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Promotion and Management of Marine Fisheries in Brazil

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Promotion and Management of Marine Fisheries in Brazil

Mauro Figuereido, APRENDER

Contents

Summary

This report analyzes Brazilian marine fisheries policy and law during the last four decades with a view to understand the management of marine fisheries and its relation with various stakeholders including environmental protection agencies in the coastal zone and EEZ of Brazil.

It concludes that policies and laws related to fisheries are more focused on economical than ecological concerns.

In the coastal zones fish resources are largely overexploited. This is due to the basic difference of interests between the production and environmental sector which is reflected in diverging demands on the coastal zone and a conflict between the artisanal and industrial fishing industry. In view of the constitutional qualification of the Brazilian coast as a national patrimony coastal management must find a way to accommodate economic and social aspects with more effective resource preservation. Therefore, better management tools as well as participation of stakeholders in the process of rule-making and rule-application are of fundamental importance (for coastal management). It is noted throughout the report that Brazilian society and government are making progress towards the participatory management of fisheries, although this is still a slow and complex process.

Resources in the EEZ are largely exploited by other nations. Hence, Brazil actively promotes the enlargement of its national fleet in oder to reserve the resources for its own benefit. However, care must be taken not to develop overcapacity of catch. Capacity must align with catch quantities in line with sustainable use of resources.

A case study on planning and evolution of a Marine Protected Area (MPA) in the south of the country through participative management shows that the country has great potential to improve fisheries management, find its way to sustainable development and reach its obligations according to policies and rules expressed in national legislation and important international treaties.

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List of abbreviations

AEP - *Areas de Exclusão de Pesca* (*No-take areas*)

AL – *Alagoas State*

APRENDER – *Ações para a Preservação dos Recursos Naturais e Desenvolvimento Econômico Racional (Actions for the Preservation of Natural Resources and Reasonable Economic Development)*

CIRM – *Comissão Interministerial para os Recursos do Mar (Inter-ministerial Commission for Ocean Resources*)

CF – *Constituição Federal (Federal Constitution)*

CONAMA - *Conselho Nacional do Meio Ambiente (National Environmental Council)*

CNBB – *Confederação Nacional dos Bispos do Brasil (National Conference of Bishops of Brazil)*

CONAP – *Conselho Nacional de Aqüicultura e Pesca* (*National Council of Aqu(a)culture and Fishing) (aquiculture and aquaculture are the same; the latter is more common though)*

CONEP – *Conselho Nacional de Pesca e Aqüicultura (National Council of Fishing and Aqu(a)culture)*

CNIO – *Comissão Nacional Independente sobre os Oceanos (National Independent Comission for the Ocean)*

CNP – *Confederação Nacional dos Pescadores (National Confederation of Fishermen)*

CPG/Demersais - *Comitê Consultivo Permanente de Gestão dos*

Recursos Demersais de Profundidade (Permanent Consultative Council of Management of Deep Demersal Resourses)

CPPA - *Compania de Polícia de Proteção Ambiental (State (Police for) Environmental Protection())*

DPA – *Departamento de Pesca e Aqüicultura - MAPA* (*Department of Fishing and Aqu(a)culture*)

IBAMA – *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Brazilian Institute for the Environment and Natural Resources)*

EEZ - *Exclusive Economic Zone*

FNMA - *Fundo Nacional do Meio Ambiente* (*National Fund For Environment)*

GEP - *Grupo de Estudos Permanente(Permanent Study Group)*

GI-GERCO - *Grupo de Integração do Gerenciamento Costeiro* (*Group for Integration of Coastal Management*)

ICCAT - *International Commission for the Conservation of Atlantic Tunas*

ICMS - *Imposto sobre Operações Relativas à Circulação de Mercadorias e sobre Prestações de Serviços de Transporte Interestadual e Intermunicipal e de Comunicação (Tax on the Circulation of Goods, Services, Tranport and Comunication*)

IN – *Instrução Normativa (Normative Instruction)*

IUCN - *International Union for Nature Conservation*

LEPLAC - *Plano de Levantamento da Plataforma Continental Brasileira (Plan for Surveying the Brazilian Continental Shelf*)

MAPA – *Ministério da Agricultura, Pecuária e Abastecimento* (*Ministry of Agriculture, Food Supply and Husbandry*)

MMA – *Ministério do Meio Ambiente (Ministry of the Environment*)

MONAPE – *Movimento Nacional dos Pescadores (National Fishermen's Movement)*

MPA – *Marine Protected Area*

NGO – *Non Governmental Organization*

OSCIPs - *Organizações da Sociedade Civil de Interesse Público (Civil Society Organizations in the Public Interest)*

PAF-ZC - *Plano de Ação Federal para a Zona Costeira (Federal Action Plan for the Coastal Zone)*

PETROBRAS – *Petróleo Brasileiro S/A*

PNGC – *Plano Nacional de Gerenciamento Costeiro(National Coastal Management Plan)*

PNMA – *Política Nacional do Meio Ambiente (National Environmental Policy)*

PNRM – *Politica Nacional dos Recursos do Mar (National Sea Resources Policy)*

REVIZEE - *Programa de Avaliação do Potencial Sustentável dos Recursos Vivos da Zona Econômica Exclusiva (Program for the Evaluation of the Sustainable Potential of Living Resources in the Exclusive Economic Zone)*

RGP - *Registro Geral da Pesca (General Fishing Register)*

SISNAMA – *Sistema Nacional do Meio Ambiente (National Environmental System)*

SIGERCO – *Sistema de Informação do Gerenciamento Costeiro (Coastal Management Information System)*

SEAP – *Secretaria Especial de Aqüicultura e Pesca da Presidência da República (Special Secretariat for Aqu(a)culture and Fishing)*

SNUC – *Sistema Nacional de Unidade de Conservação da Natureza (National System of Natural Conservation Units)*

SUDEPE – *Superintendência de Desenvolvimento da Pesca* (Superintendence of Fishing Development)

TCT - *Termo de Cooperação Técnica (Technical Term of Cooperation)*

UC – *Unidades de Conservação (Conservation Units)*

UN - *United Nations*

UNCED – United Nations Conference on Environment and Development

UNCLOS - *United Nations Convention on the Law of the Sea*

UNIVALI - *Universidade do Vale do Itajaí*

I. Environmental and socio-economic background

Brazil has a long coast of approximately 8,500 km with numerous islands, making a total of 3.5 million km^2 of Exclusive Economic Zone (EEZ) that goes from Cape Orange (5°N) until Chui (34°S), and which is located mostly within tropical and subtropical regions (CNIO 1998). The environmental conditions of the ocean within Brazils EEZ are determined basically by the occurrence of three currents: (1) the north-east current at the northern coast of Brazil ; (2) the Brazilian current that goes south, both resulting from the South-Equatorial current; and (3) the Malvinas' current. The dominant tropical and subtropical characteristics contribute to the nonexistence of dense fish stocks, which explains fishing effort being focused on those few species that offer conditions that support a profitable economic activity. The immediate concern, in the absence of efficient forms of management, has been the depletion and drop in the economic profitability of important fish stocks along the Brazilian coast (MMA/IBAMA 2001).

1. State of the relevant fisheries resources[1]

The statistics about fisheries in Brazil still don't reach a consistent level of effectivity because there are great difficulties to raise data due to the precarious structure, not only of the government but also of scientific institutions. The lack of a proper organization of fisheries management and the strong presence of artisanal fishing, which makes production more difficult to control, is also another variable by which rising of data is ineffective. Nevertheless, there are efforts towards the search of information and organizations of the sector that foster more effective statistics. According to the study presented by José Dias Neto and Simão Marrul Filho in July 2003, Brazil's leading fish resources are the following:

I - Camarão-Rosa da Costa Norte, *(Farfantepenaeus subtilis and Farfantepenaeus brasiliensis)*

The Camarão-Rosa da Costa Norte (Pink North Coast Shrimp) is the leading fishing resource of Brazil's northern coast. Until 1996, it was considered to be one of the only resources in which government-led management has been successful. However, there is a strong possibility that the resource is presently overfished.

II - Piramutaba *(Brachyplatystoma vaillantii)*

Piramutaba are mainly captured at the mouth, but also in the main channel, of the Amazon River. Production in recent years has been above 20,000 t. The species is considered to be in a recovery phase from excessive fishing.

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[1] All Information below were taken from the document presented to the Interministerial working group created to define the Finance Program of the Fleet for Oceanic Fisheries and Construction or Renovation and Modernization Coastal Fleet (Pro Fleet) – Federal Decree from 13 of June of 2003. www.ibama.gov.br Visited 28 March, 2007. J.Dias Neto and S.Marrul Filho'*Sintese da Situação da Pesca Extrativa Marinha no Brasil'* 1: IBAMA/DIFAP-BSB 2: SBF/MMA representatives of Ministry of Environment (MMA) in the Group. July 2003. www.ibama.gov.br. Visited 28 March, 2007

III - Lobsters, *(Panulirus argus and Panulirus laevicauda)*

Lobsters are the most important seafood resource in the northeastern region. The two species are found in the Atlantic from the southern U.S. coast to the southeastern part of Brazil. In certain areas the species have been dangerously overfished, which resulted in unstable catches and a high degree of uncertainty concerning the sustainability of resources.

IV - Pargo *(Lutjanus purpureus)*

Historically, the Pargo is an important fishing resource for the Northeast and, recently, for the North as well. The species is mainly found on ocean banks from the Brazilian border with Guyana to Rio de Janeiro. After a collapse from 1988-1990, with a period of significant recovery from 1991-1999, the production of Pargo declined in 2000-2001. The catch in recent years has been influenced by two factors: the recuperation of the resources in overfished areas and the expansion of the total catch area . Nevertheless, the increased number of young individuals in the catches is a concern for specialists.

V - Caranguejo-uça, *(Ucides cordatus)*

The Uça crab is one of the main components of the mangrove swamp fauna and is found along the Brazilian coast from Oiapoque, Amapá to Laguna, Santa Catarina. The states of Maranhão and Para have the most extensive areas of mangrove swamp ecosystems. Both states contribute to nearly 50% of the total controlled catch of the Uça crab in the entire Brazilian north and northeast in recent years, with catches varying from 10,000 t – 12,000 t.

VI - Sardinha-verdadeira, *(Sardinella brasiliensis)*

The Sardinha-verdadeira is one main pillar of industrial fishing in Southeastern and Southern Brazil from 22°- 29°S. Currently, there is a crisis-level decline in the catch of this species.

VII - Other Fish Species of Southeastern and Southern Brazil: Corvina *(Micropogonias furnieri)****, Castanha*** *(Umbrina canosai)****, Pescada Olhuda*** *(Cynoscion guatucupa, C. striatus)****, Pescadinha Real*** *(Macrodon ancylodon)****.***

These are important fish species caught with dragnets or drift nets in the coastal region. According to the Grupo de Estudos Permanente (GEP)[2] , these resources are fished to their limit or have even been over-fished since 1984.

VIII - Camarão-rosa from the south-southeast, (*Farfantepenaeus brasiliensis and F. paulensis)*

The Camarão Rosa harvest is dominated by artisanal fishing. The record catch was recorded in 1972 when it reached 16,629 t. By 1994, the catch fell to 2,072 t. The total fishing of Camarão Rosa from the Southeast-South in 2001 was only 1,166 t, the lowest recorded catch to date. The situation of this resource is considered critical.

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[2] IBAMA Permanent Study Groups (Grupo de Estudos Permanentes – GEP) are groups created by IBAMA with the objective of research and update the ecological and socialeconomic aspects of fishing resources.

IX - Camarão-sete-barbas, Seven-whisker shrimp, (*Xiphopenaeus kroyeri*)

Camarão-sete-barbas (Seven-whisker shrimp) is caught in the southeast and south, from Espírito Santo to Santa Catarina, by industrial, Artisanal or small-scale fishing.

Production in 1999 was only 4,116 t, the lowest in the past 30 years. In the past two years, there has been a slight recovery. The situation of this resource is poor.

X - Tuna and related fish

Tuna fishing in Brazil is one of the most complex activities in the sector because of the variety of methods used and the quantity of species involved. It is practiced along the entire coast. Most of the important tuna species found throughout the Southern Atlantic are being fished to their limits according to ICCAT[3], with exception of the bonito-listrado *(Katsuwonus pelamis)*, while other species are suffering from overfishing.

2. Overview of multiple demands on the coastal and exclusive economic zones

a) Coastal Zone

Currently, nearly one fourth of the Brazilian population lives in the coastal zone, encompassing approximately 42 million inhabitants that are distributed over 324,000 km^2. Both estuaries, as well as the shorelines, are areas of strong attraction for productive activities.[4]

There are many economic activities in the coastal zone. It is important to remember that Brazil was discovered from the coast and the first economic activity was the logging of the Pau-Brazil tree, *Caesalpinia echinata*, from the Atlantic Forest, which is now a species threatened with extinction.

Lumbering activity was once intense along the Brazilian coast, which contributed considerably to the degradation of the Atlantic Forest, which today covers only 7% of its original area. Exploitation of the Atlantic Forest and its associated ecosystems continues, although to a lesser degree due to environmental legislation and a general awareness throughout Brazilian society. Nonetheless, there is still much to be done to contain forest degradation. The resulting situation is not only due to forestry, but also to other activities in the coastal zone that contribute to the deforestation that began even before European settlement, though certainly accelerated after 1500.

Tourism is an important economic activity that is accompanied by the growth of beach communities, the hotel sector, and vacation homes.

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3 International Commission for the Conservation of Atlantic Tunas (Comissão Internacional para Conservação do Atum do Atlântico)

4 Text of the Federal Action Plan for the Brazilian Coastal Zone instituted by Resolution CIRM n° 07/2005.

Real estate speculation is increasing, and most coastal cities do not have a satisfactory urban planning which causes poor land use and contributes to the degradation of land and marine ecosystems. That, in return, directly affects the quality of life in inhabited areas.

Regions with low demographic density on the Brazilian coast, which are historically locations with traditional, semi-isolated communities, have in recent decades been incorporated into the market economy, which is principally driven by tourism and vacation activities. Real estate speculation is causing an increased dislocation of the populations that traditionally depended on fishing, agriculture and extractive activities. It has also often led to the degradation and destruction of naturally sensitive areas in the coastal region.[5]

Mining activities that serve the civil construction industry have become a serious problem that affects ecosystems in the coastal zone. In addition to destruction of the Atlantic Forest, mining for stone, gravel, clay and sand has had an intense impact on the landscape of the Brazilian coast.

Coal mining is another problem in the coastal zone. In some locations in southern Brazil, coal mining is destroying fresh water supplies. Coal is used principally in electrical generators that are highly polluting and thus have a negative impact on the quality of life for adjacent communities.

The petroleum industry has also had a strong impact on the coastal zone. The use of the sea to transport petroleum in pipelines or tankers has caused countless accidents in the coastal region. Despite efforts by the industry to prevent and contain these accidents, they are extremely harmful to the ecosystems and the economy in the regions where they are found, essentially affecting artisanal fishing which is severely curtailed by the pollution.

In addition, the installation and operation of the oil platforms and pipelines, shipping traffic, and land installations of the petroleum industry, interfere directly with the coastal zone, causing the growth of cities and modifying social economic activities of the local populations.[6]

A variety of industrial activities are found in the coastal zone including the chemical, pharmaceutical, metallurgy, machinery, agro-industrial, textile, shoe, paper, printing, semiconductor, software and other sectors. Transportation services and facilities are also growing in demand in the coastal zone. Ports, roads and airports are expanded, modernized and restored to serve the needs of commerce, industry and society in general.

Aquaculture, and especially shrimp raising, is a growing activity in Brazil's coastal zone. Such activities, conducted without proper planning, have led to considerable conflicts due to the strong environmental impact since these activities are often undertaken in areas of environmental protection. In only five years of activity, shrimp raising, which is concentrated in the Brazilian northeast and in Santa Catarina State, has contributed more

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5 See Federal Action Plan for the Brazilian Coastal Zone – instituted by Resolution CIRM n° 07/2005. http://www.mma.gov.br/estruturas/sqa/_arquivos/pafzc_out2005.pdf Visit in 24/04/2007

6 ibid.

than US$ 155 million to Brazil's balance of trade surplus. With growth rates of 50% per year, shrimp farming creates conflicts with other sectors, particularly with traditional fishing communities in the coastal region. This is due to the occupation of the areas determined by law to be protected areas, as well as the release of effluents without proper treatment. Shrimp farming itself suffers from industrial and urban pollution that is also caused by the lack of integrated planning in the coastal zone.[7]

Fishing is an activity of considerable social and economic importance in the coastal zone. In addition to its social and economic importance, the cultural role is also significant because in many coastal communities, culture is linked to fishing and its relationship with the sea.

