

**BRAZILIAN NATIONAL PROGRAMME OF ACTION FOR PROTECTION OF THE MARINE
ENVIRONMENT FROM LAND-BASED ACTIVITIES IN THE BRAZILIAN SECTION OF THE
UPPER SOUTHWEST ATLANTIC REGION**

NPA – BRAZIL

Prepared by the Ministry of the Environment of Brazil

2001



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EXECUTIVE SUMMARY

By joining the UNPE'S Global Programme of Action for the Protection of the Marine Environment from the Land-based Activities (GPA), Brazil and its Ministry of Environment, answer the international summons to protect the marine environment from land-based activities.

The Brazilian National Programme of Action's proposal contemplates the need for integrating actions and cooperation between federal, state and local government. It also acknowledges and reinforces the need to integrate coastal management and water resources management. These should be the main focus of its actions.

Concerning the basic implementation strategy, the selection of five areas as priority pilot areas according to criticality and relevance optimizes the implementation of the programme and aims at establishing the conceptual and operating basis that can be extended subsequently to other areas of the Brazilian coast impacted by land-based human activities.

Such activities (**industries, ports, urban development, tourism and farming**) have been identified as part of the scenario in the region encompassed by the programme (**Sepetiba Bay, Baixada Santista, Paranaguá Bay, Estuary of the Itajai-Açu River and the Patos-Mirim-Mangueira Lagoon System**). This was the starting point for defining the scope of the National Programme of Action.

Priority actions were determined on the basis of the main recurrent impacts (**water pollution, contamination of sediments and aquatic organisms, changes in sediment dynamics, degradation of ecosystems, loss of biodiversity and endangering of fishing stocks**), produced by the aforementioned activities in the five critical areas selected.

As for the strategy to carry out the program, the projects submitted to meet the demands of the main courses of action (reduction of pollution and contamination of sediments and aquatic organisms, protection of ecosystems, conservation of biodiversity and fishing stocks) will be given priority according to criteria that take into account the turnaround time necessary to obtain results, number of beneficiaries, replicability and sustainability. The fulfillment of these criteria will be assessed by a regional articulation panel comprising the five areas, to be created to carry out activities geared toward institutional strengthening and the attainment of common interest goals.



INTRODUCTION

Environmental issues are increasingly becoming a strategic element for public policy in Brazil. This is particularly true for the national heritage, represented by biodiversity, and the way these issues relate to the global scenario. This context is more obvious if one takes the Brazilian coastal zone, defined as the coast and the marine waters within 12 nautical miles of the shore, which stretches for over 8,500 km (over 5,200 miles) along the coast and hosts a unique diversity of ecosystems. From a socioeconomic viewpoint, this section of the Brazilian territory is the largest area in terms of impact of the expansion or large urban centers, with more than 20% of the population living in 412 municipalities. The metropolitan areas of Belém, Fortaleza, Recife, Salvador and Rio de Janeiro concentrate most of that population. The national population density is 17 inhabitants per Km², but the coastal zone registers an average of 87 inhabitants per Km². This causes a series of problems with the exploitation of and pressure on the natural resources base, particularly marine pollution by land-based sources.

This situation acquires a new dimension if one takes into account the use of the soil, the occupation of land and the exploitation of natural resources around tributary basins and estuaries. All these factors give rise to additional effluent loads from diverse sources, which make the situation more critical in the interface between the coastal zone and neighboring areas, and clearly show the confluence of activities and processes carried out in these regions.

With the commitment to promote integrated coastal management and contribute to reduce the pressure on marine environments, Brazil joined the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), during the 1995 Washington conference, where delegates defined the strategies for the implementation of individual and joint actions in signatory countries involving policies, priorities and resources for the prevention, reduction, control and/or recovery and elimination of the marine environment degradation caused by land-based activities.

The National Programme of Action for the Protection of the Marine Environment from Land-based Activities in the Brazilian Section of the Upper Southwest Atlantic Region (PNA) fits in that context with a strategy that integrates, along with the government of Argentina and Uruguay, the Regional Programme of Action for the Protection of the Marine Environment from Land-based Activities in the Upper Southwest Atlantic (PASO). The challenge is to implement an environmental management model in a region that spans from São Tomé Cape, in Rio de Janeiro state, to the north of the Valdés Peninsula, in Argentina. In Brazil, this area stretches from São Tomé Cape to Chuí, in Rio Grande do Sul state, and includes a set of units/subareas that form the conceptual and operating reference for the development of the Programme, taking into account, as main aspects, criticality criteria and relevance in terms of management (see enclosed figures):

- Sepetiba Bay, in Rio de Janeiro state;
- Baixada Santista, in São Paulo state;
- Paranaguá Bay, in Paraná state;
- Estuary of the Itajaí-Açu River, in Santa Catarina state;
- Patos-Mirim-Mangueira Lagoon System, in Rio Grande do Sul state.

The national commitments made to control pollution permanently are based on wide-scope legal and technical norms, but they also apply to the marine environment specifically. There is also a number of initiatives in the shape of bilateral and multilateral cooperation programmes.

In this context, the Brazilian National Programme of Action takes into account the coastal management background of the past, introduces the procedures and arrangements that preceded the consolidation of this document and adopts the methodological framework suggested by the GPA so as to design an ongoing and suitable programme to follow the concepts and guidelines that integrate the environment (confluence area) and the actions, which are described as follows:

- A. Identification and assessment of problems
- B. Establishment of priorities
- C. Setting management objectives for priority problems
- D. Identification, evaluation and selection of strategies and measures
- E. Criteria for evaluating the effectiveness of strategies and measures
- F. Programme support elements



BACKGROUND

The programmes and projects below related to the area encompassed by the PNA are the reference basis for the present proposal and comprise the fundamental elements for the development of the priority course of action, particularly in relation to management decentralization (environmental control and territorial organization), without losing sight of interinstitutional and interstate issues that mainly characterize sectors and activities such as tourism, ports, oil and farming.

Environmental Licensing (*Licenciamento Ambiental*) – There are two ongoing national projects being coordinated by the Ministry of the Environment. One is geared toward the strengthening of the federal licensing system and is funded by the Inter-American Development Bank (IDB). The other, provides states with the necessary structure to overcome priority deficiencies.

Integrated Coastal Zone Management Programme (*Programa Nacional de Gerenciamento Costeiro — GERCO*) – Coordinated by the Secretariat for Environmental Quality (*Secretaria de Qualidade Ambiental — SQA*) and based on the established by the National Plan for Coastal Management (*Plano Nacional de Gerenciamento Costeiro — PNGC II*), this initiative involves all government levels and the population in the area encompassed by the programme in the 17 coastal states. Highlights are the diagnoses, zonings, management plans and the Coastal Management Information System (*Sistema de Informação do Gerenciamento Costeiro — SIGERCO*). To meet the specific demands of the federal sphere identified along the implementation of this project, two subcomponents have been created: **the Integrated Management Project for the Seashore (*Projeto de Gestão Integrada da Orla Marítima*)**, whose goals are to strengthen the articulation among public sector players, devise mechanisms for integrated management and foster sustainable development in the coast, and the **Port Environment Agenda (*Agenda Ambiental Portuária*)**, which is responsible for suiting the port sector according to the country's current environmental standards by devising mechanisms to allow the monitoring and enforcement of environmental conservation regulation in all public ports and port facilities.

National Policy for Solid Wastes (*Política Nacional de Resíduos Sólidos*) – The Ministry of the Environment has developed a proposal for the Solid Waste Management Policy that entails the participation of about 30 players, under the supervision of the National Environment Council (*Conselho Nacional do Meio Ambiente — CONAMA*). This document provides the special committee established in Congress with the necessary support to expedite the approval of the bill regarding this issue. The basis for this proposal includes the political and administrative decentralization, the universalization of access to waste collection and treatment services, the joint responsibility of waste producers, waste treatment, and full product cycles, which involves reusing and recycling until final disposal.

