

THE FISHERIES SECTOR IN ARGENTINA

Introduction

The exploitation of fisheries resources was not very high in Argentina until the opening up of the economy. The growth of fisheries exploitation then took place at unprecedented rates, and this has been one of Argentina's most dynamic economic sectors in recent times. It has been categorized as the world's fastest growing fishery.¹ A strong international dimension is present in current patterns, not only because of the growth in international trade and a heavy reliance on foreign markets by the sector on harvesting (since only about 10 per cent of products are consumed domestically), but also due to the transnationalization of capital in the fisheries sector.

As in other areas of the economy, the impact of trade liberalization on the fisheries sector has been mixed. Furthermore, after intensive over-fishing, a strong degradation of the fisheries biomass has been documented, putting the main species harvested near biological collapse and causing increased fishing effort. This and other negative environmental impacts have been closely inter-linked to the social and economic crises in this sector.

This report addresses several issues such as the social, economic and environmental impacts of trade liberalization in the fisheries sector in Argentina in the 1990s. Furthermore, the report attempts to draw guidelines for a proactive policy package that could be implemented in order to address the problems and strengthen the positive aspects of trade liberalization.

In evaluating the social, economic and environmental effects of trade liberalization, the report examines these effects before and after liberalization. To situate these effects in the context of the Argentine fisheries industry, the report analyses the importance of the domestic versus the export market, as well as conducts an analysis of the labour markets in different fisheries sub-sectors, i.e. those related to trade and those which are oriented mostly for the domestic market. A cost-benefit analysis of some specific trade liberalization policies in this sector has been carried out in this report. Here there is an attempt to delineate a policy approach that aims at curtailing the negative impact that trade liberalization has had on the fisheries sector, yet at the same time harnessing the possible benefits that this type of economic policy can have. The types of policies recommended are (a) command and control measures and (b) economic and market-based instruments.

¹ See Global Environmental Outlook 2000, United Nations Environment Programme, 1999.

Development of in-country methodology

Why this sector was chosen for study

The fisheries sector has been relevant to the Argentine economy in recent years for several reasons. In the peak years of production (1995 - 1997), exports accounted for about US\$ 1,000 million. For those years, the export revenue from fish products surpassed revenue from exported beef, a historically important export product of Argentina.² Although the crisis situation of the fisheries sector is already being felt in economic terms, in 1998 seafood exports earned US\$ 860 million. The creation of several new Asian markets (Japan, South Korea, Taiwan and China now rank among the ten most important importers of Argentine fish), further reiterates the importance of this sector in Argentina's export diversification strategy. Besides its economic relevance, the social implications of the economic activity from this sector were also important. Twenty-five thousand jobs are directly dependent on the fisheries harvesting and processing sectors. Some estimates indicate that indirect employment in the fisheries sector could be as high as 100,000. Besides, several communities depend on fisheries as their most important economic driver. In the 1990s, the fisheries sector provided, on average, 3.3 per cent of total export revenue.

Methodology used

In the context of the project, the aim of the report is to analyse in a comprehensive manner the social, economic and environmental impacts that trade liberalization of the Argentine fisheries sector has had in the 1990s. The study followed a deductive method. The multiple approaches utilized respond to an integrated assessment of aggregated issues to be analysed when dealing with the fisheries sector.

The methods used include review of relevant literature and primary research, analysis of economic trends in the fisheries sector, and examination of norms and laws relevant (directly and indirectly) to the regulation of the fisheries sector. The study reviews relevant literature dealing with the social and employment issues related to fisheries exploitation in Argentina in the 1990s, and reviews the effects of increased exploitation on the depletion of species. It analyses the trend and structure of fisheries exploitation in Argentina in the period of trade policy and macroeconomic reforms. The study compares these trends with national and international norms and laws that have a bearing on the fisheries sector and also conducts an analysis of fisheries administrative organizations, at the national and sub-national levels.

The study conducts a cost-benefit analysis to assess the social, natural resource and economic impact of the export-oriented exploitation of the *Merluccius hubbsi* species. Testing several hypotheses ranging from factual policy to sustainable management practices also forms an integral part of the study. It finally outlines policy packages that could harness the positive impacts of the opening of trade in the fisheries sector while mitigating negative impacts.

² For example, beef exports for 1997 reached US\$ 803 million.

Impact of trade and investment policies on environmental management

First and foremost, the project aimed at developing a methodology and carrying out an integrated environmental, social and economic assessment of trade liberalization impacts on the fisheries sector in Argentina.

Impact of economic reforms and liberalization of trade in Argentina

The project examines the impact of the following policy package on exports of fisheries from Argentina;

- Stabilization programme: fixed foreign exchange rate, tight monetary policy;
- Commercial openness (trade liberalization);
- State reform: privatization of public utilities;
- Deregulation of markets and economic activities.