There are cities in which the economic activity of a large portion of the population is linked to the sea which is principally fishing. Of course, this is no longer the rule in the coastal region due to the growth of the other economic sectors mentioned above, although fishing still contributes considerably to the socio-economic profile of inhabitants at the Brazilian coast.

In the municipality of Governador Celso Ramos in Santa Catarina for example, fishing is the most important economic activity as described below:

> "...The greatest concentration of fishermen is located in Governador Celso Ramos, which is the only municipality in Santa Catarina with two fishing colonies. Nearly five thousand people and 800 boats are directly linked to this activity which is the principal element in the municipal economy – indirectly involving 90% of its population of 11,000 residents. Like Governador Celso Ramos, the fishermen of Bombinhas the second largest colony, depend on the waters that surround the Reserve for their sustenance."[8]

Geo Brasil – *Relatório Oficial do Brasil sobre Recursos Pesqueiros na Rio + 10* [The Official Report of Brazil About Fish Resources at Rio + 10] – estimates that fishing activity in the country is responsible for the generation of 800,000 jobs, and that there are nearly 300 companies related to fishing and processing. Nevertheless, as the text states, fishing activity does not have considerable importance in the national social-economic context. However, it is considered as a source of employment and food for that portion of the population that lives along the coast and rivers and thus it has regional importance. The Federal Action Plan for the Coastal Zone emphatically affirms that the social economic importance of the activity is uncontestable, not only as a supplier of animal protein for human consumption, but also due to the number of jobs it generates and because nearly 4 million people depend directly or indirectly on the sector.

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7 See Federal Action Plan for the Brazilian Coastal Zone - instituted by Resolution CIRM n° 07/2005 http://www.mma.gov.br/estruturas/sqa/_arquivos/pafzc_out2005.pdf Accessed on 24/04/07.

8 O Farol – Bulletin of the Arvoredo Biology Marine Reserve. Nº01 – ano 1 APRENDER Entidade Ecológica - Ibama, Boletim Informativo da Reserva Biológica Marinha do Arvoredo. TN. Colony is the term used in Brazil for officially recognized professional associations of independent fishermen.

b) EEZ

The economic activities in the Brazilian EEZ go beyond fishing activities. Among them we highlight petroleum exploration and ship traffic.

In relation to the exploration of petroleum from platforms located in the EEZ, and therefore in the Amazonia Azul (Blue Amazon), Brazil extracts approximately 80% of its petroleum production which accounts for nearly 1.4 million barrels per day.[9] PETROBRAS[10] is highly active in the EEZ and is assisting the country in the project to expand its territory. The company was one of those responsible for the LEPLAC project. "The project was essential for establishing the basis for Brazil's solicitation to the United Nations for the increase of its territory in the sea. "To legalize this space of "wet territory", Brazil was required to undertake a detailed scientific mapping of the continental platform. The 17-year process was conducted by the Navy from 1987 – 2004. In this period, US$ 40 million were invested – half of the cost paid by Petrobrás – in the so-called Plano de Levantamento da Plataforma Continental Brasileira –Leplac- (Plan for Surveying the Brazilian Continental Shelf), with Navy ships traveling 230 thousand kilometers in the region, corresponding to five and a half trips around the globe. In sum, the data collected by the Navy and PETROBRAScontained all of Brazils current information on the continental shelf which was presented to the United Nations (UN).[11] The increase of Brazil's territorial extension has direct influence on petroleum exploration activities. "One immediate effect of the marking of the Brazilian continental platform in the field of the petroleum industry will be that the blocks placed for auction by the National Petroleum Agency, which are now restricted to 200 miles, can be extended to the outer limit of the platform."

Ship traffic in the EEZ is very important for the country's economy. Nearly 95% of Brazil's foreign commerce (imports and exports) circulates through Brazilian seas. However, the current situation of the Merchant Marine is that the large majority of goods that the country imports and exports are transported by ships with other flags.[12]

3. Structure of the Fisheries Sector

The structure of the productive sector in Brazil reflects, in general terms, the structure of Brazilian society. On the one hand, capital invested in fishing activities seeks profit. On the other hand, a worker is responsible for sustaining his family. Fishing is usually one of his few alternatives for survival.

Marine fishing in Brazil is composed of artisanal or small-scale fishing and industrial activities. There is also scientific or recreational fishing, but this is beyond scopeof this work.

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9 http://www.brasilpnuma.org.br/pordentro/artigos_012.htm visit in 24/04/2007

10 Petróleo Brasileiro S/A – The Petroleum Company of Brazil

11 http://www.vermelho.org.br/base.asp?texto=17436 visited on May 8, 2007

12 http://www.brasilpnuma.org.br/pordentro/artigos_012.htm visited on April 24, 2007

Instructional Norm Num. 3 of May 12, 2004 deals with the operation of the General Fishing Register. Article 4 Item I of the Norm offers the definition by the Special Secretariat for Aquaculture and Fishing (SEAP) of the professional fisherman: an individual, 18 years or older, in complete control of his civil capacity, for whom fishing is his profession or principal way of life, whether in artisanal or industrial fishing.

The Coastal Zone encompasses both, industrial and artisanal fishing activities. In the EEZ occurs only ocean industrial fishing. The report "Brazil and the Sea in the 21st century" presents a definition of artisanal fishing, coastal industrial fishing and ocean industrial fishing:

> Artisanal Fishing (Pesca Artesanal): encompasses the segment with commercial objectives, but without employment ties with the fish processing or commercialization industry. It uses small- or medium-size boats, with or without motors, in areas of operation close to the coast. These boats are generally made of wood and the capture technology is capable of producing small- or medium-size catches. It constitutes the largest part of the national fishing fleet and contributes up to 60% of the total catch.
>
> Coastal Industrial Fishing (Pesca Industrial Costeira): conducted by boats with greater autonomy, capable of operating in areas far from the coast, effecting the exploitation of fishing resources that are relatively concentrated in geographic areas. These boats have mechanized capture equipment, are propelled by high-powered diesel engines and have electronic equipment for navigation and detection of fish schools. The hulls may be of steel or wood.[13]
>
> Industrial Ocean Fishing (Pesca Industrial Oceanica): industrial fishing is incipient in Brazil and involves boats suitable to operate throughout the EEZ, including the most distant ocean regions, even in other countries. The fleet has great autonomy, with on-board industrialization, use of sophisticated equipment for navigation and detection of fish schools, and is extensively mechanized. Nearly all boats are leased from foreign countries.

Artisanal fishing is predominantly an informal activity as Diegues explains:

> "Artisanal or small-scale fishing is based on a labor process centered on the family unit or on a group of neighbors. The fisherman is not always the owner of the means of production (boat, nets, hooks, etc). The fisherman often uses another owner´s boat and equipment and shares the catch with the owner. The owner of the boat is, usually, also a fisherman who participates with the others in the entire fishing task."[14]

Art. 4 I of IN – SEAP N° 3 de 2004 defines an artisanal fishing professional in a similar manner as Diegues which is one who, with his own means of production, exercises his

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[13] Report '*Brasil e o Mar no Século XXI*' p.119

[14] Diegues, apud Dias Neto

activity autonomously, individually or as a family business, or even with the occasional help of other partners, without formal employment ties.

Artisanal fishing is practiced by local communities in Brazil's coastal region. These populations are not indigenous and descend mainly from European settlers. In general they have little schooling and a very low average income. The fisherman spends many days at sea, while the woman cares for the family and the household.

Upon analysing the structure of the corporate-industrial fishing sector, Diegues reports that it is divided into two subcategories: a) one developed by fishing outfitters and b) the corporate or industrial sector. His description is presented below:

> "The former is characterized by the fact that the owners of the boats and of the fishing equipment – the outfitters – do not directly participate in the production process, a function delegated to the captain of the boat. The boats are bigger and have a larger range of operation than those used by the small-scale fishermen. They also require a certain division of labor among the crew: a captain, cook, freezer operator, machinist, fisherman, etc. It also has, in addition to the propulsion motors, machinery that requires formal training for certain functions which, however, does not completely substitute, the know-how of the fishermen, or of the captain, who employs them in the same way as the small-scale fishermen, the social group from which they usually emerge. The labor, as in small-scale fishing, is paid by an apportionment system, even if for some functions there may be complementary salaries."

The second category of the corporate/industrial fishing sector is defined by Diegues:

> "In industrial fishing, the company is the owner of the boats and the fishing equipment. It is organized in various sectors, and in some cases, the catching, processing and sale is vertically integrated. The boats are highly mechanized not only for propulsion, but also to undertake the fishing tasks such as casting and retrieving the nets, processing the fish on board (in some cases), etc. Electronic equipment is also found on board to locate schools, assist in navigation, etc."

The definition is better understood within the Instructional Norm – SEAP N° 3 May 12 2004 Art. 4°III and V. SEAP defines an fish outfitter as being the individual or corporation who, in his name or under his responsibility, offers for use one or more fishing boats, with a minimum gross capacity of 10 tons. Industrial fishing is defined as a corporation that directly or indirectly [15]practices the activities of catching, extraction, collection conservation, processing and industrialization of live animals or vegetables that are aquatic or for which water is the most frequented habitat.

The most important point to note is that outfitters only offer the boat while industry is the whole process of production.

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[15] Instuctional Norm – SEAP N° 3 May 12 2004 Art. 4°III

The professional fisherman is defined as one who, with formal employment ties, exercises related activities such as the catching, collection or extraction of fishing resources in fishing boats owned by individuals or companies registered in the Registro Geral da Pesca (RGP)[16] within the corresponding category.

It is thus clear that the productive sector is composed of distinct categories. Each fishing category has its own structure and *modus operandi*. This division of the productive sector directly affects the form of political organization, revealing the clear separation between rich and poor, capital and labor. In this sense, Marrul Filho explains:

> "Both fishermen as well as fishing companies, or outfitters, are distinguished by the technology of equipment that they use, by the environment or resource that they exploit, by the ownership or not of the boats, if they are small-scale fishermen, or if they participate in industrial fishing, among other differences. In this way, it is logical for there to be different and often conflicting objectives, interests and visions, and for them to dispute, each from their own perspectives, the resources that they exploit."[17]

Diegues also maintains that the dynamic of capital leads not only to the exploitation of workers at sea, but also to the disrespect of the laws that regulate the metabolism of nature.[18]

4. The organisation of the fishermen

Fishermen in Brazil are organized through colonias ("colonies") of fishermen and in unions. The colonies are associations of fishermen that have the mission to represent the fishermen before government and society and were created after 1919, with the Mission of José Bonifácio (Dias Neto *apud* Villar, 1945). Although the colonies are theoretically meant to be representative entities for fishermen, they are often linked to the dominant political party in the municipality, as Dias Neto noted:

> "It is also quite common for the presidency of the colony to be exercised by individuals who are not fishermen and who are linked to local politicians. An example is the case of the Colony of Fishermen of Coqueiral (AL)[19], the control of which was exercised by people who belong to the local elite and not by the fishermen. These non-fishermen were often elected for the Directory because in the entire community of fishermen they were the only ones to have command of "reading and writing". By means of this mechanism, it is not uncommon for the brokers or merchants to control the fishermen's association. To the degree that the

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16 Registro Geral da Pesca (General Fishing Register) is established by Decree Law no 221/67 and regulated by Instructional Norm – SEAP N° 3 May 12 2004.

17 Marrul Filho; Simão – Crise e Sustentabilidade no Uso dos Recursos Pesqueiros

18 Diegues *apud* Schiavone Cardoso; Eduardo – Geografia e Pesca: Aportes para um Modelo de Gestão. 2001.

19 Alagoas State.

colonies do not represent the interests of the fishermen, their participation is, in general, reduced, although it is compulsory" (Diegues, op. cit.).

In reality, each colony has its own special characteristics. Depending on the work, knowledge, and culture of the president and his associates, the relationship of the fishermen to the colony varies. In some, the associates only appear to solicit the few social benefits that they are given by governments and for the fishermen who are linked to the colonies. In more organized colonies, there are partnerships with non-governmental organizations (NGOs) and/or the government to help train the fishermen with lessons that include citizenship, environmental issues, and training in computer use. To summarize, some colonies provide representation and others do not.

The fishing colonies in a given state constitute the State Federation, while the individual federations combined form the National Confederation of Fishermen (CNP). This representation system was strongly linked to the government administration given that until the mid 1980's, the position of the President of the Confederation, according to its own by-laws, was named by the Ministry of Agriculture.[20]

In addition to the colonies, the fishermen are organized in movements such as the National Fishermen's Movement (Monape) and the Fishermen's Pastoral, an agency linked to the National Conference of Bishops of Brazil (CNBB). The latter two are considered more advanced than the system that culminates in the Confederation. However, they are more present in the North and Northeast and confront the resistance of the leaders of the more traditional system which is representated in all states[21]. Although they are more common in the North and Northeast, Monape and the Fishermen's Pastoral have representation in the National Council of Fishing and Aquaculture.

A third structure of organization is the union. However, unions appear to be disfavored by the fishermen. Many of them are members and do pay union dues, but do not participate because they believe that it is controlled by middlemen.[22]

With this excess of representative entities for fishermen, it is difficult to find a common perspective in the sector. This dilutes efforts by fishermen to strengthen themselves as a professional class.

The sector of business leaders linked to industrial fishing is organized into unions such as the Union of Fishing Companies of Itajai, and in councils such as the National Council of Fishing and Aquaculture, an entity with representation on the National Council of Aquaculture and Fishing.[23]

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20 Dias Neto, p 148

21 ibid p. 149

22 ibid p.149

23 The National Council of Fishing and Aquiculture (Conepe) is a private agency while the National Council of Aquiculture and Fishing (Conape) is linked to the Special Secretariat of Aquiculture and Fishing, a representative council that combines the country's principal actors in the sector.

5. Political perception of basic fisheries issues

The exploitation of fishing resources in Brazil was stimulated in the 1960's with the expansion of the legal, economic and tax structure to provide incentives to the fishing industry. At that time, fishing resources were only considered from an economic perspective, which had negative consequences that can be noticed until today. The lack of sustained management of fishing activities and of a proper structure of the sector has affected the stocks in such a way that there is now a grave crisis in the sector as demonstrated by Dias Neto and Marrul Filho:

> "The attempt to modernize fishing, initiated at the end of the 1960's and which extended until the beginning of the 1980's, [is] linked to the current economic model, which concentrated capital, encouraged exports, was over-scaled, technologically intensive and ecologically predatory. Government capital via tax and financing incentives had a large and important role in this process. The application of this model to the fishing sector in Brazil has caused serious problems related to the sustainability of exploited resources."[24]

The effort of the Brazilian government to expand fishing activities was focused on the industrial sector. This new and modern fleet began to act aggressively in the coastal zone, a preponderant factor in the degradation of the ecosystems and the consequent depletion of fish stocks.

There is a strong presence of artisanal fishing in the coastal zone in particular. This is due to the size and quality of the boats, which are not able to navigate beyond the coastal region. Nevertheless, industrial fishing boats are also present, causing considerable conflict between artisanal and industrial fishermen. This divides the fishermen and weakens their representation. The conflict generated by the presence of industrial fishing in the coastal zone was highlighted in the report Geo Brasil 2002 - O Estado dos Recursos Pesqueiros: Pesca Extrativa e Aqüicultura:

> "It is important to highlight the element of conflict and competition between artisanal and industrial fishing. In these cases, the government has historically positioned itself in the conflict in a manner clearly favorable to the capitalist business leaders (...). The government, through induced strategies, [provoked] an increase in the concentration of capital by investing heavily in the large companies. It also ignored the wealth and complexity of the endogenous local organizational forms of small production. It considered the dual interests – ancient versus modern – as independent spheres of activities and considered the small fisherman as a reactionary individual, uncultured and predatory, incapable of assimilating technological standards aspired to by the Government and the industrial bourgeoisie."[25]

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[24] J.Dias Neto and S.Marrul Filho'*Sintese da Situação da Pesca Extrativa Marinha no Brasil'* 1: IBAMA/DIFAP-BSB 2: SBF/MMA July 2003. www.ibama.gov.br

[25] IBAMA; "*Perspectivas do Meio Ambiente no Brasil*"; Report - Geo Brasil 2002

II. The legal regime governing fisheries

1. Legislation and institutions in relation to coastal and marine management

Brazilian law had a fishing code instituted at the time of the military dictatorship, the Decree Law nº 221 of 1967. The so-called Fishing Code remained in force for a long time although most of its elements were subsequently altered by the approval of new norms. The Code deals with the protection and stimulation of fishing and other measures. Its character of stimulating fishing activities is typical of a historic moment in which fish were seen predominantly as an economic resource. The fishing code included fiscal incentive policies that survived until 1988. Those fiscal facilities were abolished by Law n° 7.714/88.[26]

Since 1985, with the return to democracy, the country began to modernize its legislation, including the Federal Constitution, which caused changes in fishing laws regulations. The norms that affect fishing activity currently involve environmental, territorial, tax, social security, labor and other issues.

a) The Constitution

The Constitution of the Federative Republic of Brazil, in article 23, items VI and VII, establishes responsibilities for the Federal Government, the States, the Federal District and the Municipalities:

- to protect the environment and combat pollution in any of its forms
- to preserve the forests, fauna and flora

In specific relation to fishing resources, Article 24 of the Constitution establishes that it is the responsibility of the Federal Government, the States and the Federal District to establish legislation concerning forests, hunting, fishing, fauna, nature conservation, defense of the land and of natural resources, environmental protection and pollution control.