Urban Environmental Management (*Programa de Gestão Ambiental Urbana — GAUR*) – The so-called *Brasil Joga Limpo* Programme (“Brazil Plays Clean”), part of the 2000-2003 Federal Government Action Plan (*Plano Plurianual — PPA 2000-2003*), is coordinated by the Secretariat for Environmental Quality and funded by the National Fund for the Environment (*Fundo Nacional do Meio Ambiente — FNMA*) with resources from IDB. To be selected and approved by the fund, projects should contemplate integrated management plans for solid wastes, and an executive project for sanitary landfills and remedial actions to address the problem of garbage dumps. Another part of the programme funds the building of sanitary landfills for municipalities that follow the solid waste integrated management plan. In case the municipality already has its own operating and duly licensed sanitary landfill, the National Fund for the Environment covers the treatment, recycling and selective collection of solid wastes. In addition to the Fund, the Ministry of the Environment receives financial resources from the Federal Budget according to the same aforementioned criteria, but through a different selecting process. There's yet another side of the Urban Environmental Management Programme that solely develops the environmental management capacity in urban municipalities — either through technical assistance or capacity-building — and is supported by the Government of Germany through the German Government Technical Cooperation Agency (GTZ). It



covers environmental sanitation, territorial organization and urban transportation.

National Programme for Depollution of Watersheds (*Programa Nacional de Despoluição de Bacias Hidrográficas*) – This programme is coordinated by the Ministry of the Environment's National Water Agency (*Agência Nacional de Águas — ANA*) and consists of the inflow of funds from the Federal Government in the shape of payment for treated sewage to contractors that invest in the implementation and operation of sewage treatment facilities in watersheds with a high level of water pollution.

These initiatives comprise the structural basis for the National Programme, either for the necessary integration of policies, or for the optimization of financial and operating procedures.



METHODOLOGICAL CONTEXT

Based on the understandings reached during the meeting to prepare the PASO (1998), with the participation of Brazil, Uruguay and Argentina, the coordination of the Integrated Management Project for Coastal and Marine Environments, on behalf of the Secretariat for Environmental Quality, carried out a number of relevant activities in association with state environment bodies and agencies within the PNA. This has offered the subsidies for the preparation of the current proposal:

- Identification of assessment units within priority critical areas;
- Mobilization of teams from state environment bodies and agencies to systematize the available information on the selected critical areas;
- Signature of a Memorandum of Understanding between the Ministry of the Environment and UNEP upon the approval of the Term of Reference for the strategic design of National Programme proposal and other documents.

The initial step was to systematize the information of priority critical areas, which resulted in two fundamental documents. One is the Inventory of Sources and Contaminants Affecting the Coastal Zone (*Inventário sobre as Principais Fontes de Poluição/Contaminantes da Zona Costeira*); the other is the Identifying Report of the Main Environmental Management Demands for the National Programme (*Relatório de Caracterização sobre as Principais Demandas de Gestão Ambiental para o Programa Nacional*). The latter enabled the analysis of recurring problems in the five selected areas and their respective inducing activities and the mapping of demands, which formed the basis for a workshop. This workshop analyzed and legitimated the report information, and then focused on a consolidating analysis of the types of sources that produce impact on the marine environment — water pollution, contamination of sediments and aquatic organisms; changes in sediment dynamics; degradation of ecosystems, loss of biodiversity and endangering of fishing stocks.

In view of the sources identified and difficulties found to implement a satisfactory environmental management plan in these areas, two major courses of actions were jointly defined: “Reduction of Pollution and Contamination of Sediments and Aquatic Organisms” and “Protection of Ecosystems, Conservation of Biodiversity and Fishing Stocks”. The following items indicate the procedures to be taking into account in carrying out the actions defined:

- broadening and delivering the knowledge base on the Brazilian Section of the Southwest Atlantic to all segments, taking into account environmental, socioeconomic, institutional and legal aspects;
- designing mechanisms to integrate environmental management, combining efforts at all three government levels (federal, state and local) and within the intra-regional plan;
- adjusting and creating environmental management instruments by consolidating concluded or ongoing activities;
- identifying potentialities/business opportunities compatible with sustainable development;
- diffusing information on and mechanisms of mobilization among the business sector and NGOs.



A. IDENTIFICATION AND ASSESSMENT OF PROBLEMS

The National Programme of Action area is characterized by a socioeconomic, physical and natural dynamism. It forms a large, complex mosaic of standards for land occupation and exploitation of environmental resources. In this context, environment assets gain importance with the presence of the Southern Atlantic Central Water (SACW) on the continental platform and its occasional appearance along the coast, which contributes to a surge in biological productivity. Thus, the Southern Platform Corridor is an important breeding site for neighboring regions, for it constitutes a relevant migration area, visited by 111 marine and coastal bird specimens that nest along the southeastern Brazilian coast.

From a territorial viewpoint, the region included in the PNA comprises the coast of five states and 64 municipalities, with a population of about 4.3 million. The discharge of 1 million cubic meters/day of industrial effluents and the discharge of 1.2 million cubic meters/day of domestic sewage make it one of the most critical areas in the country, according to the Macrodiagnosis of the Coastal Zone (*Macrodiagnóstico da Zona Costeira*, MMA, 1996) and the Inventory of Sources and Contaminants Affecting the Coastal Zone. Such studies served as basis for the selection of the priority areas: Sepetiba Bay, Baixada Santista, Paranaguá Bay, Estuary of the Itajaí-Açu River and the Patos-Mirim-Mangueira Lagoon System.

Notwithstanding the differences in type, area and magnitude of the impact on each of the five regions selected, these are the determining sectors/activities:

- **Industrial Activities**, as a prevailing source and significant agent causing problems such as water pollution, mobilization and contamination of sediments and aquatic organisms, and degradation of ecosystems; and **port activities**, which, through dredging operations, the transportation of hazardous materials and the occupation of neighboring marginal ecosystems, result in water pollution, contamination of sediments and aquatic organisms and dramatic reduction of important ecosystems, such as mangroves;
- **Urban development**, characterized by disorderly expansion, particularly in terms of occupation of areas lacking basic sanitation or the removal of vegetation cover. These activities will result in massive sources of solid wastes, discharge of sanitary sewage and increase in the volume of rainwater discharge, which will lead to problems such as water pollution, and mobilization and contamination of sediments. **Tourism**, another feature of urban development, may also lead to damaging processes and jeopardize its very attractions such as bathing beaches and the natural scenery;
- **Farming activities**, which, through the removal of vegetation cover and the use of agrochemicals, result in water pollution, inflow of sediments and contamination of sediments and aquatic organisms.

Besides the loss of biodiversity, such problems lead to water pollution, changes in the dynamics and contamination of sediments, contamination of aquatic organisms, degradation of ecosystems and the depletion of fishing stocks. By and large, they translate the demands both in relation to impact inducing processes and the development of institutional measures to build an integrated management system.

Despite the punctual nature of most polluting and contaminating sources, the group of processes/activities impacting the environment goes beyond the boundaries of state and local action for a number of reasons: the strong connection of some processes/activities with the Federal Government (ports, industries and oil), the dimension assumed by them due to urban concentration aspects of port, industrial and oil activities, and the intersection of variables that increases the demand for greater regional integration, such as tourism and oil spills, among others.

In view of the this situation, three issues concerning the structuring of the current proposal should be stressed. The first regards the assessment that current initiatives do not include in an orderly, systematic manner activities geared toward the management of water resources and environmental sanitation. Likewise, existing actions are not linked to territorial organization and natural resource management tools at different levels. The second is related to the need to strengthen and increase the participation of private sector and civil society players in the environmental management process. Finally, possible solutions for the problems detected — as in the case of basic sanitation — are not included in the existing funding sources.



B. ESTABLISHMENT OF PRIORITIES

The previous selection of the five priority areas helped to identify the sectors that most likely generate impact, which were then divided into categories according to type of activity: “Industries and Ports”, “Urbanization and Tourism”, and “Farming”.

As mentioned above, the assessment of common demands that permeate the aforementioned activities enabled the recurring problems to be listed under the five areas the programme comprises and indicated the need for a proactive approach and strategies to minimize the degradation of the marine environment, which are listed below and described in more detail in the chart on Annex I.

- **Water pollution, contamination of sediments and aquatic organisms** stemming from the discharge of liquid effluents, domestic and industrial sewage, and waste waters due to their high level of organic load, POP's, heavy metals and oil.
- **Changes in sediment dynamics**, including dredging, erosion processes, aggradation, rivers carrying sediments, and removal of vegetation cover.
- **Degradation of ecosystems, loss of biodiversity and endangering of fishing stocks** due to the irregular use and occupation of floodplains, grasslands, salt marshes and mangroves, as well as other coastal features.

Without dwelling on causes and consequences, managing and operating constraints on the viability of the environmental management plan, including the difficulties to coordinate priority sectors/activities, were considered complementing requirements to the previous items. Besides those constraints, there are also specific norms to regulate the licensing and controlling, which lack a systematic monitoring effort and a greater command of the local knowledge.