State reform (privatization of public utilities), deregulation of markets and economic activities changed dramatically the economics rules inherited from the import substitution period.

General impacts

The structural adjustment process was characterized by control of the inflationary process and high activity levels. These processes led to overall increases in domestic consumption, production, productivity, investments and exports; higher pressures on natural resources, without appropriate institutional, legal and organizational rules and control systems; increasing fiscal deficit and foreign indebtedness.

Impacts of economic and investment reforms on the fisheries sector

Until the 1990s, only national flag fleets could fish and disembark in national ports; fishing vessels could only hire national crews (100 per cent of officers and 75 per cent of sailors). According to several analysts, these highly protective policies would have been some of the causes for a relative underdevelopment of the fishing fleet and a low growth of the fisheries sector. In fact, fisheries were oriented to the relatively small domestic market since no significant external demand was present and high barriers in the European and Asian markets were to be found. As a consequence, very few ships were fishing in waters under Argentine jurisdiction. The rate of catches and exploitation of all species was below the total allowable catch (TAC) estimated by INIDEP (National Institute for Research and Development of Fisheries) and set by national authorities.

The change in several norms, including the possibility of importing second hand vessels in 1992, the modification of national personnel in the crew as well as the change in previous regulations led to a change in fishing practices. In Argentina, external enterprises (mainly Spanish) opened local companies as Argentine firms in order to comply with existing regulations (i.e. only ships under national flag could fish

within the Argentine Economic Exclusive Zone, EEZ). Consequently, the size and power of the Argentine fishing fleet grew significantly from 1986 to 1991.

In 1994, an Agreement with the European Union led to the establishment of joint ventures with local firms. At the beginning of the 1990s, a growing demand from external markets (mainly the European Union and some Asian countries) put additional pressure on South Atlantic fisheries. Also, in the Malvinas area, local authorities started a rather liberal policy of granting fishing licenses to vessels from these origins.

The main impacts of the economic reforms initiated in 1991 affected all economic activities, including the fisheries sector, as follows:

- Price stabilization and fixed foreign exchange rate
These measures provided solid guarantees on the stability of the foreign exchange rate and curbed inflation, which meant that fisheries projects found a favourable environment in which to develop. National firms began investment programmes but with financial constraints and uncertain foreign markets.
- Credit availability
Economic reforms rebuilt financial markets and bank deposits, enlarging national credit availability. The expansion of fisheries activities was financed highly with local credit.
- Free movement of foreign capital
This had significant impact on the fisheries sector where foreign investors owned most of the new national firms. Consequently, the settlement rate of foreign capital in the fisheries sector saw significant growth.
- Reduction of import tariffs and export taxes
Several working inputs for the operation of fishing vessels, as well as equipment were affected by these measures, reducing operating costs and increasing profitability.
- Deregulation of numerous economic activities and markets

The fisheries sector, as well as many other economic activities, benefited from this new environment, as *inter alia* labour laws including crews of ships were liberalized.

- Privatization of public utilities
The privatization of ports and their operation had a significant positive impact on the fisheries sector. Privatization on the other hand increased prices of energy, fuel and communication services.

In brief, the economic and investment reform policies of the early 1990s had positive impacts for the growth of the fisheries sector.

Policy instruments for the fisheries sector

The high degree of economic protection that characterized the fisheries sector until the mid 1980s was clearly affected by the package of economic and investment reforms above presented. The fisheries sector did not change the general and basic legislation that regulated its activities. Instruments such as allowing joint ventures, chartering of foreign vessels, as well as import of 'second hand' vessels constituted the main legal framework for fisheries regulation in Argentina between 1994 and 1999.

Impacts on the fisheries sector

Fisheries have been one of the most dynamic economic sectors of Argentina in the past 15 years. Value added has grown steadily and exports grew 478 per cent between 1985 and 1995 (while, in comparison, total exports increased 159 per cent). The social and economic scenario in this sector, however, changed, and the impact on the sustainability of measured biomass has been negative.

The main positive economic impacts in the fisheries sector in the 1990s can be listed as follows:

- Increase in fisheries production and employment leading to revenue generation;
- Increase in exports leading to increased foreign exchange earnings;
- Improvement and growth of the fisheries fleet;
- Technological innovation, increased research and skills in the sector;
- Opening of new markets and trade exchanges;
- Increase in public income and development of infrastructure.

The main negative effects were the following:

- Degradation of fisheries biomass;
- Increased costs for fisheries regulation and control;
- Increased operation costs;
- Increasing fishing effort,
- Fiscal costs (subsidies) and investment oversizing;
- Non-diversification of catches;
- Increasing unemployment and possible decline in work conditions in some areas.