Although the Constitution establishes that the Federal Government, the States, and the Federal District are responsible to establish legislation concerning fishing, the states and the federal district have remained inactive. In fact, only the Federal Government has enacted any legislation for marine fisheries.

The Constitution contains a chapter to environmental protection in the country in Article 225, which concerns itself with the protection of the right to an ecologically balanced environment:

> "Everyone has the right to an ecologically balanced environment, which is an asset for the common use of the people and is essential to a healthy quality of life,

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[26] J.Dias Neto and S.Marrul Filho 'Síntese da Situação da Pesca Extrativa Marinha no Brasil' 1: IBAMA/DIFAP-BSB 2: SBF/MMA representatives of MMA in the Group. July 2003. p.24 www.ibama.gov.br.

imposing on the Government and society as a whole the duty to defend it and preserve it for the present and future generations."[27]

By entitling humans to this fundamental right, the Brazilian Constitution adopts the first principle of the Stockholm Declaration for the Environment issued in 1972.[28]

The measures that should be used by the government to effectively ensure the right to an ecologically balanced environment are listed in the seven items of Para 1 of Article 225. Four of these instruments, I, II, III and VII, as well as §§ 3 and 4 are essential to this study.

Art 225

"§ 1 In order to ensure the effectivity of this right the public powers are entrusted to

I - preserve and restore the essential ecological processes and promote the ecological management of species and ecosystems;

II - preserve the diversity and integrity of the genetic patrimony of the country and monitor the entities dedicated to research and manipulation of genetic material;

III - define, in all the units of the federation, territorial spaces and their components to be especially protected, with their alteration and suppression only permitted by law, and with the prohibition of any use that compromises the integrity of the attributes that justify their protection;

VII - protect the fauna and flora, and prohibit, by law, those practices that place in risk their ecological function, provoke the extinction of species or submit animals to cruelty.

§ 3 Any conduct and activity considered harmful to the environment will subject offenders, individuals or corporations, to criminal and administrative sanctions, independent of the obligation to repair the damage caused;

§ 4 The Brazilian Amazon Forest, the Atlantic Forest, Serra do Mar, the Pantanal of Mato-Grosso and the Coastal Zone are national patrimony, and the utilization must be conducted according to law, within conditions that assure environmental preservation, including the use of natural resources."

b) Legislation creating agencies and allocating powers

In general, the political administrative division of fishing in Brazil is defined in the following manner: The policies for the preservation, conservation and sustainable use of

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27 Constitution of the Federal Republic of Brazil, Brasilia: Federal Senate, 1988.

28 Man has the fundamental right to liberty, equality and to enjoy suitable living conditions, in an environment of qualty that allows him to conduct a dignified life, enjoy well-being and is a solemn carrier of the obligation to protect and improve the environment, for present and future generations. In this respect, the policies that promote or perpetuate *apartheid*, racial segregation, discrimination, colonial oppression and other forms of oppression and foreign domination remain condemned and should be eliminated. http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=97 &ArticleID=1503

natural resources are under the jurisdiction of the Ministry of the Environment (MMA) and the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA). Fishing in the Brazilian coastal/marine zone is controlled by IBAMA, the executive organ of the National Environmental Policy. In the coastal states of the federation, joint action between the state and federal government is possible for monitoring natural and fishing resources.

In January 2003, the SEAP was established at ministerial level. The Secretariat was created on the first day of the current government that issued Provisory Measure no 103, later converted into Law no 10.683 of 2003. The SEAP assumed the following responsibilities upon its establishment in the structure of the Brazilian government as determined by Article 23 of this Law:

> "SEAP is responsible for providing direct and immediate assistance to the President of the Republic in the formulation of policies and guidelines, and particularly, to promote the execution and the evaluation of measures, programs and projects to support the development of industrial and artisanal fishing, as well as the actions aimed at the implantation of support infrastructure to the production and commercialization of fish and the support to fishing and aquiculture, to organize and maintain the General Register of Fishing called for in art. 93 of Decree-Law no 221, of February 28, 1967, to regulate and establish, with respect for environmental legislation, measures that allow the sustainable use of the highly migratory fishing resources and of those that are overexploited or not exploited, as well as supervising, coordinating and guiding the activities related to the support infrastructure for production and circulation of fish and the aquiculture stations and posts, and establish, in coordination with the federal district, states and municipalities, rational programs for the use of aquiculture in public and private waters, with a basic structure including the Cabinet, the National Council of Aquiculture and Fish and up to two Subsecretaries."

Furthermore, according to Article 23 of Law no 10.683 of 2003 the SEAP is responsible to:

- issue licenses, permissions and authorizations for the exercise of commercial and artisanal fishing and aquaculture in the fishing grounds in national territory, including the continental, interior waters and the territorial sea of the Continental Shelf, the Exclusive Economic Zone, adjacent areas, and international waters for the capture of:
    a) highly migratory species, according to the United Nations Convention on the Law of the Sea (UNCLOS), with the exception of marine mammals;
    b) under or non-exploited species;
    c) overexploited species or those threatened with overexploitation, observing the dispositions of § 6º of art. 27;
- authorize the leasing of foreign fishing boats to operate in the capture of species mentioned in lines a and b of item I, except in interior waters and in the ocean territory;

- authorize the operation of foreign fishing boats, in those cases called for in international fishing accords signed by Brazil, to exercise their activities under the conditions and limits established in the respective accords;
- supply the Ministry of the Environment with data from the General Registration of Fish related to the licenses, permissions and authorizations issued for fishing and aquaculture, for the purposes of automatic registration of beneficiaries in the Federal Technical Register of Potentially Polluting Activities and Users of Environmental Resources;
- pass on to the IBAMA, fifty percent of the income from fees for services charged as a result of the activities indicated in item I, that are related to the expenses for the activities of inspection of fishing and aquaculture;
- support, provide assistance and participate, in interaction with the Ministry of Foreign Relations, in the negotiations and events that involve compliance with rights and the interference in national interests about fishing, the production and commercialization of fish and the interests of this sector in particular;
- make granting of the economic subsidy to the price of diesel fuel instituted by Law no 9.445 of 1997 operational.

Law no 10.683 of 2003 attributes to the Ministry of the Environment responsibilities for the fishing activities related to SEAP, as expressed in Article 27 item XV:

> "The issues that constitute the areas of responsibility of each Ministry are the following:
>
> Ministry of the Environment:
>
> b) policies for preservation, conservation and sustainable use of ecosystems, biodiversity and forests;
>
> § 6 In the exercise of the responsibility indicated in line "b" of item XV, in the factors related to fishing, it is up to the Ministry of the Environment:
>
> - to establish the norms, criteria and standards for use of the species that are overexploited or threatened with overexploitation, as determined by the best existing scientific data, except for those referred to in line "a" of item I of § 1º do art. 23;
> - to provide support, assistance and participate, in conjunction with the Special Secretariat of Aquiculture and Fishing of the Presidency of the Republic, in conjunction with the Ministry of Foreign Relations, for business and events that involve the compliance with rights and interference in the national interests concerning fishing".

The Brazilian government traveled a long route to reach the current organizational structure in relation to fishing activities. Since the creation of the Superintendence of Fishing Development (Sudepe) in 1962, the field of fishing in Brazil was linked to the Ministry of Agriculture. This was only modified in 1989 when Sudepe was absorbed by the IBAMA.

With the creation of IBAMA, fishing stocks, from the government's perspective, would not be considered only as economic resource, but also as natural resources. Dias Neto affirmed:

> "Thus, the 1990s began under the aegis of a new perspective. Fishing began to be managed by an agency that considered fishing resources as environmental resources and whose activity is predominantly informed by the public interest."[29]

After 1998, with the creation of the Department of Aquiculture and Fishing at the Ministry of Agriculture, IBAMA decreased its responsibility in terms of fishing . With responsibility for the sector divided between a Ministry responsible for the conservation of natural resources and another responsible for the development of an economic activity, the conflict became apparent. Dias Neto commented on this conflict that was created by placing the Department of Fishing and Aquiculture (DPA) within the structure of the Ministry of Agriculture:

> "Decree n. 2681, of August 21, 1998, which created the Department of Fishing and Aquiculture (DPA), in the structure of the Ministry of Agriculture, Food Supply and Husbandry (MAPA), consecrated the competition, for space, within the executive branch. Although DPA was not structured and provided with human resources in the states to execute its functions, its existence only intensified the institutional disputes between the MMA and MAPA, to the degree that DPA did not demonstrate a willingness to work together with IBAMA to resolve the concrete problems of national marine fishing, but disputed politically and in discourse all the attributions concerning the management of national marine fishing."[30]

With the creation of SEAP, the conflict did not change. The dispute for space in the executive power continued because the Secretariat functioned with the status of a Ministry, and had thus power equal to the MMA in the federal government. The clash of policies for the Development of Economic Activity and those for Environmental Protection is evident. This applies not only to the fishing sector. Ministries such as Agriculture and Mines and Energy also have serious conflicts with the MMA for the same reason.

Concerning the maritime region, the need to find a common language between the federal government ministries and coordinated issues related to the National Police for Sea Resources, established in 1974, resulted in the creation of the Interministerial Commission for Ocean Resources (CIRM). The CIRM developed into a forum with a tremendous opportunity to establish a unified federal government policy for marine resources. It did, however, not demonstrate considerable effectiveness.

All of this commotion related to the control of marine fishing in Brazil caused fishermen to lose confidence in the government. Due to this lack of trust, government efforts seeking participation of fishermen have had difficulties in achieving success.

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[29] Dias Neto, p. 138

[30] Dias Neto p. 116

c) Legislation on nature preservation

Art. 225 is the basis for the Law nº 9.985/2000 which established the Sistema Nacional de Unidades de Conservação da Natureza (SNUC). This law is responsible for presenting routes and strategies to society for reaching the right to an ecologically balanced environment as expressed in the Brazilian Constitution. The law also establishes the obligation of society to defend the environment, which is also contained in the Constitution, i.e. in Art. 225, which states that "it is the responsibility for the government and society to defend and preserve the environment for present and future generations". This means that the SNUC Law incorporates the principle of participation of society in the management of natural resources.

In addition to the Brazilian Constitution, international treaties signed by the Brazilian government call for public participation in environmental management. As Furriela and Telles do Valle note:

> "Different international treaties refer to public participation in environmental management as a presumption of sustainable development. Agenda 21 calls for broad public participation, principally through the active involvement of non-governmental organizations and all the groups involved in decision making. It proposes that formulation and decision making, in all segments, must be conducted through consultative processes. More recently, the Millennium Declaration, signed by the United Nations in 2000, established principals that sought to strengthen democracy in environmental management. In 2002, during the United Nations Conference on Sustainable Development, the Johannesburg Declaration on Sustainable Development was signed, where the signatory nations recognize that sustainable development requires a long term perspective and the broad participation of society in the formulation of public policies, decision making and in the implementation of measures, at all levels. It also establishes that all the actors should act as partners with all the important agents, with respect for the independent role of each."[31]

In this sense, the SNUC Law follows a global trend in opening management processes of natural resources to civil society. That is one of the reasons why the SNUC Law can positively affect the management of fisheries in Brazil.

In addition to the principle of social participation, the SNUC Law reflects the principle of precaution because the creation of protected areas is based on the concept of avoiding environmental damage in areas of important environmental interest. This principle is also applied to the buffer zones[32] of conservation units (UCs).

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[31] BIDERMAN and TELLES do VALLE, Legal Brief on the premises and conditioning factors for the shared management of Conservation Unities: reflections and proposals for the construction of a model for São Paulo State. São Paulo April 2003.

[32] Buffer zone: the surrounding areas of a conservation unit, where human activities are subject to specific norms and restrictions, in order to minimize negative impact on the unit. Art. 2° XVIII Law 9985/00.

Another strategy to assure the right to an ecologically balanced environment is to issue sanctions to offenders as prescribed in § 3 of Article 225 of the Constitution. This Constitutional Article was implemented by Law nº 9.605/1998, called the Environmental Crime Law, which addresses in Articles 33, 34, 35 and 36 conduct related to fishing activity.

Article 33 considers criminal conduct to be the act of provoking by the release of effluents or dumping of materials, the destruction of aquatic fauna species in rivers, lakes, ponds, lagoons, bays or Brazil's territorial waters.

Articles 34 and 35 focus on the act of fishing during banned seasons, in prohibited locations or by non-permitted means.

> Art. 34
> "Fishing in a period in which fishing is prohibited or in locations where it is forbidden by the competent agency.
> Penalty – detention for one to three years or a fine, or both cumulatively.
> Single paragraph. The same penalties are applied to those who:
> I – take species that should be preserved or specimens smaller than those permitted;
> II – fish quantities higher than those permitted, or with the use of equipment, devices, techniques and methods that are not permitted;
> III - transport, sale, processing or industrialisation of specimens gained from prohibited forms of collection, catch and fishing.
>
> Art. 35.
> To fish with the use of:
> I - explosives or substances that, when in contact with the water, produce a similar effect;
> II – toxic substances, or other means prohibited by the responsible authority:
> Penalty – imprisonment for one to five years."

Article 36 determines that fishing is considered to be all acts intended to remove, extract, collect, catch, seize or capture specimens of the group of fish, crustaceans, mollusks, and aquatic vegetation, susceptible or not to economic use, with the exception of species threatened with extinction, found in the official lists of flora and fauna. This is a more complete definition than the previous one found in Article 1° of the fishing code of 1967 which defined fishing as all acts that intend to capture or extract animal or vegetable elements for which the water is their normal or more frequent living environment.

When considering the control of fishing in the coastal zone, it is important to observe that the coastal zone, like the Amazon Forest, the Pantanal of Mato-Grosso, the Atlantic Forest

and the Serra do Mar, is considered as a National Patrimonium by the 1988 Federal Constitution.[33]

As determined by § 4 of Article 225 of the Constitution, the utilization of the coastal zone must be conducted according to law, within conditions that assure environmental preservation. This also applies to the use of the zone's natural resources.

Even before the promulgation of the Federal Constitution, the National Coastal Management Plan (PNGC)[34] was instituted on the basis of Law nº 7.661 of 1988, under the auspices of the CIRM in an attempt to guide the rational utilization of coastal resources. It was published in Resolution CIRM No 001/90, as an integral part of the National Environmental Policy (PNMA), instituted by Law No 6.938 of 1981, and by the National Sea Resources Policy (PNRM), created by a decree of May 12, 1980.[35]

2. Instruments promoting fisheries

With the transfer of the responsibility from the Department of Fishing and Aquaculture to the SEAP, the latter was given the mission to formulate guidelines and policies for the development and support of fish production. SEAP seeks to support the formulation of these policies in the National Council of Aquaculture and Fishing – Conselho Nacional de Aquicultura e Pesca - (CONAPE) because it is responsible for a) supporting the formulation of the national policy for fishing and aquaculture, b) proposing guidelines for the development and support of aquaculture production and fishing, c) reviewing guidelines for the development of the action plan for aquaculture and fishing, and d) proposing measures aimed at guaranteeing the sustainability of fishing activities and aquaculture. The Council, established by Law no 10.683 of 2003, is presided by the Secretary of the SEAP and involves the principal actors related to fishing in Brazil. Nevertheless, the Council is not a forum that is completely able to help in the formulation of policies to structure the fishing sector in Brazil because it includes neither agencies resorting to the Ministry of the Environment nor sectors linked to the environmental field of organized civil society.