C. SETTING MANAGEMENT OBJECTIVES FOR PRIORITY PROBLEMS

The general goal of the National Programme of Action is to contribute to the protection of coastal and marine environments in the Brazilian section of the Upper Southwest Atlantic with a view to curbing impacting activities by means of the following measures, among others:

- developing and implementing models to meet the demands of integration between coastal management and water resources management (estuary, neighboring coastal zone and watershed), aiming at harmonizing institutional measures with environmental and territorial management instruments;
- defining in the most careful and judicious manner innovative strategies and practices compatible with environmental sustainability and regional development from the involvement of different players in impact producing processes and sectors;
- proposing and improving the application of legal instruments to protect the marine environment, as well as strengthening existing control systems;
- strengthening and widening ongoing management activities and strategies.

D. IDENTIFICATION, EVALUATION AND SELECTION OF STRATEGIES AND MEASURES

The basic premises of the National Programme of Action are to establish and strengthen institutional arrangements and design innovative management models, as well as mechanisms to integrate at national, regional and global level products and results (replicability).

I. Reduction of Pollution and Contamination of Water, Sediments and Aquatic Organisms

This course of action aims at addressing emergency issues concerning pollution control in the marine and coastal zone stemming from land-based activities by contemplating the application of products from the coastal zoning, including the legal basis. In this context, the aim is to reduce impacts and polluting loads generated by port and industrial activities and urban development bearing in mind the main types of contaminants and the demands identified in terms of integrated management. According to their own characteristics, projects should include a set of issues and/or part of the demands associated with them, such as:

- a. encouraging the adoption of new, less polluting operating practices/technologies and optimizing pollution control systems, including combined solutions for the treatment of



- effluents and waste and the definition of environmental quality standards required for the region;
- b. encouraging the development of studies on technological alternatives for basic sanitation in coastal areas based on cost reduction and economic sustainability;
 - c. supporting the development of environmental monitoring models by setting minimum requirements to be met by all states in terms of standards, sampling frequency and statistical treatment of data;
 - d. encouraging the application and/or adaptation of territorial organization instruments by setting conditions for the inclusion of the priority environmental issues in the design of master plans and other mechanisms geared toward the strategic planning of soil use;
 - e. encouraging the development of products and equipment to prevent oil spills so as to create business opportunities for technology companies operating in the accident prevention sector.

II. Protection of Ecosystems, Conservation of Biodiversity and Fishing Stocks

This course of action aims at contributing to the implementation of models to replace damaging use and occupation processes, such as certain tourism and farming activities, with economic alternatives that take into account low-impact technologies, as well as simpler methods to conserve and handle fragile ecosystems but still able to generate income and business opportunities for local populations. This action involves mechanisms for the increase of the supply of high quality, value-added products to the market, which would benefit the local community, the country and the Upper Southwest Atlantic region (including Argentina and Uruguay). In this sense, projects along this line should contemplate, either individually or jointly, the following issues:

- a. fostering regional partnerships (municipal associations and watershed committees, among others) to find alternatives for the treatment of urban solid wastes and the regulation/organization of tourism activities, the integration of products from zoning processes, municipal master plans and watershed plans;
- b. supporting studies to create low-cost, simple models to recover degraded areas to be used in establishing marine protected areas. This would be based on the identification of sites of strong pressure and high criticality in the medium and long run.
- c. developing and/or adapting technologies toward the sustainable use of ecosystems and natural resources, including market studies and technical/economic feasibility research;
- d. fostering capacity building measures among local populations to teach them new practices and trades, including the creation of associations;
- e. fostering the implementation of techniques to optimize existing cost reducing processes related to the treatment of liquid effluents, as well as technologies to treat and/or dispose of waste. This initiative should support the development of new products from the recycling of solid wastes.

E. CRITERIA FOR EVALUATING THE EFFECTIVENESS OF STRATEGIES AND MEASURES

The National Programme of Action for the Protection of the Marine Environment from Land-based Activities in the Brazilian Section of the Upper Southwest Atlantic Region will be implemented through projects, by means of the consolidation of partnerships and cooperative actions among the three government levels, the private sector and the organized civil society.

In turn, the characteristics of the National Programme entail measures to ensure its legitimacy as the starting point for strengthening partnerships and funding. Based on this premise, the first measure is its evaluation and internalization by the different federal bodies and agencies forming the Interministerial Commission for Marine Resources (*Comissão Interministerial para os Recursos do Mar — CIRMI*¹). The

¹ Ministry of Defense / Brazilian Navy
 Ministry of Foreign Relations
 Ministry of Transportation
 Ministry of Agriculture and Supply
 Ministry of Education
 Ministry of Development and Foreign Commerce
 Ministry of Mines and Energy
 Ministry of Planning, Budget and Management



commission is a forum coordinated by the Brazilian Navy that supervises nationally relevant initiatives that impact coastal and marine areas and the implementation of the National Policy for Marine Resources (*Política Nacional para os Recursos do Mar — PNRM*).

The Ministry of the Environment, through the Secretariat for Environmental Quality, and the National Coordination of the ICZM Programme, will coordinate the structure of the PNA. This organization shall be responsible for all talks necessary for the articulation activities of the programme with the other Secretariats, particularly the Water Resources Secretariat (*Secretaria de Recursos Hídricos*) and the National Water Agency (*Agência Nacional de Águas*), and other government levels involved in one way or another with the programme. Such efforts include the organization of a regional working group in charge with carrying out activities aiming at institutional strengthening in order to attain previously defined common interest goals, as follows:

- First Goal: Treating liquid effluents by using adequate discharge systems to eliminate or minimize the impacts on the receiving environment;
- Second Goal: Reducing/preventing physical alterations in/destruction of coastal, marine and estuarine habitats resulting from the growing of new urban centers or stretching of the limits of the already existing ones;
- Third Goal: Reducing/eliminating the industry- and farming-related sources of pollution that affect the coastal, marine and estuarine systems;
- Fourth Goal: Establishing adequate sites for the discharge of solid wastes, as well as management programmes focusing on the irregular discharge of sediments in the coastal and marine system.

This approach entails, on the one hand, the adoption of conditions for the funding of sustainable activities, provided that infrastructure and control issues are given priority and addressed, such as environmental sanitation, port and industry management, and monitoring, among other. On the other hand, this approach involves the design of a proactive agenda that would be the main focus of the present proposal. In both cases, the courses of action should foster projects that produce unique results and innovative models in terms of management and economic development. The idea is to rely on successful experiences within programmes and projects carried out by federal institutions involved in the PNA, particularly with respect to the integration of priority areas, the release of results that will help improve managing and regulating instruments, such as initiatives toward the modernization of the licensing system at federal and state level.

Based of these guidelines, the PNA Coordination Group will define in detail the operating and technical criteria for the approval of projects submitted to the major courses of action through elements that take into account, *inter alia*, turnaround time for products/results, number of beneficiaries, replicability and sustainability. All the projects will be monitored and assessed continuously for effectiveness.

Potential project executors shall be screened by:

- a. selecting organizations that have been successful in the implementation of projects related to the priority courses of action;
- b. analyzing the register of assessment of officially organized institutions of recognized technical competence and infrastructure to carry out the projects in a manner that suits the proposals submitted.

An Operating Handbook will be prepared to reinforce conceptual and methodological issues of the programme and to detail the courses of action, conditions and criteria for the preparation and approval of projects. This applies particularly to those organizations and institutions that may require international funding for development needs.

A Web site with specific links will begin the integration of PNA and PASO with other programmes. This will allow the delivery of information to all segments and the release of applied studies and successful experiences, particularly those of common interest to countries, such as port environment management, and tourism and urban development. Clearing Houses will also be established with the participation of private sector companies, research and technology institutes and other interested parties for the exchange of



knowledge, experiences, technologies, products and results.