A diagnosis of the Argentine fisheries sector

Description of fisheries resources

Argentina's extensive continental platform, as well as its coastal extension on the South Atlantic, is indicative of the country's high level of fisheries resources. Geopolitically, two fisheries areas can be identified: the Economic Exclusive Zone (*Zona Económica Exclusiva*) and the Argentine-Uruguayan Common Fisheries Zone (*Zona Común de Pesca Argentino-Uruguaya*). Due to this last zone, fishing vessels with Argentine flags can fish until parallel 34 (while the platform's extension is made up of the area south of parallel 36). Regarding the fish, only some 20 per cent are currently considered of interest to fisheries exploitation.

Knowledge about particular species as well as ecological dynamics varies greatly from species to species and from sub-system to sub-system, going from highly studied species and dynamics to other species or ecological dynamics which have not been analysed fully.

Main species in Argentine fisheries and their status

According to the National Institute for Research and Development of Fisheries (INIDEP), the fisheries resources exploited currently can be classified according to the impact that the current degree of exploitation has on the particular resource.

The over fished resources were those which experienced a high degree of fishing pressure.³ In order to avoid fisheries collapse, measures to recuperate the resource are advised. The main fish species within this category was the Argentine hake (*Merluccius hubbsi*), which forms the main focus of this study.

In addition, several other resources were fished up to maximum advisable levels. The main recommended measure for the species in this category is to maintain fishing at current amounts. The most commercially important fish species within this category includes the fin squid, the red shrimp, scallops, cod, and others. Resources with feasible increased exploitation in the short and medium term include those currently captured at numbers below advisable catch level, and therefore increased extraction is feasible without endangering resources. The important species in this category include anchovies, mackerel, sprat and others.

Geographical distribution of fisheries

The geographical distribution of fisheries is an intensely important variable in fisheries exploitation given that this distribution is related to management regimes, administrative aspects of the fisheries sector as well as with the determination of areas where fishing can or cannot take place for a particular resource or period of time. The geographical distribution of resources is also relevant in the context of the substantial

³ For some species, fishing took place not only to a high degree but also well beyond advisable levels for several years.

shift that has taken place with liberalization and increased exploitation. Five ecologically defined areas of geographic distribution of fisheries have been identified.

History of fisheries exploitation

Argentina is not a country with an intensive fishing history. Some sporadic periods of exploitation followed either commercial or geopolitical goals. For example, in the 1960s, accords with the former Soviet Union allowed for intense fishing of Argentine hake. In the 1980s, agreements with the former Soviet Union and Bulgaria were signed in order to implement a geopolitical strategy with the Malvinas. In the 1990s, the introduction of a new set of fishing policies saw a shift from under utilization to over-exploitation of fisheries. This change, as well as global transformations in the areas of fisheries, has radically changed the way that fishing activities are conducted in the country.

Fishing gear

As can be expected from multi-resource fisheries, a wide extent of different types of fishing gear was utilized for capture. The fishing gear used were however not specific to the species captured nor even to the size of the capture. These factors resulted in large incidental by-catches and discards, as well as the capture of juveniles thus reducing the reproductive capacity of the stock. Incidental and by-catch effects can also have impact on non-fisheries resources, such as seabirds. The non-specificity of the fishing gear along with the fact that some species have a higher market value than others, has led to resource depletion. It is estimated that shrimp fishers discard hake by-catches which could go up in some cases to 62 per cent of the catch.

Fisheries exploitation

Individual species landings have decreased sharply since the beginning of the 1990s. Furthermore, there is no argument from any source that fishery resources of Argentina have been overexploited. Information varies from species to species and some are more studied than others.

From the reported landings, there is an indication that it is 47 per cent beyond the total allowable catch. In 1999, with a fully distended conflict already taking place, the total capture for some species was nearly 314,000 metric tons.⁴ The total allowable catch was 238,000 metric tons (declared capture was, therefore, 32 per cent above this figure). This produced an inordinate amount of fishing pressure on just a few species. In 1999, 77 per cent of capture was for only three species. Argentine hake makes up 48.7 per cent of fish landings for 1999 (even in a year with an ample biological stop for this species).⁵

⁴ By Resolution 293/1999 of the Secretariat of Agriculture, Animal Husbandry, Fisheries and Food.

⁵ Hake landings in 1999 were in the amount of 311,992 metric tons, while total landings were 1,012,803 metric tons. Total fish landings (i.e. not including molluscs and crustaceans) were 640,017 metric tons.

For hake, different estimates show that reported capture can range between 110 per cent to 150 per cent over TAC. Furthermore, harvesting out of the EEZ as well as in the Malvinas area has a high impact on fish stock within the EEZ. The lack of full control over the extensive platform and national jurisdiction has had strong implications on fisheries stock.