When it initiated its activities, SEAP presented a project that countered the former project of the Department of Fishing and Aquaculture of the Secretary of Rural Support and Cooperativism of the Ministry of Agriculture as demonstrated by the text of the project presented in January 2003:

> "The previous policy of the Department of Fishing and Aquiculture – DPA/MA had as its guidelines the sustainable development of fishing and aquiculture, the

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33 National Patrimony is defined in the text of the National Coastal Management Plan II (PNGC II) approved by Resolution n° 005 of the Inter-ministerial Commission for Ocean Resources (CIRM) from December of 1997: "National Patrimony - all those assets belonging to the Brazilian nation, of common use, with special historic, scenic, social-economic, environmental or other congenerous characteristics, confering to them special status and requiring the preservation of their basic conditions for existence."

34 National Coastal Management Plan – Plano Nacional de Gerenciamento Costeiro (PNGC).

35 National Sea Resources Policy (PNRM) is updated by decree 5.377/05

> generation, adaptation and transfer of scientific and technological knowledge, the definition of requirements for quality, cleanliness and safety for products of fish origin. Its strategy was aimed at the support of ocean fishing in the EEZ and in international waters, the development of continental and marine aquiculture, the recovery and rationalization of coastal fisheries, the competitive insertion in the international market and the opening of the spaces for the attraction of capital, with the strategic vectors, ocean fishing and aquiculture".

Although these policies and strategies formally contemplate artisanal fishing, family aquaculture, and the recovery of coastal and continental fishing, the privilege was practically and nearly exclusively given to the agribusiness of ocean fishing and aquaculture. Coastal and continental fishing – by artisanal, family or small and micro outfitters – suffered a process of stagnation or decline, resulting in part from an unsuitable administrative model and applied policy due to the historic absence of an appropriate organization and the consequent overexploitation of stocks.

To change this reality new policies seek to focus on small fishermen, although the support of ocean fishing in fact continues. The policies, in addition to being worked within the realm of the National Council, have the support of two National Conferences of Aquaculture and Fishing. They are summed up in the summary text prepared by SEAP for the first National Conference for Aquaculture and Fishing.

The role of the state through the auspices of SEAP/PR will be to provide support by investing in the modernization of the productive chain of aquaculture and fishing, stimulating partnerships with the states and municipalities, and encouraging cooperativism and associativism. Its goal will be to provide the aquaculture and fishing sectors with support infrastructure for activities that consider not only the stimulation of creation of modern companies for fish processing, but also support for exports and internal commercialization.

The policies developed for the fishing sector have been based only on the apparent needs of the sector because the actors involved in public consultations are mostly members of the productive sector and government. Universities and environmentalists have little space in the debate, for example, in the National Conferences.

In this context a so-called Pro-Fishing Fleet program was created by Federal Law 10.849/2004. The second article of the law establishes financing for the purchase, construction, conversion, modernization, adaptation, and outfitting of fishing boats in order to reduce pressure on over-exploited stocks, provide efficiency and sustainability to the coastal and continental fishing fleet, promote maximum utilization of the catch, increase production of national fishing, use fishing stocks in the Brazilian Exclusive Economic Zone and in international waters, consolidate the nation's ocean fishing fleet, and improve the quality of the fish produced in Brazil.

The law that created the Pro-fleet program is implemented by Decree n° 5.474 of 2005, which, in Article 13, establishes conditions for the projects presented to the program. In addition to being subject to economic-financial analysis, the projects and proposals for the

construction, purchase and modernization of boats must have detailed technical specifications and meet the following requirements:

> I - approval from the Special Secretariat for Aquaculture and Fishing of the Presidency of the Republic of the proposals' technical factors, as well as approval of the applicant to develop the proposed activity;
>
> II – obtaining of previous permission to fish by SEAP and
>
> III - license to build or convert a boat issued by the Marine Command.

It should be noted that environmental variables must be considered in the approval of the project because the sole paragraph of Article 13 establishes that the technical specifications in the Article should be within the guidelines of the environmental and technical manual prepared jointly by tSEAP, the Ministry of the Environment and the Ministry of Defense and published and distributed by SEAP.

Decree n° 5.474 furthermore creates a Management Group for the Pro-Fishing Fleet Program, composed of a representative of each organ or entity as indicated below:

- Special Secretariat for Aquiculture and Fishing of the Presidency of the Republic, which will coordinate the Group;
- Ministry of the Environment;
- Ministry of Defense;
- Ministry of National Integration;
- Treasury Ministry;
- Ministry of Transportation;
- Ministry of Planning, Budget and Management;
- Banco do Nordeste do Brasil S.A. - BNB;
- Banco da Amazônia S.A. - BASA; and
- Banco Nacional de Desenvolvimento Econômico e Social - BNDES.

A subsidy for the purchase of diesel fuel was established by Federal Law n° 9.445/97 which authorizes the Executive Branch to provide economic support for diesel fuel purchased to supply Brazilian fishing boats. It is limited though to the amount of the difference paid between national and foreign fishing boats. The law was implemented by Decree no 4.969/04, which establishes in its second article that beneficiaries of the economic support will be owners of, outfitters and those that lease, either individuals or corporations, Brazilian fishing boats. It also determines that Brazilian individuals who lease foreign fishing boats under the terms of the law will have the same rights as the other beneficiaries indicated in this article. For approval and support under the measure, the individual or corporation can be represented by a federation or colony of fishermen, a fishing cooperative, a union of outfitters or fishermen, and outfitter or fishermen associations. The economic benefit will be the equivalent to a percentage of the price of the billing for diesel fuel at the refinery, without the application of Taxes on the Circulation of

Goods and Services (ICMS). This percentage varies annually. In 2004, for example, it was at a maximum, with 20% of the bill being used for diesel fuel at the refinery.[36]

This type of policy appears to oppose global trends because on the world scene there is recognition of the growing overcapitalization of the fishing sector and the need to stimulate the "decommissioning" of boats[37]. This criticism is warranted, but the modernization of the fleet is also important as it allows Brazil to better exploit its EEZ. As long as the program is articulated in accordance with the country's environmental policies and respects the international accords to which Brazil is a signatory, the program can be useful to the Brazilian nation.

Concerning the recovery of stocks, which is essential for the strengthening of the Brazilian fishing sector, there is no well-defined policy as there is a considerable lack of information. It is essential that scientific research is supported, preferably concerning indicators for the state of the stocks and their ecosystems.[38] Dias Neto demonstrates that scientific research is the indispensable basis for obtaining success in promoting the management of the sustainable use of fishing resources[39]:

> "Among the various types of information needed for each resource we highlight the life cycle, population dynamic, potential, the environment where it is found, the interaction between the resource, the environment and fishing, as well as the social, economic and the political and institutional aspects related to fishing activities."[40]

The structural policies in the fishing sector in Brazil seem to walk backwards due to the division of the competencies between IBAMA and SEAP. It strengthens the competition for power in the government and does not help in the dialogue with the stakeholders because people do not perceive government as one entity. It is more difficult to create sound policies if the voice of the government is divided.

The paradigm in the elaboration of policies has strong economic aspects, although it is well known that there is a need to focus on fishing technologies that cause less impact and on developing environmental awareness of actors related to fishing. Nevertheless, Brazilian environmental legislation is quite consistent and some sectors of the government seek to implement it. Unfortunately, the government as a whole has done little to implement environmental policies in the country. The implementation that has taken place was due to a strong effort by the Ministry of the Environment and support from organized civil society. Additionally, other government sectors have tended to ignore environmental legislation or interpreted norms in an extremely permissive manner. Yet, there are laws that were prepared over many years and provoked an important debate in the nation and are playing

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36 caput and § 2° of art 1° of Decree n° 4969/04

37 Jablonski, Silvio – Consulting report sent to the Center for Management and Strategic Studies (CGEE) of the Ministry of Science and Technology.

38 ibid

39 Dias Neto, p.92

40 ibid p. 93

an important role in the Brazilian natural resoursec management. It is clear in Brazil that fishing and environmental policies must be compatible. SEAP, besides the fishery users, might have a closer dialogue with the Ministry of Environment and civil society before establishing structural policies.

3. Instruments of fisheries management

Brazil uses many methods of fisheries management. They include establishing seasons when fishing is prohibited, minimum catch size, gear restrictions, limitations on the size and/or number of fleets, licensing, closing of areas to fishing, and the establishment of protected areas, such as marine UCs.

However, as noted above, the effectiveness of these instruments suffer from uncoordinated competences of diverging administrative authorities. Access and capture restrictions are regulated by IBAMA, the Ministry of the Environment and SEAP in accordance with their´responsibilities established by Law nº 10.683/03.

On the one – the environmental – side Article 27 of Law no 10.683/03 entrusts the MMA with competences to enact policies for the sustainable use of ecosystems and to establish the norms, criteria, and standards for use of the species that are overexploited or threatened with overexploitation. Art. 1 of Decree 5.583/05 delegates powers to IBAMA to establish norms about the sustainable use of fishing resources referred to in the Article cited above. These powers are executed by regulatory acts established in consultation with other Ministries and Secretariats of SEAP, as well as those that involve foreign institutions or authorities. The text of the decree also maintains that the norms established by IBAMA must obey the guidelines, criteria and standards defined by MMA.

On the other – the economic – side, Article 23 of the same Law no 10.683/03 entrusts SEAP with competences of supporting the development of the fisheries sector, of establishing measures concerning sustainable fisheries, and of issuing authorizations for the exercise of commercial and artisanal fishing.

a) Closed seasons

This management tool has been used for a long time in Brazil. Closed seasons are related to a specific species in a determined region. When a species is forbidden to be fished in a determined season and region, the government provides social security for the fishers who are not allowed to work. This is a way of helping the workers to feed their families but also a strategy to keep fishers away of the stocks. One example of a species that is not permitted to be taken in a determined season is the **Camarão-sete-barbas, Seven-whisker shrimp,** (*Xiphopenaeus kroyeri*). Ruled by IBAMA's Normative Instruction no 91/2006 fishing of this species is forbidden every year from October 1st to December 31st in the area between the parallels 18º20'S (border between the states of Bahia and Espírito Santo in the northeast) and 33º40'S (Chuí river, state of Rio Grande do Sul next to the border with Uruguay).

b) Minimum catch size

The minimum size of determined species allowed to be caught is fixed in a specific region according to scientific data. After the first scientific meeting for ordination of the minimum catch size of marine and estuarine fishes in the southeast and south of Brazil in 2003 IBAMA established through rule no 73/03 the minimum size of several species as it is possible to see below in the annex I and II of the rule 73.

ANEXO I - Portaria IBAMA no 73 /03-N

Name	**Scientific Name**	**Minimum Size** (in centimetres)
Badejo Mira	Mycteroperca acutirostris	23
Badejo Quadrado	Mycteroperca bonaci	45
Badejo de Areia	Mycteroperca microlepis	30
Cherne	Epinephelus niveatus	45
Garoupa	Epinephelus marginatus	47
Miraguaia	Pogonias cromis	65
Cação-anjo-espinhoso	Squatina guggenheim	70
Cação-anjo-asa curta	Squatina occulta	70
Cação anjo asa longa	Squatina argentina	70
Viola	Rhinobatos horkelii	80
Cação listrado/Malhado	Mustelus fasciatus	100
Caçonete	Mustelus schmitii	50
Cação-bico doce	Galeorhinus galeus	110
Tubarão Martelo recortado	Sphyrna lewini	60
Tubarão Martelo liso	Sphyrna zygaena	60

ANEXO II - Portaria IBAMA no 73 /03-N

Name	**Scientific Name**	**Minimum Size** (in centimetres)
Bagre Branco	Genindes barbus	40
Bagre	Cathorops spixii	12
Bagre	Genindes genidens	20
Batata	Lopholatilus villarii	40
Cabrinha	Prionotus punctatus	18
Castanha	Umbrina canosai	20
Corvina	Micropogonias furnieri	25
Goete	Cynoscion jamaicensis	16
Linguado	Paralichthys patagonicus / P. brasiliensis	35
Palombeta	Chloroscombrus chrysurus	12
Pampo/Gordinho	Peprilus paru	15
Pampo Viúva	Parona signata	15
Papa-terra branco ou Betara	Menticirrhus littoralis	20
Peixe-Espada	Trichiurus lepturus	70
Peixe-Porco, Peroá ou Cangulo	Balistes capriscus / B. vetula	20
Peixe-Rei	Odonthestes bonariensis / Atherinella brasiliensis	10
Pescada Olhuda ou Maria Mole	Cynoscion striatus	30
Pescadinha	Macrodon ancylodon	25
Robalo peba ou peva	Centropomus parallelus	30
Robalo Flexa	Centropomus undecimalis	50
Sardinha-Lage	Opisthonema oglinum	15
Tainha	Mugil platanus / Mugil Liza	35
Parati ou Saúba	Mugil curema	20
Trilha	Mullus argentinae	13

c) Gear Restrictions

The restriction of gears is an important management tool to avoid incidental catch and damage to the see floor. Technology has not provided gears that protect ecosystems as a whole but the use of explosives, for example, is completely forbidden in Brazil. It is important to specify which gears can be used to fish determined species. The rules related to fishing of many species in Brazil fix which gear can be used for the fishing activity. As an example, the normative instruction MMA/SEAP no 23/2005 determines that the only gear that can be used to catch the Frog Fish (*Lophius gastrophysus*) are bottom-fixed nets. The same norm limits the number of nets that can be transported by each vessel to 1000.

d) Limited entry fishery

Limitation on size and/or number of vessels, is fundamental for controlling fishing effort and strive for sustainable fishing.

For the catch of Royal Crab (*Chaceon ramosae*) a fleet of only three vessels is allowed within the area between the parallels 19º00'S e 30º00'S.[41]

Fishing in the buffer zone of Arvoredo Biological Marine Reserve as regulated in the fishing and tourism area is one example how size limitations are implemented. Activities of large boats (more than 10 gross tons) is prohibited in this zone.[42]

e) Licensing

Licenses, permissions and authorizations for the exercise of commercial and artisanal fishing as well as aquaculture in Brazil are issued by SEAP[43]. Fishers, fishing industry and vessels might be registered in the Registro Geral da Pesca (General Fishing Register) which is established by Decree Law no 221/67 and regulated by Instructional Norm – SEAP N° 3 May 12 2004. The registration in the RGP/SEAP is the first step to the exertion of fishing activity in the country.

f) Other management instruments

Instruments of fisheries management such as marine protected areas (MPAs), catch limits ,and adoptions of border observers are also used in Brazil.[44]

Participatory management of fishing resources is still incipient in Brazil, although some initiatives are being taken. While they have still not been tested in marine fishing, Brazil has achieved positive results with the "Fishing Accords". The legal base for the accords was established in IBAMA's Normative Instruction no 29[45] and is aimed at fishing in

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41 Normative Instruction SEAP no 4/2005 Art. 2 III.

42 See Item II) 6.5

43 See Item II) 1.c

44 See Item II) 4.b and 5

45 IBAMA; Normative Instruction no 29 of 31 December 2002

inland waters. Nevertheless, it appears to be an adequate model for participatory management of fishing resources that can go far in assisting the resolution of conflicts between marine fishing and government agencies.

The Fishing Accord is understood as a set of specific measures found in consensual agreements among the various users and the management organ of the fishing resources in a given geographic area. The Accord is realized in the realm of a fishing community and should follow the following criteria:

> "I -that they represent the collective interests operating in the fishing resources (commercial fishermen, subsistence fishing, riverside dwellers, etc.) in the area to which the Accord applies, as long as they do not harm the environment which is a public asset to be assured and protected;
>
> II -that they maintain the sustainable use of fishing resources, in order to strengthen fishing and fishermen;
>
> III -that privileges not be given to one group more than others, that is the restriction of equipment, size of the fleet, protected areas, etc. must be applicable to all those interested in using the resources;
>
> IV -that they are operationally viable, principally in terms of inspection;
>
> V -that they do not include regulation elements which are exclusively attributed to the government as described by law (penalties, fines, fees, etc);
>
> VI -that they be concretised by normative decrees complementary to the general normative decrees, which regulate the fishing activity in each hydrographic basin."[46]

As can be observed, a new chapter has begun in Brazil in the history of fishing resource management. Nevertheless, there is still a long road to be traveled until the state and society mature enough to allow for a definitive change in comparison to historical trends.

The bottom top approach must be straightened in the country. Although standards managing fisheries norms are based on technical studies, most of them have flaws due to the centralized form in which they are established. In most cases it does not involve the actors and neglects traditional knowledge of the fishermen, as well as their interests. Fishing control will certainly be not successful if there are conflicts with fishermen due to ignoring their ability to participate in the management processes. If we analyze the means of administration applied to some of Brazil's principal fishing regions and stocks, the need for change becomes obvious.