F. PROGRAMME-SUPPORT ELEMENTS

A series of ongoing projects and strategies in the five priority regions will provide the Programme support elements. Most of them have already secured the necessary investments through national and international sources for projects regarding territorial organization, environmental control and port-related environmental management, institutional arrangements, capacity building, research projects, as well as the available regulating framework. Additional funds would cover the development of the programme. These measures constitute the conceptual and operating basis of the programme both in terms of attainment of goals set and fulfillment of GPA's recommendation that countries work toward the integration of their management structures. Moreover, the results will allow an assessment of the main lessons learned and the evidences related to the application of products and results in different locations.

a. Instruments for territorial organization, environmental control and infrastructure

- **Project for the Use of Coastal Management Instruments in the Municipalities of the Porto Belo Peninsula and the mouth of Camboriú and Itajaí-Açu Rivers, Santa Catarina (*Projeto para Aplicação dos Instrumentos de Gerenciamento Costeiro nos Municípios da Península de Porto Belo e Entorno da Foz dos Rios Camboriú e Itajaí-Açu*)**. Aims at promoting the development of environmental management in areas of the center and northern coast of Santa Catarina State. This should be done through the integrated application of management plans, information systems, coast management municipal plans, monitoring systems and strategies to establish and implement, in a participatory manner, guidelines for the use and occupation of the land at local level geared toward the strategic productive sectors, such as mariculture, a growing activity in the area.
- **Integrated Management of the Paraná State Coastal Zone (*Projeto Gestão Integrada da Zona Costeira do Paraná*)** – pending approval by the Second National Programme for the Environment (PNMA II) Coastal Management Component. This project contemplates the creation of an Ecological and Economic Zoning Plan and a Regulation and Management Plan to go along with a Monitoring Programme to gather elements to update instruments of land use and occupation with a view to the development of land-based activities and their consequences to estuarine and marine areas, as well as to those resource-lacking sectors indigenous to those areas, as is the case of fishing and mariculture.
- **Integrated Project for the Improvement of the Rio Grande do Sul State Licensing and Environmental Information System (*Projeto Integrado de Aprimoramento do Licenciamento e do Sistema de Informações Ambientais do Rio Grande do Sul*)** – Aims at improving the technical, legal and institutional structure of the state environmental licensing system through carrying out a pilot activity in the southernmost part of the country, affecting part of the Mirim-São Gonçalo Basin. Another goal is to improve the existing information system, by enhancing aspects such as capacity, regionalization and municipalization of environmental licensing, institutional integration, environmental control and support instruments. Actions take into consideration diverse activities already carried out in the region, giving priority to most significant forms of environmental quality control.
- **Waste Exchange of the State of Rio de Janeiro (*Programa Bolsa de Resíduos*)** – Started by the Rio de Janeiro state Government in 1982 to optimize the process of handling waste produced by state industries through recycling. This low-cost, innovative solution is self-sustainable by means of trading between companies, which offer their waste as if they were selling assets in a stock exchange, while others look for recyclables that they can use as raw material in their productive processes.
- **Brazil Plays Clean Programme (*Programa Brasil Joga Limpo*)** – This federal government initiative is one of the 365 programmes forming the 2000-2003 Federal Government Action



Plan (*Plano Plurianual — PPA 2000-2003*), the so-called *Avança Brasil*. In an innovative manner, this programme fosters projects to organize collection and final disposal, implement an environmental information system for the integrated management of waste, design legal regulation and instruments and support demonstrative projects. In terms of cost and investments, the programme is funded by the National Fund for the Environment (FNMA) with foreign resources and matching funds from states and municipalities. It is already active in four Paraná state municipalities, within the PNA umbrella. This initiative has helped to realize that the solution for problems stemming from domestic waste, an important land-based source of impact on the marine environment, requires all three government levels, the private sector, civil society organizations and the population in general to take action so as to readjust production and consumption standards.

- **Better Housing Programme (*Programa Morar Melhor*)** – Focusing on low-income families, this programme contemplates basic sanitation for municipalities with a population of 75 thousand inhabitants or less, the construction, extension or improvement of the collecting, treatment and disposal system for solid wastes and the construction of houses for families living in risky areas. The programme, funded by *Caixa Econômica Federal (CEF)*, has already benefited many municipalities, 21 of which under the PNA umbrella.

b. Institutional arrangements

- **Coastal Management Integrating Group (*Grupo de Integração do Gerenciamento Costeiro — GI-GERCO*)** – Comprising collaborators from different institutions, this group is coordinated by the Ministry of the Environment and was created to operate under the Interministerial Commission for Marine Resources (CIRM). The goal is to articulate federal actions in the coastal zone. Regional subgroups are to be created in coastal states and linked to the main group. This is a significant, innovative initiative in the sense that horizontal and vertical institutional arrangements have paved the way for the Federal Action Plan for the Coastal Zone (*Plano de Ação Federal para a Zona Costeira*), leading to four different programmes: Programme for Orderly Land Use and Occupation (*Programa de Ordenamento da Ocupação e do Uso do Solo*); Programme for the Conservation and Protection of the Natural, Historical and Cultural Heritage (*Programa de Conservação e Proteção do Patrimônio Natural, Histórico e Cultural*); Environmental Control Programme (*Programa de Controle Ambiental*); Federal Action Plan Development Support Programme (*Programa de Suporte ao Desenvolvimento do Plano*) (articulation, capacity building and information/technology).
- **São Paulo State System for Environmental Quality Management, Control and Development and Adequate Use of Natural Resources (*Sistema Estadual de Administração da Qualidade Ambiental, Controle and Desenvolvimento do Meio Ambiente and Uso Adequado dos Recursos Naturais — SEAQUA*)** – created by State Law No. 9509/97 and coordinated by the São Paulo State Environment Secretariat, this programme aims at organizing, coordinating and integrating actions by bodies and entities of the direct and indirect administration and foundations created by the public sector, with the participation of the population, to carry out environmental policies in the state. Institutional arrangements make this a significant, innovative initiative, for they favor the consolidation of environmental policies so and contribute to the development of a socially just, sustainable development culture.

c. Legal mechanisms

- **Law No. 7661** of 16 May 1988. Created the National Plan for Coastal Management (*Plano Nacional de Gerenciamento Costeiro*) as part of the National Policy for Marine Resources (*Política Nacional para os Recursos do Mar — PNRM*) and the National Policy for the Environment (*Política Nacional do Meio Ambiente — PNMA*). This law's enabling decree (pending approval) shall provide the regulation for the improvement and control of the use of the environment and the monitoring of environmental quality in the Brazilian coastal zone.
- **Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (*London Convention*)**, signed by Brazil on 26 July 1982.



- **Law No. 9966** of 28 April 2000, also known as *Oil Law*, establishes the principles to be complied with the transportation of oil and other harmful substances in Brazilian national waters.
- **Law No. 10257** of 10 July, widely known as *Estatuto da Cidade*, this law enacted on 10 July 2001 defines public order and social interest norms that regulate the use of urban properties in favor of the collective good, safety and well-being, as well as environmental balance;
- **Law No. 9636**, of 15 May 1998. Provides for the regularization, administration, emphyteusis and alienation of federal government property that affect the coastal zone;
- **Law No. 8630**, of 1993, which, among other issues, provides for the adjustment of the port sector according to the country's current environmental standards.
- **Decisions by the National Environment Council** (*Conselho Nacional do Meio Ambiente — CONAMA*). Most of these regulatory acts directly relate to land-based activities that impact the marine environment and neighboring areas. They are important managing instruments that define, for instance, basic criteria and general guidelines for the Environmental Impact Assessment (*Avaliação de Impacto Ambiental*), the classification of brackish, fresh and marine waters in the whole of the national territory according to prevailing uses, the definition of guidelines for the inventory of industrially produced and/or existing waste in the country and the review of procedures and criteria for the environmental licensing system (decentralization aspects for municipalities).

d. Additional funding sources

- **Global Environment Facility (GEF)** – A likely funding source adding US\$ 208,000.00 that will be disbursed in the initial stage of the programme to complement existing investments so as to pay for new activities and initiatives. This will be done by means of existing donating mechanisms geared toward the protection of the marine environment from land-based sources of pollution through the International Waters Focal Area according to the schedule on Annex II.
- **SEBRAE Microcredit Programme (Programa SEBRAE de Apoio ao Segmento de Microcrédito)** – Developmental political strategy geared toward poorer sections of the population to enable easier access to credit. Microcredit has been successfully used in other countries, and the Brazilian National Economic and Social Development Bank (BNDES) has been supporting institutions that offer microcredit. Also, the Brazilian Supporting Service for Small Companies and Microbusinesses (*Serviço Brasileiro de Apoio às Micro e Pequenas Empresas — SEBRAE*) shall provide for the initial capital and the resources necessary for building the capacity of microcredit institutions. Combined with initiatives that foster responsibility, self-esteem and financial self-sufficiency, this project can help with implement small businesses geared toward the sustainable use of the environment and coastal and marine resources. As an example, the activities associated with the development of sustainable tourism and aquiculture, as well as the Baleia Franca Project, which promotes environmental education through whale watching in Santa Catarina state.

e. Research and monitoring

- **Integrated System for Treating Liquid Effluents in the Southern Petrochemical Center (Sistema Integrado de Tratamento de Efluentes Líquidos do Pólo Petroquímico do Sul — SITEL)** - Treats organic and inorganic liquid effluents from petrochemical activities in southern Brazil, in the drainage basin of the Patos Lagoon. About 450 cubic meters/hour are treated, producing wastes that can be reused or safely disposed of in the soil or water. The process is collectively sustained and systematically assessed as to its ability to reduce toxicity. It has also introduced in Rio Grande do Sul state new treatment practices, such as the “residual sludge” farm.
- **Inland Sea Programme (Programa Mar de Dentro)** – An international cooperation between Rio Grande do Sul state and the Japanese agency JICA, the programme aims at socioeconomic equality for the state based on environmental conservation principles and a more balanced



relationship between the partners involved through the exchange of technology, scientific knowledge and technical capacity. The programme's socioeconomic indicators should demonstrate the results of adopting a sustainable environmental policy and the importance of establishing international partnerships to tackle local or regional environmental problems.

