental licensing procedures. The scoping report would be required during the scoping phase (therefore after the screening process), to provide further information for the development of the term of reference with the objective of preventing the development of unnecessary environmental studies and to guide the studies to meet the priorities for the decision making.

466 United States of America, Code of Federal Regulations, Part 1508 (2013).

467 Ibid.

468Brazil, National Environmental Council Resolution 237 of 19 Deceber of 1997.

469 Brazil, Normative Instruction of the Brazilian Institute of Environment and renewable Natural Resources 184 of 17 July 2008.

The implementation of strategies to reduce emissions in ports will be discussed under the results of the inventories of each port. The strategies may constitute both simple and complex measures, depending on the type of source. The use of new cleaner technologies, which is one of the possibilities, may require more time to be established, as they depend on new investments. In the United States, the strategy to reduce port emissions adopted by the USEPA is based on a partnership with Port Authorities, as part of the National Clean Diesel Campaign. The measures to improve air quality at ports can be implemented through a grant fund, that comes from the Diesel Emissions Reduction Act. Grant funds may be used for clean diesel projects that use: retrofit technologies that are verified or certified by either; idle-reduction technologies for marine vessels and locomotives that are USEPA verified; and early replacement and repower with certified engine configurations. Brazil has no provisions similar to those in the United States, therefore, once the inventory for each port is concluded, the proposed measures could be classified in two types: those which need funding and higher investments and those that can be implemented in medium term as they do not require high investments. The establishment of the measures would involve discussions with agencies responsible for the port sector in Brazil, such as the Secretariat of Ports and the National Agency for Aquatic Transportation, especially in the regard of the funding of new strategies.

As regards oil pollution preparedness and response, Brazil has provisions for the use of chemical dispersants established in the CONAMA Resolution 269/2000⁴⁷⁰. As the IMO updated its guidelines for the use of these substances during the oil spill response in 2013⁴⁷¹, the CONAMA Resolution could be compared to these Guidelines and maybe be updated too under a new CONAMA Resolution, if considered appropriate.

470 Brazil, National Environmental Council Resolution 269 of 14 September of 2000.

471 Report on the Sixty-fifth Session of Marine Environment Protection Committee, London, 13 -17 May 2013.

Conclusions

4.1 Summary

Maritime shipping is an industry in expansion, being an essential element of the world trade chain. Developing countries have contributed an important share of this growth, as shown, for example, by the numbers of new Brazilian ports in the last ten years.

As a result of this expansion, increasing pressures on the marine and coastal environment is a relevant concern. The construction of new ports and the need for dredging activities may be responsible for the destruction of coastal and marine habitats, the release of contaminants into coastal waters, impacts resulting from ocean dumping, decrease of the air quality through the emissions of greenhouse gases and other types of air pollutants, incidents resulting in oil spills, impacts over marine species and marine protected areas.

Environmental licensing can be an important tool for pollution prevention and control, as it requires the assessment of potential environmental impacts prior to the development of an activity (environmental impact assessment) and, once the project is approved, establishes a set of conditions and controls in the environmental license with the objective to prevent, reduce, mitigate and compensate the environmental impacts that might result from the implementation of the activity.

Brazil has established the environmental licensing as an instrument of the National Environmental Policy in 1981. Since then, other legal instruments were enacted in order to regulate the procedures and address specific issues; the majority of these instruments are Resolutions from the National Environment Council, but laws, decrees, “portarias” and normative instructions also contain provisions regarding aspects of the environmental licensing.

As the expansion of the port system is already happening and is expected to continue, port expansions, new ports and dredging projects will be subject to environmental licensing, as they are considered activities that may cause environmental degradation and, therefore, are required to have an environmental license to be implemented. In this regard, the objective of this thesis was to evaluate international examples and opportunities to improve the Brazilian procedures, in order to align the development with the protection of the environment in the best possible way.

Under this light, international instruments and the environmental licensing systems of two countries, United States of America and Republic of South Africa, were

reviewed and then compared to the Brazilian procedures, in order to identify possible good examples to be implemented within the federal environmental licensing procedures of ports and dredging activities in Brazil.