One example are lobsters (*Panulirus argus* and *Panulirus laevicauda*) which have been largely overfished[47] although following measures were taken: limits to the number of boats,

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46 See items I -VI of Art 1° of Normative Instruction no 29

47 J.Dias Neto and S.Marrul Filho'*Sintese da Situação da Pesca Extrativa Marinha no Brasil'* 1: IBAMA/DIFAP-BSB 2: SBF/MMA representatives of Ministry of Environment (MMA) in the Group. July 2003. www.ibama.gov.br. Visit in 28/03/2007

determination of a season when fishing is banned, minimum catch size, restriction of the use of gears and others. These measures may be observed, e.g., in Normative Instruction no 5 of May 4 2005 from the Ministry of Environment.

In the case of the Camarão Rosa (Pink shrimp) of the southeast/south (*Farfantepenaeus brasiliensis* and *F. paulensis*), with stock levels which are considered to be at a critical level,[48] the management of the activity is conducted by means of a closed season , a limitation on the fleet size, restrictions on use of fishing gears and, in some cases, a minimum shrimp size. These measures are issued in norms like IBAMA's Normative Instruction no 92 of 2006.

The situation of the Sardinha-verdadeira (*Sardinella brasiliensis*) stock is considered one of the most serious collapses[49] of fish resources. The management measures for sardine include limitation of the fleet, a minimum size and adoption of closed seasons.

Certainly the Brazilian government, in addition to changing methods for elaboration of management norms for fishing resources, needs to strengthen its inspection and control structure because the norms in force have not been adequately enforced. This is not only because of the fragile technical and participatory base in their elaboration, but also because of the large deficiency in personal and structure in government agencies, chiefly the Brazilian environmental agency, IBAMA.

4. Fisheries governance in the Exclusive Economic Zone (EEZ)

a) Geographical scope

Brazil's Federal Constitution of 1988 defines in article 20, item V, assets of the federal government as the natural resources of the continental shelf and of the EEZ. The Brazilian EEZ is governed by Law nº 8.617 of January 1993 concerning the territorial sea, the contiguous zone, the EEZ, the Brazilian continental shelf and other measures. According to article 6° of this Law the Brazilian EEZ extends from 12 to 200 maritime miles, determined from the base lines that serve to measure the width of the territorial sea.

The Brazilian EEZ encompasses nearly 3.5 million km². It is bordered in the north by the estuary of the Oiapoque River and on the south by the mouth of the Chuí River. It reaches to the east and includes the areas around the Atol das Rocas, the Fernando de Noronha, São Pedro and São Paulo archipelagos and the Islands of Trindade and Martin Vaz.[50] Brazil has requested from the United Nations an increase of 900 thousand km² to this area, at points where the continental shelf extends beyond the 200 nautical miles (up to 370 km). If the Brazilian proposal is accepted, Brazilian jurisdictional waters will total nearly 4.5 million km². An area larger than the green Amazon, it composes an Amazon of the sea, the

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48 ibid

49 Ibid

50 http://www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=19&idConteudo=1189 Visited on April 20, 2007

Amazonia Azul (Blue Amazon).[51] The request was introduced in 2004 and in 2007 the United Nations (UN) approved 75% of Brazils solicitation.

Map of Brazilian coast including the UN recognized extension into the continental shelf (in dark blue). Source: Design LEPLAC

b) Fisheries management in the EEZ

Fishing is an important activity in the EEZ. The modality of fishing exercised in the region is to a large part industrial ocean fishing.[52] Nevertheless, Brazil does not have a fleet large enough to fully exploit the fishing resources found in its EEZ. As pointed out earlier, the country has about 30.000 vessels, that are officially registered by SEAP, but only 10% of them are considered as industrial fleet.[53] This fleet is characterized for acting in fishing

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51 https://www.mar.mil.br/menu_v/amazonia_azul/amazonia_azul.htm Visited on April 28, 2007

52 Industrial Ocean Fishing: industrial fishing is incipient in Brazil and involves boats suitable to operate throughout the EEZ, including the most distant ocean regions, even in other countries. It has great autonomy, with on-baord industrialization, use of sophisticated navigation equipment and that for the detection of schools and is extensively mechanized. The boats are nearly all leased from foreign countries.

53 http://200.198.202.145/seap/html/diagnostico.htm#2 visited on July 10 2007

grounds existing beyond the line of 200 meters. It offers, in short term, a growth potential or expansion of fishing effort.

In accordance with UNCLOS Brazil has sovereign rights and jurisdiction over its EEZ. Thus, Articles 7 and 8 of Law 8.617 of 1993 which transposes Article 56 UNCLOS provides:

> "Art. 7. In the Exclusive Economic Zone, Brazil has sovereign rights for purposes of exploration and utilization, conservation and management of natural resources, living or non-living, of the waters superjacent to the seabed as well as its subsoil, and in relation to the other activities that seek the exploration and utilization of the zone for economic purposes".
>
> Art. 8. In the Exclusive Economic Zone, Brazil, in the exercise of its jurisdiction, has the exclusive right to regulate scientific marine research, the protection and preservation of the maritime environment, as well as the construction, operation and use of all types of artificial islands, installations and structures.
>
> Sole paragraph. Scientific marine study in the Exclusive Economic Zone can only be conducted by other States with the previous consent of the Brazilian government, according to the terms of the legislation in vigor that regulate the issue."

According to article 62 of UNCLOS, however, when a coastal state does not have the capacity to harvest all of its allowed catch, it should give other States access to the surplus of this catch, through accords or other adjustments in conformity with the modalities, conditions, laws and regulations. To compensate for the lack of Brazilian boats, the country allows foreign boats to use its EEZ for fishing as long as these boats are leasehold or are under the benefits of international agreements firmed by Brazil.

This question is handled by Federal Decree 4810 of 2003, which established norms for the operation of fishing boats in Brazilian fishing zones, in the High Sea and through international agreements. According to article 4° of the decree, the leasing of foreign fishing boats by a Brazilian fishing cooperative or company is considered a temporary instrument of the national ocean fishing development policy. The goal, established by the decree, is to provide the following benefits: a) an increased supply of fish in the domestic market and generation of income; b) improvement of labor and generation of jobs in the Brazilian fishing sector; c) the rational and sustainable occupation of the EEZ; d) stimulus to the formation of a national fleet capable of operating in deep waters and to the use of equipment with modern technologies; e) expansion and consolidation of the fishing sector; f) supply of material for improving knowledge of the living resources of the continental platform and in the EEZ and; g) the sustainable use of fishing resources in international waters.

The Brazilian fishing cooperative or company that intends to lease foreign boats must ask for authorization from SEAP which has the competence to issue the permission for this kind of business as expressed in the art. 5 of decree 4810. The decree established a two-year period for Brazilian companies to accede to this leasing policy. Therefore, since 2005 the only boats that have been operating in the country are those whose permissions were

signed in this period (from 2003 to 2005) and are still in force. In the realm of SEAP there are discussions on a possible opening of the leasing policy.

For the conscious regulation of fishing activity in the EEZ, profound knowledge of the living resources of the region is required. For this reason, and in observance of the determinations of UNCLOS, Brazil realized the Program for the Evaluation of the Sustainable Potential of Living Resources in the Exclusive Economic Zone (the REVIZEE Program).

The program has two basic lines of motivation. The first is related to agreements reached by Brazil, upon signing UNCLOS in 1982 and ratifying it in 1988. The second is based on the internal dynamic of the national fisheries potential. An MMA analysis explains the situation:

> "While the estimates of the potential for marine fishing resources in Brazil are for amounts superior to 1.5 million tons per year, the effective harvests of Brazilian fishing has been regularly below 700 thousand tons per year. While the estimates - usually based on the fishing potential in known areas - may be exaggeratedly high, the limited scope of the fishing effort and the poor knowledge of the Brazilian coastal resources is undeniable. Paradoxically, this situation coexists with the overfishing and depletion of stocks of most coastal species that are the traditional targets of the Brazilian fishing sector."[54]

This shows that Brazil is in need of consistent and up to date technical-scientific data to support the administrative measures, regulation, support, and development of national fishing.

The REVIZEE and further programs and the leasing of foreign boats are part of the strategy to exploit the Brazilian EEZ. However, this exploitation requires innovative measures for the management of fishing.

For example, Normative Instruction SEAP N° 23 of June 4, 2005 denotes criteria and procedures (and other measures) for fishing of "frog-fish"(*Lophius gastrophysus*) in Brazilian jurisdictional waters in the southeastern and southern region between the parallel of 21° 00 S and the southern limit of the Brazilian EEZ. It is an example of a norm that translates new trends in fishing resource management in Brazil into the legal context. New tools of management include

- a permission of the annual maximum limit of the catch (art 2° V), in this case 1.500 tons;
- utilization of ship-borne satellite tracking equipment that allows automatic and real-time oversight of the geographic position of the boat and of the local depth at each hour (art 7 II);
- placement of observers on board in 100% of the fishing operations (art 7 III); and

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[54] http://www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=19 Visted May 8, 2007

- the definition of areas where fishing is prohibited[55] (art 10).

In maritime fisheries, Brazil only determines a maximum catch quota for the Frog Fish, the Real Crab (*Chaceon ramosae*) - Normative Instruction SEAP no 4 of may 4, 2005 - and the Red Crab (*Chaceon notialis*) – Normative Instruction SEAP no 5 of may 4, 2005.[56] The requirements of these management instruments partially exceed the terms expressed in their legal basis. They address both government institutions and private companies in the production sector.

By November 2005, four boats were approved that began their operations, however, without total compliance with this Normative Instruction, principally concerning the use of satellite tracking devices and on-board observers.[57] Until now this makes any measure to control fishing within the Areas de Exclusão de Pesca (AEP's) of frog fish unviable. It can be therefore assumed that the norm has practically not been implemented. The annual quota for the total catch (1,500 t) has been systematically surpassed since 2001. As a result, recent estimates of the stock indicate a biomass 50% lower than estimated in 2001 and an evident risk of overfishing.[58]

Part of the difficulties in complying with the norms established by Normative Instruction MMA – SEAP/PR no 23, derive from a lack of introduction of satellite tracking systems and of the National Program for on-board observers, which has been recently finalized in the realm of the SEAP/PR, MMA and Navy Command after more than two years of preparation.[59] Another portion of these difficulties has been attributed to the resistance of the production sector, principally due to the costs involved with the installation and maintenance of the tracking equipment and the remuneration of the on-board observers by the fishing companies.[60] Overall, the Brazilian government still does not have infrastructure for controlling fisheries in the EEZ. A cooperation with the Brazilian Navy and other Brazilian institutions for controlling fisheries is needed. Much time and money have been spent to draw new rules for the sustainable use of fisheries in the EEZ, however, a concentration of efforts and a commitment of all stakeholder involved is needed, so rules can be effective.

5. Fisheries Governance in the Coastal Zone

Governance of fisheries, which is the sum of legal, social, economic, and political arrangements used to manage fisheries, has international, national, and local dimensions. It includes legally binding rules, such as national legislation or international treaties, and it

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55 Áreas de Exclusão de Pesca (No take areas)

56 A strict ban prohibiting fishing and any form of threat of all kinds of cetacean, such as whales, dolphins and other aquatic mammals, in Brazilian Waters was established by Law No. 7.643, de 18 de dezembro de 1987.

57 SCC CPG/Demersais,2006

58 SCC CPG/Demersais,2006

59 See Normative Instruction SEAP/PR - MMA – CM n° 2, of Sept. 4, 2006

60 See - Peres, J.A.A – in: Áreas Aquáticas Protegidas como Instrumento de Gestão de Pesca. Pg 209

relies on customary social arrangements as well as on the respective national framework provided for all economic activities.[61]

The management of fisheries in the coastal zone is necessary observing the great impact that development of coastal cities and economic activities exhibit over marine resources. Thus, a social, economic, and environmental approach is needed for managing fisheries.

a) National Coastal Management Plan

As observed before,Brazil has a National Coastal Management Plan since 1988. In 1997, as determined by Law nº 7.661 in article 4 and under the influence of commitments made by Brazil in the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, the National Coastal Management Plan was revised in order to contemplate the principles and guidelines called for in international agreements such as Agenda 21 and the Rio Declaration for Environment and Development of 1992. The so-called PNGC II was established by resolution number 005 of CIRM.

The National Coastal Management Plan is divided into seven items: 1. Introduction; 2. Principles; 3. PNGC's Influence Area; 4.Instruments; 5. Objectives; 6. Programmed Actions; 7. Attributions and Competencies; 8. Funding.

Among these items we highlight the instruments (4) and the attributions and competencies (7). The instruments are the following:

- State Coastal Management Plan;
- Municipal Coastal Management Plan;
- Information System of Coastal Management;
- Coastal Monitoring Environmental System;
- Report of the quality of the environment in the Coastal Zone;
- Ecological Economic Coastal Zoning (ZEE);
- Coastal Zoning.

Concerning the competencies and attributions listed in item 7, responsibility is laid upon the federal, state, and municipal levels. On the federal level, the responsibility is divided between the Environmental Ministry and IBAMA in the following manner.

The Ministry of the Environment, Water Resources and the Legal Amazon[62] (Ministério do Meio Ambiente – MMA) is the central organ in the National Environmental System (Sistema Nacional do Meio Ambiente) – SISNAMA. The Ministry will coordinate the implementation of the PNGC and will also have the following attributions:

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61 http://www.fao.org/fishery/topic/2014 - Visited in 12/01/2008.

62 Amazonia Legal (Legal Amazon) is a political concept used for territorial and economic planning. It corresponds to the geographic space that goes across the states of Amazonas, Amapá, Acre, Mato Grosso, west of Maranhão, Pará, Rondônia, Roraima e Tocantins, with a surface of approximately 5 million km^2 which is about 60% of the National Territory. The concept was instituted by Law 1.806 of 1953.

a) to permanently supervise and evaluate the implementation of the PNGC, observing the compatibility of the State and Municipal Plans with the PNGC and other federal norms, without prejudicing the authority of other agencies;

b) to promote inter-sectoral and inter-institutional coordination;

c) to promote institutional strengthening, through technical, financial, and methodological support;

d) to propose general norms, referring to the control and maintenance of coastal environmental quality;

e) to promote the consolidation of the Coastal Management Information System (Sistema de Informação do Gerenciamento Costeiro – SIGERCO);

f) to establish procedures for broad promotion of the PNGC; and

g) to structure, implement and accompany the Programs for Monitoring, Control and Regulation in the areas of its responsibility.

The MMA will work closely together with agencies and councils existing at the federal, state and municipal levels and whose attributions are linked to PNGC activities.

To support the MMA, the PNGC II also instituted a commission and a subcommission relevant in our context. The commission, created in the realm of the CIRM, is called the Group for Integration of Coastal Management (Grupo de Integração do Gerenciamento Costeiro - GI-GERCO). It promotes and articulates federal actions in the realm of the coastal zone based on the approval of the Federal Action Plans (Plano de Ação Federal para a Zona Costeira - PAF-ZC). The sub-commission is linked to GI-GERCO and promotes the integration of the states among themselves and within the federal government regarding all issues related to coastal management.

According to SISNAMA the MMA has the role of the articulator of policies, while IBAMA is responsible for the execution of policies. It has the following attributions:

a) to execute federal control and maintenance of coastal environmental quality in strict compliance to norms established by CONAMA;

b) to support and participate in the consolidation of the Coastal Management Information System (SIGERCO), jointed with MMA and other member agencies of SISNAMA in actions needed for its complete operationalization;

c) to execute and accompany the Monitoring, Control and Regulatory Programs;

d) to propose actions and projects for inclusion in the Federal Action Plan;

e) to execute actions that seek to maintain and support sustainable economic activities in traditional communities in the coastal zone;

f) to execute actions of the PNGC according to the guidelines defined by the MMA;

g) to prepare Annual Operating Plans related to the activities under its responsibility, in a form compatible with priorities defined in the Federal Action Plan;

h) to support information and results obtained in the execution of the PNGC, considering the Report on Environmental Quality in the Coastal Zone;

i) to make the actions of the PNGC compatible with public policies that apply to the coastal zone;

j) to conduct environmental licensing of development or activities of regional or national repercussion within the coastal zone, considering applicable norms; and

k) to promote, in alignment with the states and municipalities, the establishment of federal UCs and to support the implantation of state and municipal UCs in the coastal zone.