- **Programme for the Monitoring of the Environmental Quality at the Rio Grande Port, Rio Grande do Sul state (*Programa de Monitoramento da Qualidade Ambiental do Porto de Rio Grande – RS*)**. Assesses the impact of port-related activities carried out estuarine ecosystem. This innovative programme highlights the businesses and/or activities with the highest impacting potential is funded by the port authority, which indicates a tendency toward this sector's growing sympathy for the environmental cause. In addition, the results shall fuel decision-making and environmental licensing processes concerning current and future enterprises in other locations.
- **Research in Basic Sanitation Programme (*Programa de Pesquisa em Saneamento Básico — PROSAB*)** Combines the efforts of the Brazilian Studies and Projects Financing Agency (*Agência Financiadora de Estudos e Projetos — FINEP*), Brazilian Council for Scientific and Technological Development (*Conselho Nacional de Desenvolvimento Científico e Tecnológico — CNPq*), Coordination for the Improvement of Research in Higher Education (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior — CAPES*) and *Caixa Econômica Federal (CEF)*. It innovates by carrying out research into the improvement of technologies for water supply, waste water and solid wastes that can be easily applied, are cost-effective, and result in better living conditions for the whole of the Brazilian population, especially the poor. In operation since 1983, this programme has already released three invitations to bid and received 69 projects.

f. Capacity building and development mechanisms

- **UN's Train Sea Coast Programme** – Coordinated by the Division of Ocean Affairs and the Law of the Sea (DOALOS/UN), offers training and capacity building to decision-makers regarding the integrated management of the coastal zone and its interfaces. The Brazilian TSC unit is supported by the Interministerial Committee for Marine Resources (CIRM) and is part of a global network and has been offering regular training courses, both at the host institution, Rio Grande Federal University Foundation — *Fundação Universidade Federal do Rio Grande (FURG)*, and in other states and countries. A pioneering initiative in this type of capacity building, the Brazilian TSC has recently started developing a number of courses associated with the **National Programme for Port-related Capacity Building (*Programa Nacional de Capacitação Portuária — PNCAP*)** under the Port Environment Agenda. In turn, the agenda's goals are to gather and diffuse knowledge for the planning and taking of actions toward environmental protection and control in port activities. The target audience is environmental control bodies and managing and operating port staff. The intended field of action goes beyond the offer of different training courses and includes sector-related meetings and events as routine activities to discuss the subject.

g. Public participation mechanisms

- **Itajaí River Watershed Committee, Santa Catarina (*Comitê da Bacia Hidrográfica do Rio Itajaí, Santa Catarina*)** – Mechanism for public participation in environmental issues related to, inter alia, water pollution, mining, farming, degradation of habitats, and waste treatment, involving 47 towns located in the Itajaí River watershed and 10 municipalities located in the coastal zone of Santa Catarina state. This area is impacted by land-based activities and is to be included in the National Programme of Action (PNA).
- **São Paulo State Coastal Forum (*Colegiado Costeiro do Estado de São Paulo*)** Part of the Management System of the São Paulo State Coastal Zone Management Plan (*Sistema de Gestão do Plano Estadual de Gerenciamento Costeiro do Estado de São Paulo — PEGC*) and created by law in 1998 to draft proposals for ecological/economic zoning. Under the coordination of the



São Paulo State Environment Secretariat, working groups were established to discuss technical proposals for zoning and prepare regulation drafts for the PEGC Law. Such groups involve representatives of the state and local government and of the organized civil society, represented by unions, professional associations, environmentalists, among others. All players have the right to vote and, therefore, make their participation legitimate.



CONCLUSION AND FUTURE STEPS

Upon analyzing the basic premises laying the foundation for the Brazilian National Programme of Action, one can conclude that the main mission is to build a solid framework with initiatives that encompass both current measures and those contemplated by the Programme's courses of action. Such initiatives will be combined and should then focus on promoting the protection of the marine environment from land-based activities in order to reduce pollution and contamination of waters, sediments and aquatic organisms as well as to protect ecosystems, conserve the biodiversity and the fishing stocks.

As for the initiatives, after the Programme is internalized by members of the federal bodies and agencies under the CIRM and the national framework and the necessary operating mechanisms are built, Brazil will seek the integration of its actions into the Regional Programme of Action so as to join the regional cooperation efforts provided for by the Global Programme of Action, particularly through the implementation of a network to exchange and manage information of common interest to member countries of the PASO (Uruguay and Argentina).



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ANNEX I

| PROBLEMS SELECTED AREAS | WATER POLLUTION | CONTAMINATION OF SEDIMENTS AND AQUATIC ORGANISMS | EROSION AND AGGRADATION PROCESSES |
|--|---|--|---|
| SEPETIBA BAY | <ul style="list-style-type: none"> - Industrial effluents (discharge rate of 153,835 m³/day), containing around 3,300 Kg/day of organic load and 41 Kg/day of oil, grease and heavy metals; - Discharge of 3,000 t/day of solid wastes; - Spills of oily material from fishing/tourism vessels; - Sanitary sewage/urban wastes (discharge rate of 286,900 m³/day), with an organic load of 150,763 Kg/day; - Suspension of metals from dredging in port activities; - Tourist activities. | <ul style="list-style-type: none"> - Fluvial input of 153,835 m³/day of industrial effluents containing heavy metals (cadmium and zinc); - Resuspension of sediments, dredging/port activities; - Presence of cadmium and zinc, in high concentrations; - Presence of above standard concentrations of chromium in fish, shrimp, oysters, shellfish and crabs; - Oil spills leading to contamination of aquatic biota. | <ul style="list-style-type: none"> - Fluvial input of 1,150,000t/year of sediments generated from the urbanization of the basin and removal of vegetation cover for agricultural activities/sand removal; - Input from river transposition of around 160m³/s; - Extraction of sand in river channels, resulting in degradation and exposure of soils. |
| BAIXADA SANTISTA | <ul style="list-style-type: none"> - Sanitary sewage (discharge rate of 369,038m³/day), with an organic load of 110,712 Kg/day; - Industrial effluents (discharge rate of 1,027,857m³/day), with an organic load of 137,589 Kg/day; - Pesticide wastes from agricultural activities; - Port activities/chemical handling (detergents, oils, heavy metals); - Tourist activities (2nd home tourism). | <ul style="list-style-type: none"> - Input of heavy metals, through industrial effluents, carried to sediments (high concentrations of copper, zinc, lead and mercury); - Heavy metals and agrochemicals (BHC, endosulfan and DDT) resuspended during dredging operations; - Presence of heavy metals in marine algae, mangroves, fish, mollusks and crustaceans. | <ul style="list-style-type: none"> - Fluvial input of 1,500,000m³/year of sediments generated by urbanization and occupation, and erosive processes generated by industrial activities. |
| PARANAGUÁ BAY | <ul style="list-style-type: none"> - Sanitary sewage (discharge rate of 47,598 m³/day), with an organic load of 14,279 Kg/day; - Solid wastes (95 t/day); - Industrial organic discharges; - Discharges from port activities/chemical handling; - Agrochemical contamination from agricultural activities; - Tourist activities. | <ul style="list-style-type: none"> - Potential contamination by agrochemicals used in agricultural activities (carbofuran, aldicarb, aldrin, paraquat, copper sulfate, copper oxychloride, among others); - Heavy metals; - Oily material arising from port activities and leaks in pipelines located in the drainage basin; - Introduction of saltwater from wells. | <ul style="list-style-type: none"> - Fluvial input of sediments generated from the removal of vegetation from the extensive hillsides existing in the surrounding area for urban and agricultural occupation; - Tourist activities; - Dredging of around 1,111,706m³/year of materials. |
| ESTUARY OF THE ITAJAÍ-AÇU RIVER | <ul style="list-style-type: none"> - Industrial effluents (discharge rate of 14,675m³/day), with an organic load of 11,675 Kg/day; - Sanitary sewage (discharge rate of 76,483 m³/day), with an organic load of 22,946 Kg/day; - Removal of vegetation for agricultural occupation and urbanization; - Tourist activities; - Road construction/urbanization. | <ul style="list-style-type: none"> - Potential contamination by agrochemicals used in agricultural activities, particularly in rice culture; - Contamination arising from port activities (oily material); - Contamination of soil arising from carriage of solids in suspension and organic matter. | <ul style="list-style-type: none"> - Intense fluvial input of sediments, particularly during flood seasons, (frequent phenomenon in the area), in addition to the removal of vegetation from the extensive hillsides existing in surrounding area for urban occupation; - Deforestation for agricultural activities. |
| PATOS-MIRIM- MANGUEIRA LAGOON COMPLEX | <ul style="list-style-type: none"> - Industrial effluents (discharge rate of 14,823 m³/day), with about 27,061Kg/day of organic load; - Sanitary sewage (discharge rate of 205,968 m³/day), with an organic load of 60,954 Kg/day; - Effluents arising from irrigated rice culture; - Oily material from port activities. | <ul style="list-style-type: none"> - Heavy metals (concentrations above reference levels of mercury, lead, chromium, zinc and copper); - Industrial discharges and domestic sewage discharges; - Potential for agrochemical contamination; - Oil spills arising from port activities. | <ul style="list-style-type: none"> - Sediment input estimated at 66,114,200t/year, from erosive processes due to land occupation; |