Selected international instruments that regulate aspects relevant to or affected by ports and dredging activities, were analyzed. These included UNCLOS and other instruments addressing ocean dumping, biodiversity, oil pollution preparedness and response, sustainable development. In this regard, relevant elements that could be applied to the environmental licensing of ports and dredging were identified in UNCLOS, IMO Conventions, the biodiversity-related conventions, such as the CBD, Ramsar Convention and Convention on Migratory Species, and regional instruments. Also, sustainable development documents were analyzed as they underline the importance of implementing the tools for sustainable development and ecosystem approach into national policies.

The USA was the first country to implement the environmental impact assessment within the regulatory framework in 1969. The set of requirements for the implementation of a new port or a dredging activity may involve more than one permit and the participation of different agencies. The procedures regarding relevant aspects affected by ports and dredging were evaluated as follows: sea and ocean dumping; threatened and endangered species; environmental impact assessment; oil pollution preparedness and response; air quality; water quality and marine protected areas. The regulatory framework of the USA is extensive and provided good examples to be applied in Brazil, especially regarding the country's experience with the control of pollution of coastal and marine waters, air emissions and environmental impact assessment procedures.

As the USA, South Africa also does not have an integrated permitting system, which means that a project may require more than one environmental permit to be implemented. The history of the environmental impact assessment is recent, as the procedure became mandatory in 1989. Nevertheless, the country has today a consistent set of requirements for the environmental impact assessment procedure and is recognized as one with the most advanced legislation in terms of control and management of pollution on aquatic resources, including coastal and marine environment, within the African continent. The evaluation focused on the same aspects as that followed for the USA and showed that some of the requirements are similar to those existing in Brazil, such as the aspects for the authorization of sea and ocean

dumping and for the release of effluents into coastal and marine waters. Although some of the requirements are similar, the environmental impact procedures provided an example to be adopted in the Brazilian federal environmental licensing, in order to focus the environmental studies on the main problems and aspects to be discussed and prevent the development of unnecessary studies, therefore, providing relevant elements for the decision making process.

Brazil has an integrated environmental licensing system, which means that emissions to air, water (effluent), as well as a range of other environmental effects are considered together. Nevertheless, the Brazilian procedures were evaluated in relation to the same aspects as USA and South Africa.

Through a comparative analysis among all the above instruments, it was possible to identify opportunities to improve the Brazilian procedures, either by implementing new aspects or by enhancing the implementation of existing ones. The comparative analysis also showed the importance of the observation of UNCLOS in the environmental licensing of ports and dredging, as the Convention provides a framework for all the aspects addressed in this thesis: sea and ocean dumping; threatened and endangered species; environmental impact assessment; oil pollution preparedness and response; water quality and marine protected areas.

4.2 Evaluation/Recommendations

The proposal developed for the improvement of the federal environmental licensing of ports and dredging activities in Brazil addresses different topics related to these projects, including:

- Improvement of the practices for the reduction of the disposal of dredged material into the ocean, such as, beneficial use of the material;
- Observe the recommendations regarding operational and engineering measures to reduce the environmental disturbance during the dumping of dredged material;
- Improvement of air quality programmes and reduction of emissions in port areas;
- Enhance the inclusion of biodiversity and wetlands perspectives in the environmental impact assessment procedures;

- Improvement of the screening and scoping process of the environmental licensing procedures in order to provide effective instruments for the decision making process;
- Observation of recent documents approved in the regard of oil pollution preparedness and response;
- Improvement of the plan for the control of the pollution of marine and coastal water due to the release of effluent.

The elaboration of these proposals also considered the necessary legal requirements for their implementation, if approved. For example, some will require new legal instrument or the ammendment of existing one. Other might be adopted in short term, as they are not regulated of specific legal instruments.

4.3 Future Work

The analysis of the implementation of the proposals put forth above would need to start with those aspects that do not require the development of specific legal instrument and could be incorporated in the current procedures. In this regard, for each proposed action the implications for the implementation (economic, environment, timing in the environmental licensing procedure) must be evaluated, as well as the differences from what is done now and the focus (new projects, new and ongoing projects, etc.). This will provide enough elements for the decision of IBAMA regarding the adoption in the federal environmental licensing procedures.

In the case of the aspects that require new legal instruments, a proposal can be made with the same terms as above, but the discussions regarding the implementation will have a broader context as they must include other government institutions. Further, each legal instrument would have to follow different procedures to be enacted.

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