On the state level, responsibilities are similar to those at the federal level, though all information must be shared with other states and the Federal Government in order to help the planning of the country's coastal zone as a whole. It is important to emphasize that the states and municipalities are essential for the coastal management plans to become effective.

States will, within their spheres of responsibilities and jurisdiction, plan and execute the coastal management activities with the aid of municipalities and society. The States are responsible for:

a) designating the Coordinator of the State Coastal Management Plan;

b) preparing, implementing, executing, and accompanying the State Coastal Management Plan, obeying the federal legal norms and the PNGC;

c) organizing and consolidating the state Coastal Management Information System;

d) organizing, implementing, executing, and accompanying the monitoring programs with information that should be consolidated periodically in the Environmental Quality Report for the State Coastal Zone;

e) promoting inter-sectoral and inter-institutional accordance at the state level in their field of responsibility;

f) promoting the strengthening of entities directly involved in coastal management, through technical, financial, and methodological support;

g) preparing and supporting the broad promotion of the State Coastal Management Plan and the PNGC; and

h) promoting the organization of the state council.

Planning at the municipal level is essential for establishing territorial order. It is important that the municipalities, when planning their territories, consider policies relevant to the coastal zone. The municipalities also have a great capacity to supply essential information for the planning of the coastal zone at the state and federal level. The municipalities, observing federal and state norms and standards, will plan and execute their coastal management activities in intergovernmental accordance and with the participation of society. The municipal responsibilities are:

a) to prepare, implement and accompany the Municipal Coastal Management Plan, observing guidelines of the PNGC and the State Coastal Management Plan;

b) to structure the municipal Coastal Management Information System;

c) to structure, implement and execute the monitoring programs;

d) to promote the strengthening of the entities directly involved in coastal management through technical, financial, and methodological support; and

e) to promote the structuring of the municipal council.

Annex A of the plan includes definitions and Annex B contains a list of the municipalities within the coastal zone.

In addition to the environmental factors, the PNGC has influence in other fields of coastal management in order to coordinate the multiple demands in the coastal zone. As determined by Article 5° of Law 7.661/88, the PNGC contemplates the following elements: urbanization; land use, use of the subsoil and subterranean waters; land division; road and transport systems; production, transmission and distribution of energy; housing and basic sanitation; tourism, leisure and recreation; and natural, historic, ethnic, cultural, and scenic assets.

In December 2004, Law nº 7.661 was specified by decree 5.300. In Article 3° item I and II of this decree, the most common definition of the Coastal Zone is given:

> "The Brazilian coastal zone, considered a national patrimony by the Constitution of 1988, corresponds to the geographic space of the interaction of air, sea and land, including its resources, renewable or not, encompassing a maritime portion and a terrestrial portion, with the following limits:
>
> The maritime portion: the space that extends for 12 nautical miles, measured from the base lines, thus including the totality of the territorial sea";
>
> Land portion: the space composed of the limits of the Municipalities that suffer direct influence of the phenomena occurring in the coastal zone".[63]

This definition of the coastal zone reveals the great importance of this region for a country, which has 8,500 Km of coastline. The Brazilian coast is divided into four regions: North, Northeast, Southeast and South.

From an environmental perspective a possible way to manage fisheries characteristic for the coastal area (although not excluded to be applied to the EEZ) is the establishment of marine protected areas by means of UCs.[64] It is important to understand that the implementation of

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63 Federal Decree 5.300 of December 7, 2004

64 Art. 2° I of Federal Law no 9.985/2000 – **Conservation Unit**: territorial space and its environmental resources, including the territorial waters, with important natural characteristics, legally instituted by the Government, with the objectives of conservation and defined limits, under a special administrative mechanism, to which suitable guarantees of protection are applied.

MPAs is not part of SEAP's policy. It is not studied by specialists and the government as a fisheries management tool, though in reality the management of MPAs in Brazil have contributed a lot to improving fisheries management. However, the need to recover fish stocks has led attention to the need to manage fishing under the ecosystem approach. Reserves are comparatively more effective than traditional tools of fishing management. They can be established in a more simple manner and cause equal or even less implementation and management costs.[65] Of course, the implementation of MPAs should not be the only way of managing fisheries.

"They offer one important strategy for maintaining biological diversity but should not be relied upon as a single solution for management. Reducing the effects of pollution from land and freshwater are important resource management strategies as are fishing gear restrictions, catch limits and other fisheries management techniques, such as timed closures."[66]

The strategy to establish MPAs suggests a new paradigm for the management of fishing resources. In Brazil, it has become common to call these areas Natural Conservation Units. Since 2000, the country has a National System of Natural Conservation Units (SNUC).

The system, established by Law no. 9.985, encompasses the basic principles of environmental law such as the principle of public participation in the environmental management. Despite the fact that the system was designed basically for terrestrial areas, it also applies to marine sites with a great degree of effectiveness. To better understand the National System of Conservation Units, a brief analysis of its principal measures will be conducted focusing mainly on its participative elements.

b) The National System of Natural Conservation Units – SNUC

Until the promulgation of the SNUC Law, Brazil did not have a legally established system of UCs. The different categories were created by a few laws that treated the units in an isolated manner and with no planning to integrate the different categories.

Nevertheless, as Mauricio Mercadante reveals, since the 1970s, the planning and creation of UCs were being integrated as they matured in form.

Until the 1960s, the creation of national parks, national forests, and forest reserves did not follow any broader planning.

UCs were established for aesthetic reasons and when politically favorable circumstances were given. There was not, until then, a policy for the creation of a UC with the purpose, for example, of assuring the conservation of representative samples of Brazilian ecosystems. It involved less the idea of establishing a system of UCs composed of different

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65 Jablonski, Silvio – Consulting report sent to the Center for Mangement and Strategic Studies (CGEE) of the Ministry of Science and Technology

66 Dorfman, Dan – The Marine Real in: Closing the gap – Creating ecologically representative protected area system pg.62

types of management categories and administered in an integrated manner. There was no strategic relationship, for example, between the creation of national parks and biological reserves.

The concern with planning and creation of the UCs, aiming for a broader and effective process , began to flourish and produce the first results in the 1970s. In 1976, the work concluded with an analysis of priorities for nature conservation in the Amazon. This document was the foundation for the elaboration of the "Plan for the System of Conservation Units in Brazil", the first phase which was published in 1979 and the second in 1982.[67]

It was only in 1988 that the proposed law began to developand would legally create the SNUC. The concept became Draft Law no 2.892/92, which began to be considered in the Federal Chamber of Deputies in 1992.[68] During the debate over the proposal, which lasted nearly eight years, efforts were made by the legislature and the social-environmentalist sector to add objectives, guidelines, and mechanisms to the system that would allow the participation of civil society and traditional populations in the creation, management, and implementation of UCs. In this period, the principle of participation of civil society in the management of natural resources was already established in important documents such as Agenda 21 and the Rio de Janeiro Declaration about Environment and Development.[69] Thus, due to the extensive participation of NGOs in the legislative process, Law no 9.985/00 confirmed this participation in its text.

The objectives, guidelines, and categories of the SNUC are defined in this law. The objectives are established in Article 4 and include a) promotion of sustainable development based on natural resources and the use of principles and practices of nature conservation in the development process (IV), b) giving social and economic value to biological diversity (XI) and protecting the natural resources needed for the subsistence of traditional populations, c) respecting and giving value to their knowledge and culture and promoting it socially and economically (XIII). To achieve these objectives, article 5 of Law nº 9.985/00 creates guidelines that govern the SNUC. These guidelines include some aspects that refer to social participation:

- "Assurance of the mechanisms and procedures needed for the involvement of society in the establishment and revision of the national policy for conservation units;
- Assurance of the effective participation of local populations in the creation, implantation and management of the conservation units;

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67 MERCADANTE, 2001. p. 190

68 ibid. p. 195

69 See Principle 10 of the Rio de Janeiro Declaration on Environment and Development: "The best way to handle environmental issues is to assure the participation, at the appropriate level, of all the interested citizens."

- Seeking the support and cooperation of NGOs, private organizations and individuals for the development of studies, scientific research, and practices of environmental education;
- Ecological tourism and leisure activities, monitoring, maintenance and other activities of management of the conservation units;
- Encouraging the local populations and the private organizations to establish and administer conservation units within the national system;
- Considering the conditions and needs of the local population in the development and adaptation of the methods and techniques for the sustainable use of natural resources;
- Guaranteeing alternative means of subsistence, or fair indemnification for the resources lost to the traditional populations whose subsistence depends on the use of natural resources existing in the interior of the conservation unit."

The SNUC consists of federal, state, and municipal UCs and will be administered by the following agencies with the respective attributions (Art. 6):

- Consultative and Deliberative Agency: the National Environmental Agency (CONAMA)[70], with the responsibility for accompanying the implementation of the System;
- Central Agency: the Ministry of the Environment, with the task of coordinating the System;
- Executive Agencies: Instituto Chico Mendes[71] and IBAMA, in supplementary character, the state and municipal agencies, which have the function of implementing the SNUC, subsidizing the proposals for creation and administrating the federal, state, and municipal UCs, in the respective spheres of activity.

The designation of CONAMA as the consultative and deliberative agency for the system shows once again the importance of the participation of civil society in the management of the SNUC. CONAMA is an organ that involves the sectors of society, allowing broad debate before decisions are made.

The SNUC expanded the responsibility of CONAMA, which was created by Art. 8 of Law nº 6.938/81, which established the National Environmental Policy.

aa) Categories of Conservation Units

For the objectives of the SNUC to be reached, the categories of UCs were systematized and divided into two groups: Integral Protection Units and Sustainable Use Units. The

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70 National Environmental Council

71 Instituto Chico Mendes was created by Law No 11.516 of august 28, 2007 and now is the main executive agency of the SNUC.

objectives of the SNUC are to meet the primary objectives of each one of the categories of UCs that are part of the system.[72] Article 7 of the SNUC Law No 9.985, regarding the division of the UC groups, established the basic objectives of the two different groups:

> "The basic objective of the Integral Protection Units is to preserve nature, permitting only the indirect use of its natural resources with the exception of those cases presented in this Law.
>
> The basic objective of the Sustainable Use Units is to create a compatible conservation of nature with the sustainable use of its natural resources".

It was the first time in Brazil that two different groups of conservation units were explicitly distinguished with these purposes[73].

There are five categories in the Integral Protection group: the Biological Reserve, the Ecological Station, the National Park, the Wildlife Refuge and the Natural Monument (Art.7). The first two categories are very similar and there would be no problem if they were unified.[74]

The Sustainable Use group has seven categories. These include the Environmental Protection Area, Area of Important Ecological Interest, National Forest, Extractivist Reserve, Fauna Reserve, Sustainable Development Reserve and Private Reserve of Natural Patrimony.[75]

bb) Creation of Conservation Units

According to Article 22 of the SNUC Law, UCs are created by the government. The creation of a UC must be preceded by technical studies and public consultation that allow identifying the location, size, and most suitable limits for the unit as determined by regulations.

Articles 2-5 of Decree 4.340 of August 22, 2004 stress the need for public consultation. Public consultation and technical studies demanded by law for the creation of a UC, except for the Biological Reserve and the Ecology Station, are essential to the success of unit placements. The exception established for the Biological Reserve and the Ecology Station must be understood as a legislative error because they are the most restrictive categories of the SNUC.

In addition to public participation in the creation of UCs there is also a need to involve social actors in the management process. For instance, consultative and deliberative

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72 MERCADANTE, 2001 p.204

73 By contrast, the IUCN Commission for National Parks and Protected Areas uses six different categories based on the different management objectives. Worldwide, there are more than 140 different names applied to protected areas of various types. See SCHWARTZMAN p.133.

74 MERCADANTE p.207

75 Law 9985/00 art. 14

councils should be instituted to assist in the elaboration of management plans and serve for co-management of the units. Entities called Organizações da Sociedade Civil de Interesse Público – OSCIP (Civil Society Organizations in the Public Interest) can play a major role in this regard. As Wiedmann notes:

> "Law no 9.985 of July 18, 2000, by instituting the National System of Conservation Units (SNUC), incorporated social participation in various articles. Item V of Article 5º, which lists the guidelines for the system, includes those that "encourage local populations and private organizations to establish and administer conservation units within the national system". And Article 30 allows the management of conservation units by OSCIP's under a Partnership Agreement signed with the agency responsible for the unit."[76]

Wiedmann also commented that the new social environmental policy seeking partnerships constitutes an important turning point away from the kind of command and control that has for long dominated environmental policy.[77] This change of concept is essential for the successful implementation of UCs.

Two types of councils are called for in the SNUC Law. The first, the so-called deliberative council, has decision-making powers, while the second has consultative functions.

> Decree 4.340, Article 20 establishes the responsibility of both council categories:
>
> The Council of the Conservation Unit is responsible for:
>
> - preparing its internal regiment, within a period of 90 days, counting from its installation;
> - accompanying the preparation, implementation, and review of the 'Management Plan for the Conservation Unit' and if relevant, guaranteeing its participative character;
> - seeking integration of the UC with other UCs and protected territorial spaces;
> - pursuing compatibility between interests of various social segments related to the unit;
> - evaluating the budget for the unit and the annual financial report prepared by the executive organ with regard to the objectives of the UC;
> - expressing its opinion in its consultative function, ratifying, in its deliberative function, and in the case of shared management (of the unit) contracting and dealing with the terms of the partnership agreement with the OSCIP;
> - monitoring the management of the OSCIP and recommending decision for the partnership agreement when an irregularity is found;

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[76] WIEDMANN,2002 p.115

[77] ibid, p.116

- delivering statements on activities that potentially cause impacts on the UC, in its buffer zone, mosaics or ecological corridors; and
- proposing guidelines and actions to share, integrate, and improve the relationship with the population in the surroundings or interior of the unit, depending on the situation.

The UCs for Integral Protection must establish consultative councils as determined by Art. 29 of the Law:

> "Each conservation unit in the Integral Protection group will have a Consultative Council, presided over by the agency responsible for its administration and constituted by representatives of public agencies, civil society organizations, owners of lands located in the Wildlife Refuge or the Natural Monument, when that is the case, and in the hypothesis foreseen in § 2 of Art. 42, by the traditional resident populations, as determined by the regulation and by the act that created the unit".

It is clear that the law intents to maintain decision-making power within the State concerning questions related to units with integral protection.[78]

The presence of deliberative councils prescribes UCs for Sustainable Use in two categories: the Extractive Reserves and the Sustainable Development Reserves. Within deliberative councils considerable decision making power is delegated to civil society, which must be well prepared to exercise this activity.

Brazil still has no Sustainable Development Reserves in marine areas. However, there are 11 federal marine Extractive Reserves, spread throughout the country's coastal regions.[79]

The Extractive Reserve, according to Article 18 of the SNUC Law, is an area used by traditional extractivist populations whose subsistence is based on extractivism and as a complement, on subsistence agriculture and the raising of small animals. The basic objectives of the extractive reserve are to protect the livelihood and culture of these populations and to ensure the sustainable use of the natural resources within the unit. The deliberative council managing the Extractive Reserve is governed by the agency responsible for its administration and is composed of representatives of public agencies, civil society organizations, and traditional communities resident in the area, as determined by the regulations and the legal act creating the unit.

Although the model was first established for populations that work with subsistence agriculture and raise small animals, the institution of well administered Extractive Reserves has proven to be very effective in marine and coastal areas.

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78 WIEDMANN,2002 p.117

79 See http://www.ibama.gov.br/siucweb/listaUcCategoria.php?abrev=RESEX , visited on April 25, 2006

cc) Management Plan for Conservation Units

Article 27 of the SNUC Law provides that the UCs must have a management plan. Article 2 of the SNUC Law defines the management plan to

> "a technical document which, based on the general objectives of the conservation unit, establishes the zoning and norms that must govern the use of the area and the management of the natural resources, including the implantation of the physical structures needed to manage the conservation unit."

The planning must, as determined by the first paragraph of article 27, encompass the area of the UC, its buffer zone, and the ecological corridors. This includes measures with the purpose of promoting its integration in the economic and social life of the neighboring communities. In this context, the participation of society is essential, because this is the *sine qua non* condition for the community to be integrated with the UC. In this respect, paragraph 2 of Article 27 says:

> "In the preparation, revising and implementation of the Management Plan for Extractive Reserves, Sustainable Development Reserves, Environmental Protection Areas, and when applicable, National Forests and Areas of Important Ecological Interest, **broad participation of the resident population** will be assured." (emphasis added)

Astonishingly, none of the categories cited belong to the Integral Protection group. However, this omission was filled by methodological instructions which IBAMA was entrusted to elaborate on the basis of Article 14 of Decree 4.340. These instructions were published in 2002. They are aimed at all protection categories in the SNUC, including those belonging to the Integral Protection group. They determine that the planning must be continuous, gradual, flexible and participative.