ANNEX I (continuation)

| PROBLEMS | REDUCTION OF FLOODPLAINS, MANGROVES, GRASSLANDS AND SALT MARSHES | ENDANGERED FISHING | LOSS OF BIODIVERSITY |
|---|---|--|--|
| SELECTED AREAS | | | |
| BAÍA DE SEPETIBA | <ul style="list-style-type: none"> - Process of aggradation and sedimentation in the Bay's fluvial channels resulting from urban occupation ; - Landfills due to urban occupation, port activities and tourist activities; - Potential degradation from port discharges. | <ul style="list-style-type: none"> - Reduction of mangroves; - Aggradation of beaches causing reduction of saltwater layer and changes in the salinity of estuarine zones, resulting in the decreased presence of saltwater species. | <ul style="list-style-type: none"> - Intense growing process, submitted to strong pressures and expanding. |
| BAIXADA SANTISTA | <ul style="list-style-type: none"> - Landfills for industrial expansion, urbanization and port activities; - Potential degradation from port discharges. - Degradation from tourist activities. | <ul style="list-style-type: none"> - Reduction and degradation of mangroves. | <ul style="list-style-type: none"> - Continual process, submitted to point pressures (initially) and expanding. |
| PARANAGUÁ BAY | <ul style="list-style-type: none"> - Landfills for urban expansion and port activities; - Potential oily matter spills in mangrove areas; - Occupation of mangroves arising from urban expansion. | <ul style="list-style-type: none"> - Reduction and degradation of mangroves. | <ul style="list-style-type: none"> - Growing process, submitted to point pressures (initially) and expanding. |
| ITAJAÍ-AÇU ESTUARY | <ul style="list-style-type: none"> - Landfills for urban expansion and port activities; | <ul style="list-style-type: none"> - Reduction of ecosystems. | <ul style="list-style-type: none"> - Growing process, submitted to point pressures (initially) and expanding. |
| PATOS-MIRIM MANGUEIRAS LAGUNAR COMPLEX | <ul style="list-style-type: none"> - Port activities; - Irrigated rice culture; - Extensive ranching; - Urbanization process; - Potential oily material spills. | <ul style="list-style-type: none"> - Reduction of ecosystems. | <ul style="list-style-type: none"> - Growing process, submitted to strong pressures and expanding. |



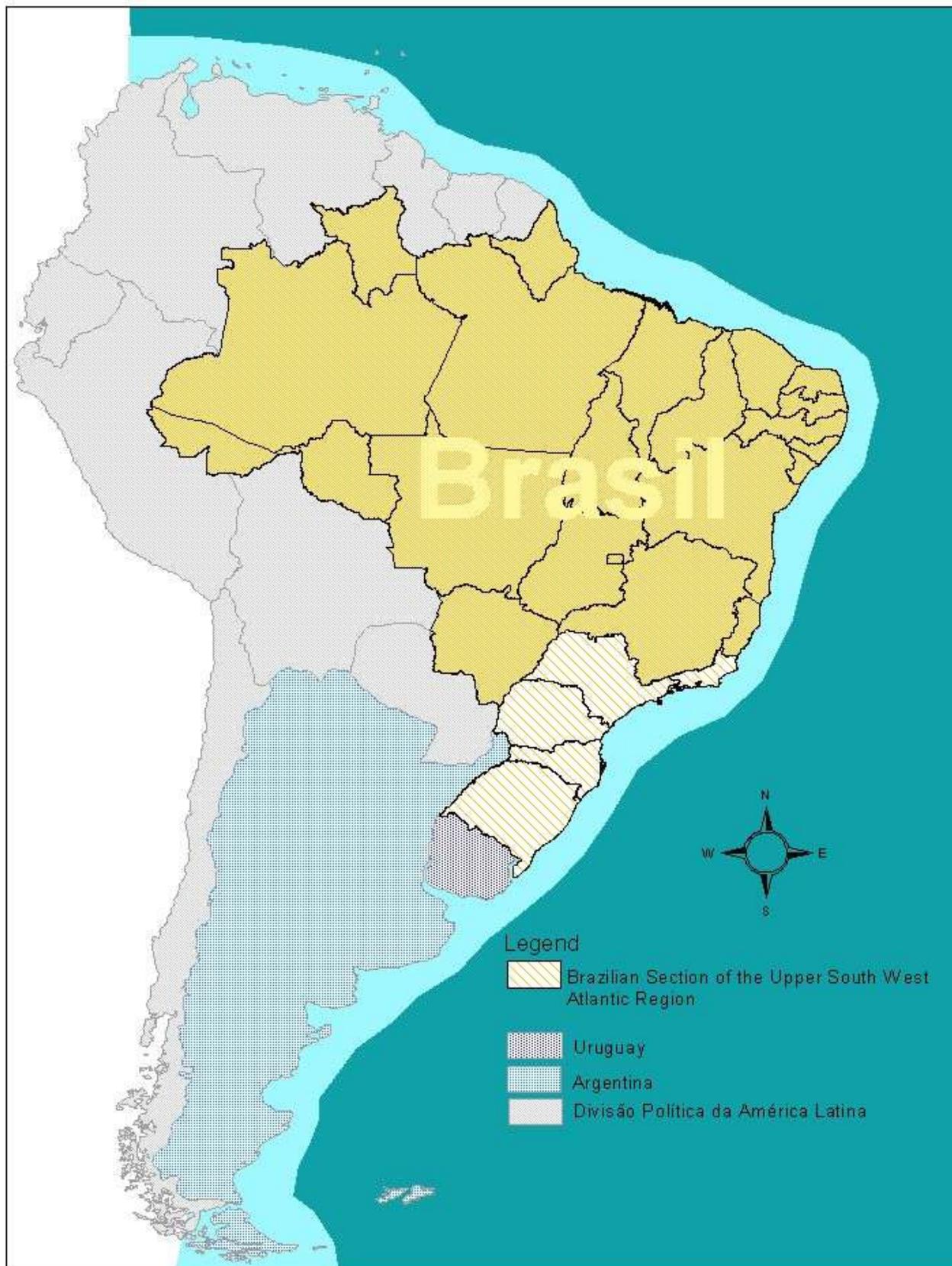
ANNEX II

| Stages (timetable) | Months | | | | | | | | | | | | | Resources amount (US\$) | |
|---|--------|----|----|----|----|----|----|----|----|----|----|----|----|-------------------------------|----------------|
| | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | | |
| Approval of the Program by CIRM | | | | | | | | | | | | | | | |
| Assessment of Program Text by UNEP | | | | | | | | | | | | | | | |
| Request for PDF by UNEP and MMA | | * | | | | | | | | | | | | | |
| Drafting of the Manual on criteria to prepare/approve projects, by the Coordination Group | | | | | | | | | | | | | | | 32,000 |
| Dissemination of the Manual to potential executors | | | | | | | | | | | | | | | 27,000 |
| Selection of proposals, by the Coordination Group | | | | | | | | | | | | | | | 68,000 |
| Improvement of selected projects, to put together final proposal | | | | | | | | | | | | | | | 81,000 |
| Submission to GEF (UNEP and MMA) | | | | | | | | | | | | | | | |
| Assessment at GEF | | | | | | | | | | | | * | | | |
| Start executing projects | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | 208,000 |

(*) The periods will be dilated, given the procedures/mechanisms for GEF assessment and approval.