The methodology established seeks the involvement of society in planning and implementation of measures in the UCs and their surroundings. It acknowledges the importance of the UC and its contribution to society. At the same time, it allows to identify leaders that can support the resolution of conflicts occurring in a UC and its surroundings:[80]

> "Now considered indispensable, participative planning has been adopted by IBAMA since the 1990's and constitutes an established and highly recommended practice. The success of this practice finds resonance in the SNUC Law, which adopted it as one of the legal precepts for the management actions of the Conservation Units. Thus, prepared under a participative focus, the Management Plan is organized and implemented with the involvement of society, governmental and non-governmental organizations, and in particular, in the case of the units

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[80] Methodological Instructions for Planning, IBAMA, 2002

> located along the border, the institutions of national security, constituting a truly democratic and socialized instrument for the Conservation Units".[81]

Even if the SNUC Law gives greater emphasis to land areas, when it comes to planning of protected marine areas, it is possible, with participation of society in elaboration of management plans, to resolve conflicts generated by the creation of the area. The participative process is very important and can be a decisive factor in the organization of society, principally of artisanal fishermen. They are very interested in the process and are (quite) willing to collaborate by interacting with other actors, contributing their knowledge of the area and presenting the basic demands of the sector.

dd) Co-Management of Conservation Units

Among the forms of social participation, Article 30 of the SNUC Law calls for the possibility of co-management.

> "The conservation units can be managed by civil society organizations for the public's interest with objectives akin to those in the district, through the instrument to be signed with the agency responsible for its management".

As Cláudio Maretti affirms:

> "Co-management is a more specific type of partnership that implies the shared management of a conservation unit by two or more organizations, with one of them being the institution legally responsible for the protected area, in which there is delegation of the management. This delegation can be total or partial, with partiality possible both in terms of the area as well as the management programs".[82]

Shared management of UCs is a global trend and has already existed in Brazil before the SNUC Law, as Raquel Biderman and Raul Telles do Valle observe:

> "Although the first legal mention of shared management of conservation units arose only in 2000, this does not mean that it did not exist before. On the contrary, formal and informal sharing between government and NGOs for the management of Conservation Units, both federal as well as state, have existed for more than a decade, and it was based on this accumulated experience, in order to adapt to global trends, that the legislature decided to formally provide the possibility for co-management, opening a fertile field for the strategic partnership between the State and organized civil society in the protection of Brazilian biodiversity."[83]

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81 ibid

82 Desafios e Oportunidades para a Co-gestão. In Seminário Internacional: Construindo um Modelo de Co-gestão de Unidades de Conservação para o Estado de São Paulo. São Paulo, May 5, 2003. [International Seminar: Building a Model for Co-Management of Conservation Units for São Paulo State].

83 BIDERMAN and TELLES do VALLE, Parecer Jurídico sobre premissas e condicionantes para a gestão compartilhada de Unidades de Conservação: reflexões e propostas para a construção de um

The co-management process is regulated by Decree nº 4.340, which provides in Article 21 that the partnership agreement is the instrument to be signed with the responsible agency, as shown by Art. 30 of the SNUC. Such an agreement is based on Law 9.790 of 1999 which concerns the qualification of private non-profit entities such as OSCIPs. It establishes and disciplines the partnership agreement and other measures. This law is considered a landmark for the third sector in Brazil.

OSCIPs are non-profit entities that, in compliance with the determinations of Law nº 9.790, are accredited by the Ministry of Justice. The criteria for an OSCIP to manage a UC are expressed in Article 22 of Law 9.790 and parts of Decree 4.340.

> "The OSCIP that fills the following requirements can manage a conservation unit:
>
> I – has among its institutional objectives the protection of the environment or the promotion of sustainable development; and
>
> II – proves that it has conducted activities for environmental protection or sustainable development, preferably at the conservation unit or in the same biome".

The participation of society in councils and or through OSCIPs by means of co-management, is still a process that must be strengthened by the government as well as organizations. Nevertheless, it provides a great opportunity for UCs to reach their management objectives.

6. Case study: the Arvoredo Biological Marine Reserve

The case presented here is a demonstration how management of a MPA can affect the management of fishing resources, considering popular participation in decisions that directly affect coastal communities and their relation with marine and coastal ecosystems. It involves management of the Arvoredo Biological Marine Reserve, a marine UC located on the northern coast of Santa Catarina (State). The analysis of the management of the reserve is based on the previously mentioned Law no 9.985 of 2000 that established the SNUC in Brazil. The case demonstrates how instruments of social participation contained in the law can help in the management of marine resources in general. In Brazil, the only activities permitted in a Biological Reserve are scientific research and environmental education. It is a UC within the group of integral protection and therefore fishing is legally not possible within the reserve.

a) Location

As a place of high biological diversity, the Arvoredo Biological Marine Reserve (certainly) deserves special attention of the Brazilian government. The archipelagic reserve located in

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modelo para o Estado de São Paulo. São Paulo April 2003. [Legal Brief about premises and conditions for shared management of Conservation Units: reflections and proposals for the construction of a model for São Paulo State].

the coastal region north of the city of Florianópolis, the capital of Santa Catarina, protects a representative sample of ecosystems of the region,.

The reserve lies at the southern limit of Brazil's southeastern coastal region, which stretches from Cabo Frio, Rio de Janeiro to Cabo de Santa Marta, Santa Catarina. Accentuated seasonal climatic changes allow the appearance of cold climate species in winter, such as the sea lion (*Archtocephalus*) and the right whale (*Eubalaena australis*), which share the same space with tropical species.[84] This is made possible by the influence of two ocean currents: the warm-water Brazil Current from the north and the cold-water Malvinas Current from the south.[85]

b) Creation of the Reserve

The Arvoredo Archipelago, composed by the islands of Arvoredo, Galé and Deserta and by the Calhau de São Pedro has been part of the Arvoredo Biological Marine Reserve since 1990. The process for the creation of the reserve began at the end of the 1980s. It is the result of an environmental movement that sought to protect the area from predatory and unorganized actions, such as fishing and tourism activities.

The efforts of the environmentalists were recognized by IBAMA, which conducted complementary studies for the creation of the UC. Contrary to the expectations of society, which had called for the creation of a marine national park, IBAMA technicians suggested the creation of a biological marine reserve. The reserve was created through Decree 99.142 of 1990, with the goal of protecting a representative sample of ecosystems of the coastal region of Santa Catarina Island, its neighboring islands and islets, waters and continental shelf and all associated natural resources.

A planning seminar was held in March 2003 that included the principal actors involved with the UC. The participants in the seminar identified the following problems in the process of creation and management of the reserve:

- The exclusion of the Baía do Farol (Lighthouse Bay);
- The reserve was created without the consultation of the parties involved;
- Questionable limits, established without knowledge of the region;
- There was no complete study to establish this category of UC;
- No appropriate territorial area;
- Creation of the reserve without knowledge of the society;
- Prohibition of fishing species that pass through the regional waters (*anchova*/blue fish , *tainha*/mullet).[86]

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84 Environmental Monitoring Program of the Arvoredo Biological Marine Reserve, Santa Catarina, Brazil. Paper presented at the 1st Latin American Congress of National Parks and Other Protected Areas, held May 21 – 28, 1997, in Santa Marta, Colombia.

85 Report of the Bioregional Management Project (IBAMA, 2003).

86 Information from a report of a planning workshop for the Reserve, promoted by APRENDER Entidade Ecológica (Ecological Entity APRENDER), as part of the project to prepare the management plan for

The list revealed a lack of communication between government and society. The communities that inhabit the surroundings of the reserve were hardly involved. The managing agent (IBAMA) owns bad reputation in the region because he adopted a harsh policy of punishing breaches of environmental rules. Rather, he should have considered to show the communities why it was important to create the reserve and how this could help to improve the social and economic quality of the local population.

All problems related to the troubled process of creating the Arvoredo Biological Marine Reserve resulted in a permanent conflict between the social actors of the region around the reserve and the environmental inspection agent, IBAMA. At the time of the creation of the reserve, its management often sought its isolation from the communities that inhabit the region and bordering the reserve. Meanwhile this management paradigm in which society is regarded as the enemy of the environment is outdated in Brazil. Principally, after the advent of the National System of Conservation Units, social actors are more seen as partners in the management of protected areas. Nevertheless, this change of paradigm can not only be a matter of the law. It must be put into practice. Government and society must work together towards the maturing of their institutions, essentially by means of exchange of knowledge and information.

c) The fishing activity in the region of the Reserve

Fishing has been practiced in Santa Catarina since pre-history. This is revealed by the presence of archeological sites.[87] The region of the Arvoredo Reserve represents this history. From the time of our pre-historic ancestors, through the epochs of the Carijós Indians and the Portuguese colonizers, fishing has been an important economic activity for the resident populations. There are now 10 fishing colonies in the communities around the Arvoredo Biological Marine Reserve, which represent some 15.000 fishermen. Nine of these colonies are dependent on artisanal fishing conducted in the region. In addition to artisanal fishing, industrial fishing is also conducted in the Arvoredo region.

The artisanal fishermen were the most affected by the creation of the UC. This caused deep indignation in the fishing communities. Until today, these fishermen do not understand why they cannot catch the so-called "passing" fish at this location. In most cases, norms have been created without the participation of the community and were afterwards enforced without the community being properly informed of their creation. Nevertheless, the fishermen now respect, in a certain way, the limits of the reserve, although many things have changed in the region since its creation 17 years ago.

One issue that has been highly criticized in relation to the Arvoredo Biological Marine Reserve is related to Art. 4 of the decree that created the reserve. This article determined that fishing of young individuals of any species is prohibited in the region north of parallel

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the UC. 30 participants of the workshop h represented the principal social segments involved with the UC.

87 BECK *apud* WAHRLICH, 1999, p.25.

27º00` S, south of parallel 27º30` S, to the west by the coastal line of the continent and to the east by meridian 48º18`W.

In practice, Article 4 is found to be inapplicable because most fishing modalities in the region end up capturing young individuals, which are present in the by-catch or are captured on purpose. Collection of mussel seeds, used for mariculture in the region and fishing for live bait, conducted by the tuna fleet[88] are some types of fishing that capture young individuals in the prohibited region. It is common to observe live bait fishing occuring openly near beaches in the region.

The purpose of Article 4, according to the (accompanying) justification for the decree that created the reserve, is to allow for the recovery of the populations[89]. Until today, this has not been successful. The imposition affects the system of industrial production, through prohibition on catching live bait, as well as artisanal fishing, which is seriously threatened by the prohibition of catching shrimp with drag nets[90]. The precarious inspection system is also a preponderant factor for non-compliance of Art. 4.

In addition to this article that sought to regulate fishing activities in the region around the Arvoredo Marine Biology Reserve, the norm No. 51 of 1983 (was a factor that) impeded fishing activities in the Bay of Tijucas, which is part of the reserve's buffer zone. The purpose of this norm was to prohibit in drag fishing in any form in areas such as bays, coastal lagoons, canals, and estuaries in Santa Catarina.

Since norm 51/1983 took effect, combined with Article 4 of the decree that created the Arvoredo Biological Marine Reserve, much of the fishing activity in the region has been conducted illegally. This has generated indignation principally among artisanal fishermen who have fed their families with the catch from the region for many years. These norms did not have great practical effect and fishermen were always running the risk of having their fishing equipment and their catch confiscated by inspectors when these were active.

Management of fishing in the region was conducted, with rare exceptions, without the participation of the fishermen, being the principally interested actors. Despite many meetings and debates, norms that governed fishing in the region were defined by the government fishing authority, which did not consider the traditional knowledge of local fishermen.

d) Projecting a new approach

With the advent of the SNUC Law, the management of the Arvoredo Biological Marine Reserve began to adopt a new management paradigm. The enactment of the law allowed for the opening of the management process of the UC to society. This was directly reflected in the management of fishing in the region around the reserve.

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88 WAHRLICH, 1999, p.100.

89 Exposition of motives of Decree 99.142/90.

90 WAHRLICH, 1999, p.129.

Based on the new guidelines established in the SNUC Law, IBAMA in Santa Catarina sought an association with civil society to sign a partnership in order to implement the Arvoredo Biological Marine Reserve. Negotiations between IBAMA and the NGO APRENDER resulted in the signing of two documents. One of them, the Technical Term of Cooperation (TCT), was signed on August 27, 2001 and was published in the Diário Oficial da União on Sept. 18 of same year. The purpose of the TCT is the implementation and realization of activities related to environmental education, research, exchange of information and mutual assistance necessary to the consolidation of the UC *Arvoredo Environmental Reserve*.[91] Days before the signing of this document, another agreement was signed which, in addition to IBAMA and APRENDER, involved PETROBRAS. The agreement was the fruit of administrative process number 02001.000110/92-05, which resulted in the company's commitment to finance a UC of integral protection "through the participation of PETROBRAS in the maintenance of the Arvoredo Biological Marine Reserve".[92]

After the first months of the partnerships, APRENDER began to structure its support program for the management of the reserve and to effectively collaborate in the implementation of the UC. The program prepared by APRENDER involved three projects. Two were under the coordination of the APRENDER team: the integral protection project and the Project for Elaboration of the Management Plan for the Arvoredo Reserve and Consolidation of its Implemenation Mechanisms. A third program was coordinated by the Universidade do Vale do Itajai (UNIVALI) which was the Tijucas Bay Responsible Fishing Project. This project also involved IBAMA and fishing colonies Z-9, Z-10, Z-22, and Z-25, all located in municipalities around the Arvoredo Biological Reserve.

The three projects show the broad scope of issues that must be dealt with within the management of UCs. The change of paradigm in the management of marine resources, especially fishing, through a systematic approach requires continuous, gradual, and flexible work based on environmental education, involvement of society, and scientific research. The principal project in this contex was the Elaboration of the Management Plan for the Arvoredo Reserve and Consolidation of the Implementation Mechanisms. The Integral Protection project was an accessory to this and the Responsible Fishing Project in the Tijucas Bay is already part of the implementation of the Reserve Management Plan.

The first phase of the Integral Protection project was executed between November 2002 and July 2003. Its general objective was to support the management of the Arvoredo Biological Marine Reserve and to strengthen its various administrative lines. This was accomplished through inspection and environmental perception as well as education activities in the area of the reserve and the surrounding region. These were based on a systemic, holistic, and permanent interdisciplinary proposal, which sought the effective

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91 Diário Oficial da União, Sept. 18, 2001, p. 55. It should be noted that the publication mistakenly referred to the unit as the Arvoredo Environmental Reserve, while the correct name is the Arvoredo Marine Biology Reserve.

92 Ibid

implementation of the UC in a decentralized and participatory form, integrated with various social segments.[93]

The specific objectives of the project were:

- To conduct monitoring, informational and awareness-raising activities in the area of Arvoredo Reserve and the surrounding region;
- To conduct activities of environmental perception and education in the region surrounding the Arvoredo Reserve, in order to identify the social environmental context in which the reserve is inserted and identify areas that should be recovered, protected and occupied;
- To survey the support needed for the future elaboration of a Proposal for the Environmental Education and Perception, constructed in a continuous and participative form, through an insertion in schools and with institutional contacts, to support integration and cooperation among different social segments;
- To visit the surrounding municipalities (Florianópolis, Governador Celso Ramos, Tijucas, Bombinhas and Porto Belo), providing information through the realization of talks and distribution of an informative bulletin, thus promoting Arvoredo Reserve and the work undertaken by the various institutions for its maintenance and conservation;
- To collect information through the application of guided research on the perception of the surrounding communities towards Arvoredo Reserve and the degree of environmental awareness of the residents and visitors to these localities;
- To establish institutional contacts and make future partnerships for the development of the project with political agents, public agencies, universities, fishing colonies, NGOs, and other representatives of civil society viable;
- To support integration and cooperation among representatives of three sectors of civil society, through the example of the partnership between IBAMA-APRENDER-PETROBRAS, the State Environmental Police (CPPA)[94,] and the Coast Guard in the state in in order to enhance environmental education and preservation;
- To provide logistic support to the realization of the project for preparation of the Reserve Management Plan (Agreement APRENDER/FNMA[95]).

The objectives presented reveal the concern of the UC in working closely with the community, given that in the 13 years since the creation of the UC, the image of IBAMA(, the reserve's management agency,) was quite poor in these communities because it only conducted inspection and control activities. IBAMA's bad reputation in the community reflects the enormous difficulty in the relationship between society and government. In this

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93 Projeto Proteção Integral [Integral Protection Program].