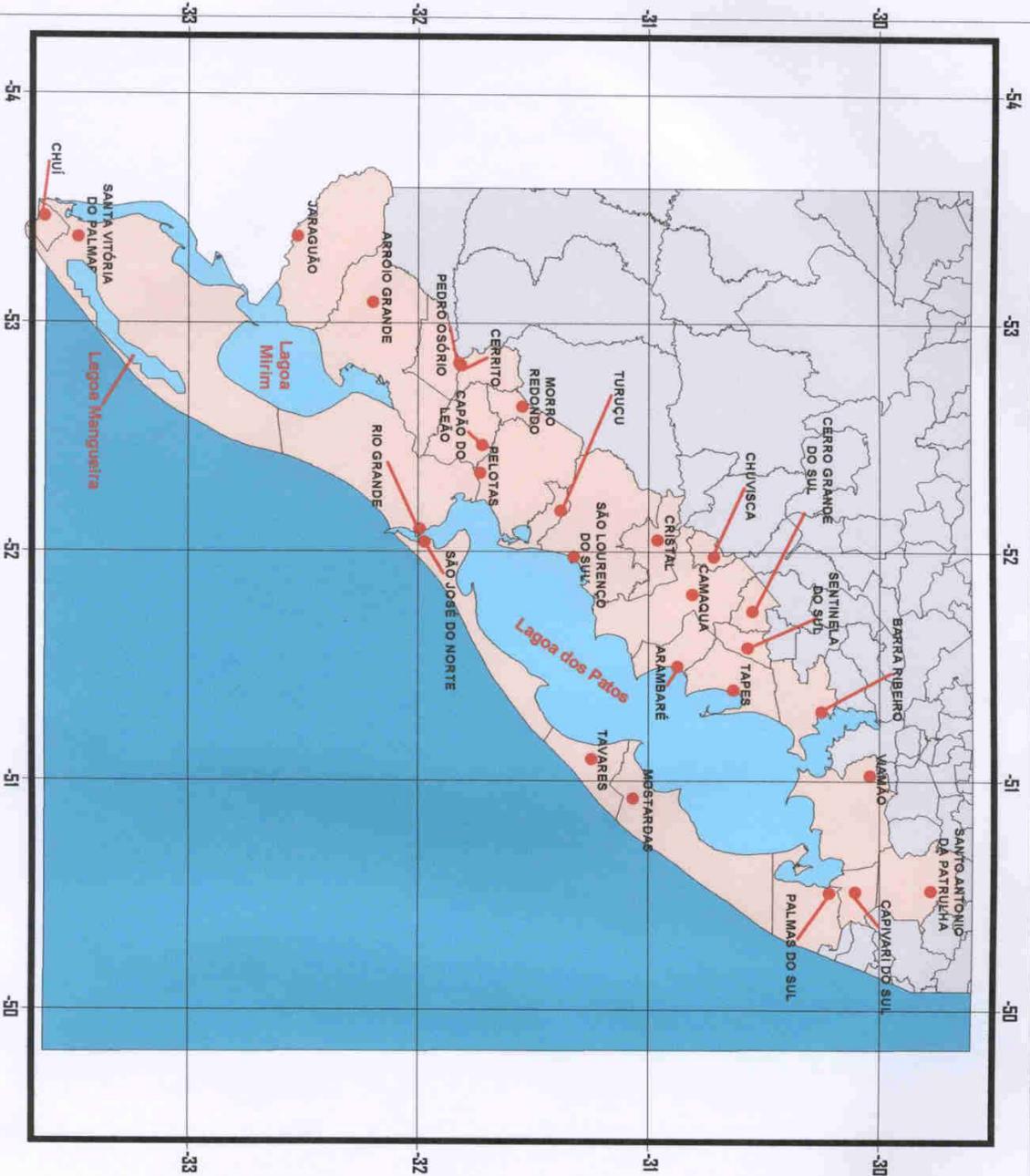


National Programme of Action for the Protection of the Marine Environment from Land-based Activities in the Brazilian Section of the Upper Southwest Atlantic Region (NPA)

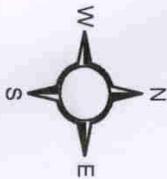




Patos - Mirim - Mangueira Lagoon System - Rio Grande do Sul State



- Legenda**
- Municipal Headquarter
 - Patos - Mirim - Mangueira Lagoon System Municipalities
 - Patos, Lagoa Mirim and Mangueira Lagoon
 - Municipal Boundaries