94 Companhia de Policia de Proteção Ambiental (State Environmental Police)

95 Fundo Nacional do Meio Ambiente - National Fund For Environment

case, a NGO can seek a better relationship with the surrounding communities, showing that the reserve does not belong to the agency but to the whole of society. It is also noted that the project was executed in parallel to the project for the preparation of the Management Plan for the unit. This is the reason why the principal actors related to the reserve actively participated in the preparation of the Plan.

e) Preparing the Reserve's management plan

As required by Article 27 of the SNUC Law, UCs must have a management plan, which is defined in Article 2, item XVI. The plan is a technical document that, based on the general objectives of the UC, establishes its zoning and norms that govern the use of the area and the management of the natural resources, including the implantation of the physical structures needed to manage the UC. It is important to remember that the planning must encompass the area of the UC, its buffer zone and ecological corridors, and include measures aimed at promoting its integration in the economic and social life of the neighboring communities.

The proposal of the project for the preparation of the Management Plan for the Arvoredo Biological Marine Reserve was prepared by APRENDER Entidade Ecológica in partnership with IBAMA and CPPA. The project was executed through the following steps:

- A technical work meeting with researchers at the reserve;
- A diagnosis of the reserve and its surroundings;
- A meeting with researchers participating in the diagnosis;
- Meetings with the reserve's management team;
- Meetings of institutional contacts;
- A Participatory Planning workshop;
- A technical meeting about zoning at the reserve;
- A meeting about inspection and control;
- Technical work meetings about the buffer zone;
- Meetings with the management plan supervising team;
- Strategic meetings of the planning team;
- A training workshop for potential board members of the council of the reserve;
- A seminar to present and discuss the plan;
- A seminar for public presentation of the plan.

Note from the steps described that the project seeks the participation of society in various planning moments following the guidelines of SNUC and IBAMA's Methodological Plan. The plurality of actors participating in the project is very important for the later implementation of plans because the decisions taken by the planning team are based on the knowledge and desires of social actors who relate with the UC.

Once that legislation prohibited fishing within the reserve, the participation of fishermen and technicians from the fishing area was essential for the planning of the reserve's buffer zone. This is mainly due to the reasons presented above, such as Article 4° of the decree that created the reserve and Norm 51 of 1983. With the planning of the buffer zone in

observance with the demands of the artisanal fishing sector[96], technical studies were conducted that allowed a zoning for the region that changed the previous norm.

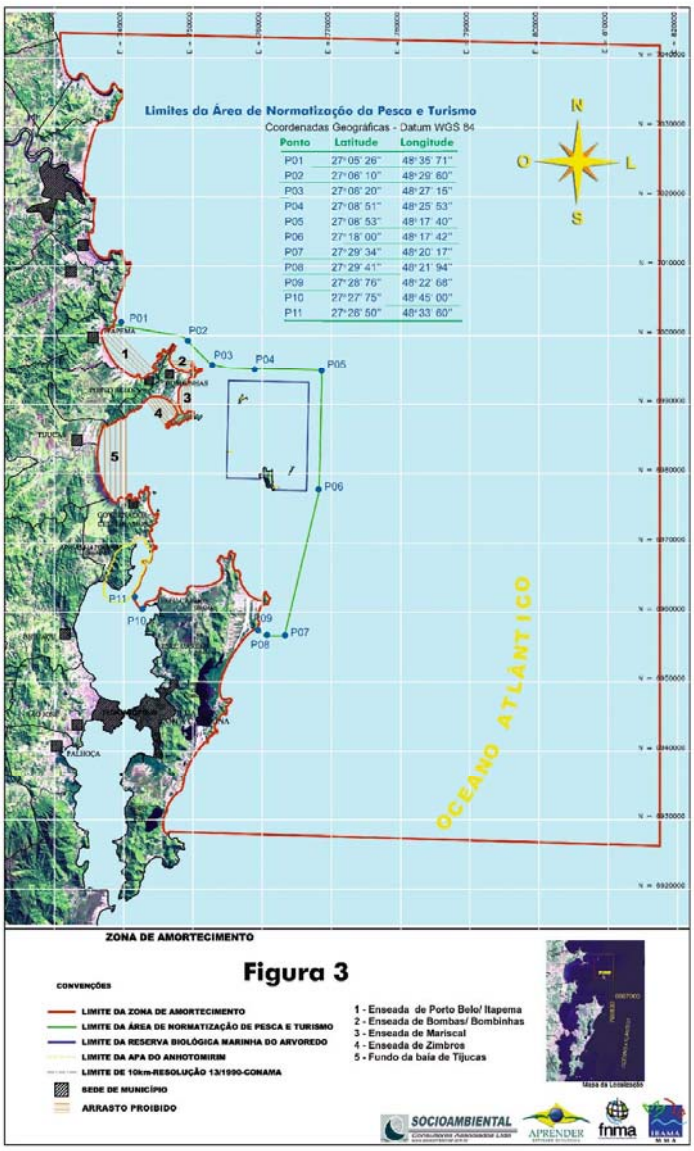
The management plan for the Arvoredo Biological Marine Reserve was finalized after 20 months of work. The text was incorporated into the Brazilian legal order by means of IBAMA Norm no 81 of Sept. 10, 2004. The Management Plan traced out a buffer zone and changed the rules for fishing of young fish established by the previously mentioned, and polemical, Article 4°. It also altered the ban on drag fishing, previously prohibited in the Bay of Tijucas by Norm 51 of 1983. The new norm sought a more suitable manner to harmonize the conflicts in the buffer zone and to guarantee the conservation of fishing resources in the region.

The new rules for fishing activities in the reserve's buffer zone are as follows:

- Fishing in the area of the buffer zone, as regulated by the Fishing and Tourism Regulation, is prohibited for large boats (of more than 10 gross tons).
- Drag fishing is allowed for boats smaller than 10 gross tons, except for some areas of the bay and its coves.
- In the region of the islands, close to the reserve's borders, nets must retain a minimum distance of 50 meters from the coast, as determined by current law (IBAMA Decree No. 143/1994).
- Drag fishing is restricted in five distinct locations within the buffer zone. These include part of the Tijucas Bay, Zimbros Cove; Mariscal Cove; Bombas and Bombinhas Cove and the Porto Belo Cove.

In the figure below it is possible to identify the limit of the buffer zone, the limit of the area of regularization of fishing and tourism and the limit of Arvoredo Biological Marine Reserve.

[96] Note that representatives of the industrial fishing sector did not participate because they did not accept the invitation to participate in the process of elaboration of the management plan.



Source: O Farol[97]

__ **Limit of the Buffer Zone**

__ Limit of the Area of Regularization of Fishing and Tourism

__ Limit of Arvoredo Biological Marine Reserve

With these new rules, artisanal fishermen are the only ones who can operate in the region surrounding the reserve. Industrial fishing continues to be prohibited. Not pleased with the

97 O Farol – Bulletin of the Arvoredo Biology Marine Reserve. Nº02 – ano 2, APRENDER Entidade Ecológica - Ibama, Boletim Informativo da Reserva Biológica Marinha do Arvoredo.

new norms established in the region, the Fishing Industry Union filed suit to change the rules.

f) The Lawsuit Against the Management Plan

In the lawsuit the Industrial Fishing Union sought to have declared null and void the act that prohibited boats of more than 10 gross tons (precisely those used by its members) from exercising fishing activities (for which they are authorized by the Special Secretariat for Aquiculture and Fish/Santa Catrina Office) in the buffer zone of the Arvoredo Marine Biological Reserve, created by the Reserve Management Plan on Sept. 1, 2004. The plaintiff alleged that this stipulation of the management plan was illegal and unconstitutional. The allegations made by the Union, as expressed in the judge's decision issued Nov. 8, 2006, were the following:

a) Given the absence of an invitation, the Union was not given an opportunity to defend the interests of the group that it represents in the Participatory Planning workshop held from March 12-14, which was purposed to discuss the Management Plan. In this regard, it is pertinent that there is not just one Union of Industrial Fishermen in the state, but a number of them, according to the region of fishing undertaken by the members;

b) The principle of equality was not respected (Art. 5, CF/88), given the absence of preliminary studies comparing the environmental impact and the socio-economic factors of boats larger and smaller than 10 gross tons. The plaintiff affirms that the trawling practiced by the latter boats are more harmful to the environment than the larger ones because of their better equipment.

c) IBAMA did not clearly state what criteria were used to distinguish, in relation to the Buffer Zone, the fishing conducted by boats larger than 10 gross tons from that undertaken by lighter boats.

The plaintiff affirms that the criteria justifying the exclusion of the affiliates from the buffer zone were more "socioeconomic than biotic" and aimed to allow that artisanal fishermen with smaller boats that are not allowed to navigate in high seas, can carry out their activity in the buffer zone.

Based on the positions of the parties and with the fulfillment of the proper legal process, the Union's request was ruled unfounded by the judge of the environmental court of the Federal Justice in Florianópolis, Santa Catarina.[98] The major arguments of the judgment are the following:

> "What is of particular interest to the regulation of the fishing activity, the management plan of the Arvoredo Reserve distinguishes three distinct zones: the 'Buffer Zone", the "Area of Regularization of Fishing and Tourism" and the so-

[98] www.jfsc.gov.br

called “Limit of the Arvoredo Marine Biology Reserve” that constitutes of the area of the reserve itself.

The "Buffer Zone” corresponds to an area of 50 km surrounding the limits of the unit, for a total of 850 thousand hectares, of which 99.3% constitute marine waters that cover the coasts of the municipalities of Florianópolis, Governador Celso Ramos, Tijucas, Bombinhas, Porto Belo, Itapema, Balneário Camboriú, Itajaí, Navegantes, Penha, Piçarras and the extreme south of Barra Velha.

Meanwhile the "Area of Regularization of Fishing and Tourism”, which encompasses 10% of the “Buffer Zone”, includes coves that range from the north of the Island to the Municipality of Itapema extending in the ocean to the line of demarcation of the reserve. It is exactly in this area that the fishing activity is prohibited to large boats, understood as those with capacity of more than 10 tons gross. As determined by the management plan, these boats ´can only travel in the region without practicing any type of fishing in the entire area of the reserve and its surrounding`.

Therefore, no reason is found in the plaintiff’s argument when it affirms that it has been harmed because “in the Buffer Zone, fishing activity was prohibited to boats larger than 10 tons gross weight*”* (fl. 04 of the initial). In 90% of the Buffer Zone, fishing is permitted with the methods practiced by the plaintiff’s members.

The only exception is in the Area of Regularization of Fishing and Tourism, which, as said, remains between Itapema and the north of Santa Catarina Island and corresponds to only 10% of the Buffer Zone, a location where fishing can be practiced only by boats smaller than 10 tons. Thus, characterizing it as an area of exclusion for industrial fishing that has a reason to exist because it is located in the immediate surroundings of the biological reserve”.

Beyond the considerations presented by the judge, it is important to remember that in the location of the Zone for Regulation of Fishing and Tourism, fishing was previously prohibited by the Decree that created the Arvoredo Marine Biology Reserve, Decree N-51 of 1983. Despite the prohibition, industrial boats continued to fish in the region accentuating the environmental degradation and generating a grave conflict between industrial and artisanal fishing.

It is also important to emphasize that according to the SNUC Law in Article 27 Section 1, a management plan should include the area of the UC, its buffer zone and ecological corridors and **include measures to promote its integration into the economic and social life of the neighboring communities.** In this sense, it is important that the artisanal fishermen have clear rules for conducting economic activity by means of which they sustain their families. In terms of the damage caused to the environment, the rules to protect locations essential for the health of the region’s fishing stocks were evaluated by scientists with the participation of fishermen. Meanwhile, measures to mitigate the environmental impact of the economic activities are being studied. Concerning the relationship of the

management plan with the social and economic factors of the region, the decision determined:

> "Likewise, the plaintiff's allegation that the exclusion of industrial fishing in the Area of Regulation of Fishing and Tourism is discriminatory and infringes on the principle of equality makes no sense when it argues that the drag fishing conducted by the smaller boats, in addition to harming the environment, does not account for the sustenance of the large majority of fishermen.
>
> Given that it is generally conducted with one or two boats, which drag a net over the bottom of the sea, taking everything in front of it, turning the most superficial substratum into a large cloud of "dust", disrupting algae, sponges, starfish, mollusks and crustaceans that live there, there is no doubt that drag fishing is extremely harmful to the environment and the conservation of fishing stocks. In this process, many undesirable fish, mollusks and crustaceans are captured, technically known as "accompanying fauna". This normally includes larva and the juveniles from shrimp and commercial fish, which are too small to sell and for this reason are discarded. As a result of this practice, nearly all of the marine life captured in the net die, even if returned to the sea, either because of the time they are out of the water, or because they are crushed.
>
> Therefore, it is unacceptable that the referred to predatory form of fishing is used as an argument by the author to permit, in the same region, industrial fishing as well in a mean-spirited attempt in the spirit of the old saying "if everyone is being destructive, I want to destroy as well". One destructive activity cannot justify the practice of another.
>
> In various points of the country, drag fishing has been limited or prohibited, a measure that sooner or later will be intensified in the entire area of the Arvoredo Reserve. Nevertheless, one cannot simply analyze the issue strictly from an ecological and scientific perspective, given that this type of fishing has been conducted for decades in the region, a tradition passed from father to son for generations. This is aggravated by the fact that the large majority of artisanal fishermen have little schooling and their only known source of income is usually this type of fishing.
>
> A change of habits, in this case, can only be implemented from the moment that environmental education effectively reaches the fishing colonies with the goal of implementing viable alternatives for subsistence (see example at p. 274). These alternatives should also be extended to the crew of the boats of the plaintiff's members, because it is a fact that the decline of fishing in the world has intensified, so that sooner or later they will lose their employment in any case.
>
> For this reason IBAMA is correct when it concluded that the current permission of the artisanal fishermen to practice fishing in the area in question clearly has an element of social assistance, as determined by the sole paragraph of Art. 8 and Sect. 8 of Art. 195 of the Federal Constitution of 1988.
>
> The creation of marine reserves throughout the world is, among other goals, precisely an attempt to protect the fishermen, whether artisanal or industrial,

because it allows the increase of fish production in adjacent areas, according to information found in the National Plan of Protected Areas of the Ministry of the Environment (http://www.mma.gov.br/planoap.pdf). In the case of the Arvoredo Reserve, this increase in fishing is particularly found in the buffer zone, which is the area immediately surrounding the reserve, offering support to thousands of families for whom fishing is the principal subsistence activity. "

The preparation of the Management Plan was made according to legal and methodological principles established by the federal government. In this sense, the broad participation of those interested in various moments of planning was guaranteed. Since IBAMA's methodological plan restricted the planning workshop to 35 participants, representatives of the Industrial Fishing Union of Itajai were the only ones invited. Nevertheless, besides not participating in the workshop, the industrial sector did not contact IBAMA at any time in order to participate in the process. The Union in Florianópolis is now alleging that the population did not adequately participate in the preparation of the new rules. The judge's response to this claim is the following:

"Concerning the alleged lack of consultation of the population directly affected, as mentioned in the documentation included in this suit, it is concluded that the legal and formal requirements for its approval were properly observed. In relation to this issue, the lucid and clarifying report of the Federal Public Ministry at sheets 339/344 should be adopted, in particular when it affirms:

> 'The Public Hearing was envisaged in a convenient and scientific manner, and denominated the 'Participatory Planning Workshop'. In this sense, it should be highlighted that the discussion and preparation of the Arvoredo Reserve management plan was assisted by the Federal Public Ministry, by its technical assistant, and the participation of various representations of the communities and the local authorities (from the area of influence of the unit) was corroborated.'

The absence of the plaintiff, as well as of any other interested party, in the event of discussions about the preparation of the plan does not compromise its validity in any way".[99]

For the reasons mentioned above and others found in the filings of the suit reported here, the request of the plaintiff was declared unfounded. The lack of basis for the suit filed by the Union has reinforced the provisions established in the Management Plan and provides legal security for those applying the regulations, in this case IBAMA. The Union can still appeal to higher courts though.

In practice, inspection of fishing in the region is still precarious. However, artisanal fishermen are now allied with IBAMA in combating predatory industrial fishing. A good program to raise awareness could turn fishermen into active citizens in the defense of their exclusive right to fish in the referred to area.

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[99] Information taken from the decision issued for suit Nº 2005.72.00.008766-3/SC on Nov. 8, 2006 – www.jfsc.gov.br

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