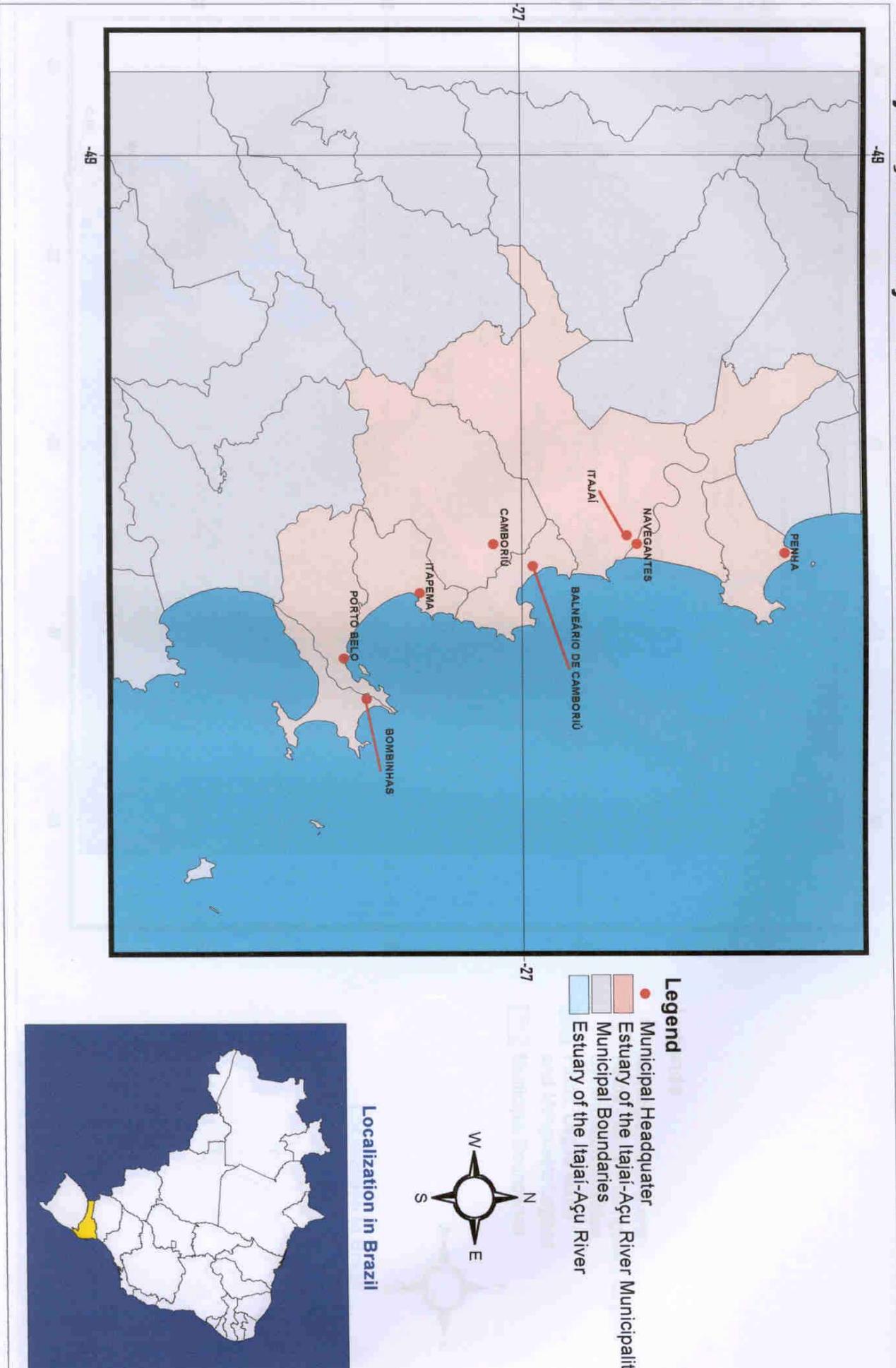
Localization in Brasil







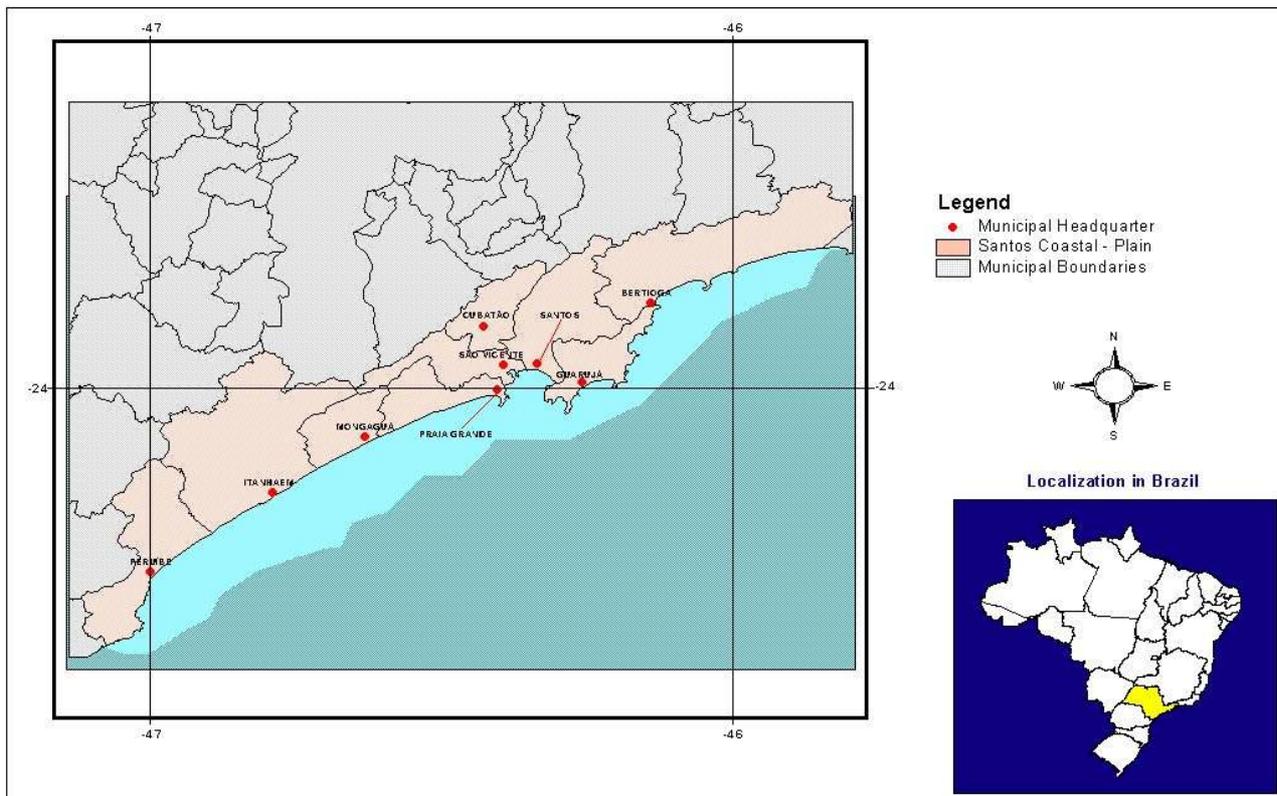
Rio Itajaí-Açu Estuary - Santa Catarina State





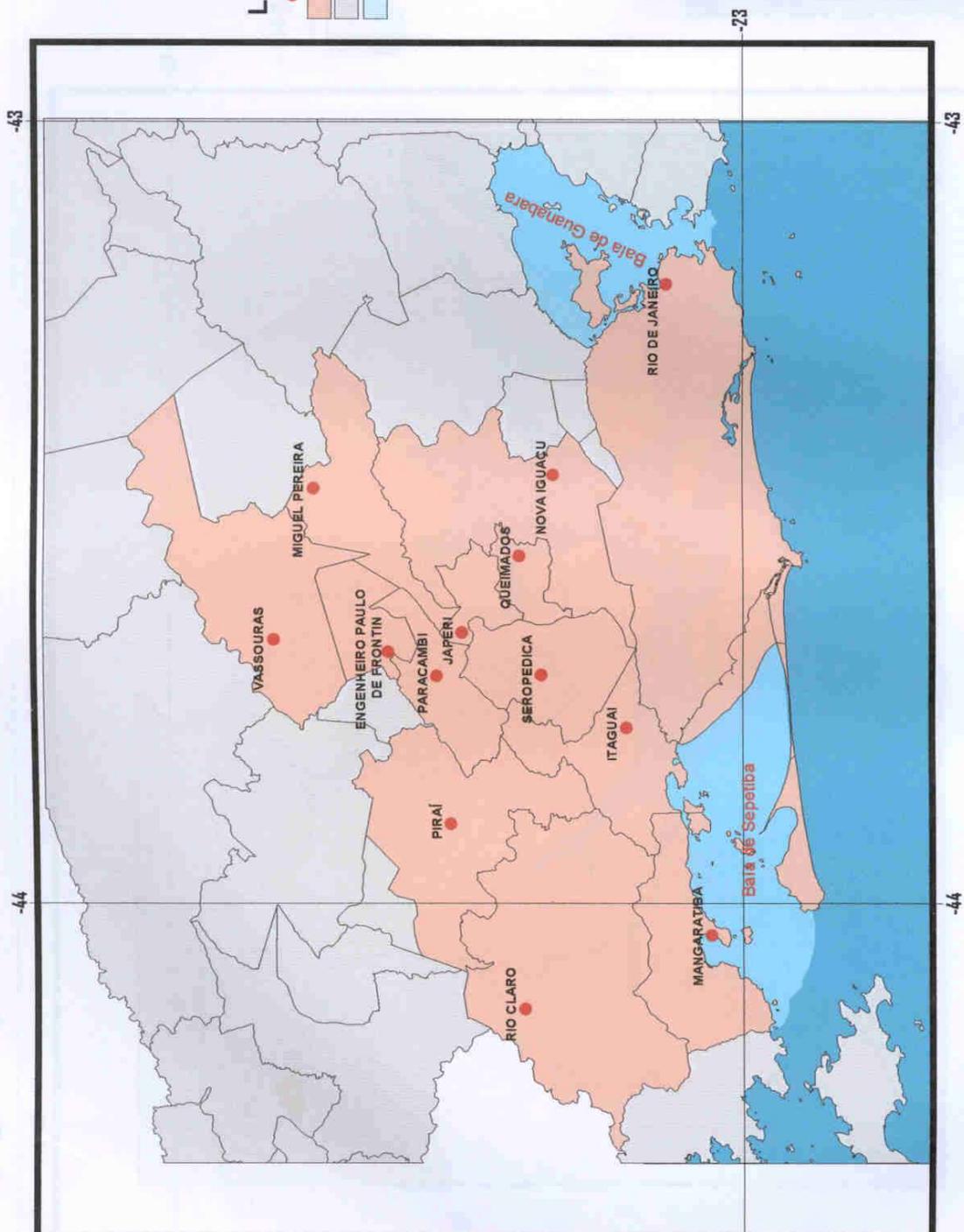


Santos Coastal Plain - São Paulo States



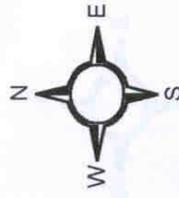


Setpetiba Bay - Rio de Janeiro State



Legend

- Municipal Headquarter
- Sepetiba Bay Municipalities
- ▭ Municipal Boundaries
- ▭ Guanabara Bay and Sepetiba Bay



Localization in Brazil