National consumption patterns and the domestic market

National consumption of fish is not very high when compared with consumption in other countries. Cultural factors as well as the high price of fish and fish products in the local market (when compared with other protein sources), has resulted in a historically small domestic market. Nevertheless, there has been a steadily increasing consumption of fish and fish products in recent years.

National consumption only accounts for about 10 per cent of the total seafood catch. Hake again represents a very high ratio of fish consumed, with about 60 per cent of the local market. The second largest product consumed is Argentine short-fin squid with about 8 per cent of the local market. Most local seafood consumed is either fillet or whole fish. The market value of domestic fish consumed is of about US\$ 184 million.

Argentina has a long tradition of local canning and processing industries in the seafood sector. Since the mid 1990s, the emerging pattern is that while seafood that comes from the local market is consumed fresh with little value added, imported fish products are generally processed foodstuffs or products of higher value than local fish. The sources vary greatly from product to product. The opening of markets for processed imported products (especially canned) has created a crisis in the processing sector.

Export pattern of fisheries

The growth and change in export patterns is undoubtedly an outcome of the fisheries policies in Argentina since the early 1990s. Over 90 per cent of the harvest is exported, making Argentina currently one of most important exporters of fish products in the world. In 1998, with fisheries exports down due to the stock crisis, they still reached US\$ 860 million.

For the fish species, in the peak export year of 1997, over 33 per cent of the exports were made up of hake, while the value of squid is also highly similar to the value of exported hake. Other products exported are fish paste (surimi) and shrimp, which have a higher market value yet lower volume in overall exports.⁶ Processed seafood products only account for a very small percentage of exports.

⁶ The value of these exports for 1997 were: for surimi US\$ 58,000,000 and for shrimp US\$ 51,000,000.

Foreign markets

Markets for internationally traded seafood products are somewhat diversified. The main market is the European Union, which accounts for roughly 50 per cent of Argentine exports, followed by the Asian markets with 25 per cent and MERCOSUR (Southern Common Market) with 14 per cent of the market. The North American Free Trade Association (NAFTA) block secures 10 per cent of exported products. Exports of seafood to Brazil increased 271 per cent from 1991 to 1996. Most exports to Asia and the EU are unprocessed, whereas a significant proportion exported to the NAFTA block and MERCOSUR are processed. Two thirds of the hake produced are exported to three countries, i.e. Brazil, Spain and The Netherlands. Other products are directed to different markets.

Subsidies in Argentine fisheries⁷

Subsidies are an essential dimension to the situation facing global fisheries today. It has been indicated that the main impact of fisheries subsidies can be divided into three outcomes, i.e. expansion in the number of enterprises, upgrading fishing technology to increase catches, and discouraging exit of industry even when it is no longer sustainable.⁸

Ineffective management of fisheries was consistent with over fishing as well as with overcapitalization/overcapacity. Overcapacity in turn was intrinsically linked to subsidies. Argentine subsidies can basically be approached from two perspectives, foreign subsidies, and national ones.

Foreign subsidies

First of all, the European subsidies employed for access to distant waters (in the case of the EU-Argentina Accord as well as previous agreements of the type), were categorized by the EU as positive subsidies, given that they reduced pressure on natural resources in European waters.

As has happened throughout many regions of the world, over-exploitation and fisheries collapse in developed countries, as well as increasing consumption in international markets led to a shift in fishing activity from developed countries to the Argentine Economic Exclusive Zone.

The EU, together with Japan, Korea and Spain account for 80 per cent of all budgeted subsidies for ocean fisheries in OECD countries. It is clear that some of the most subsidized fleets from these countries operate either directly or indirectly in Argentine waters. Spain is a net importer of fish and fish/seafood products, and Argentina has been in recent years the second largest source (after Morocco) of these

⁷ This section is drawn largely from "Subsidies in Argentine Fisheries", paper submitted at the UNEP Fisheries Workshop, Geneva, 12 February 2001.

⁸ See Porter, 1998.

kinds of products entering the Spanish market from waters outside the EU.⁹ Spain is the main recipient of total Argentine fisheries products.

The situation vis-à-vis subsidies and fleets from Asian countries is not as clear. The main assessments have been carried out for European capital (that is, in direct relation to Argentine fisheries). Asian cases have not been studied from this perspective as fully as the EU Agreement in relation to fisheries in Argentina. Asian fleets (from Japan, Korea, China and Taiwan) are generally granted permits to fish squid in Argentine waters in exchange for fishing fees. As these countries' markets are practically closed to Argentine products, Argentina's strategy has been to open fisheries for distant water fleets. Distance water fleets from Asian countries operating in Argentine waters and harvesting squid vary in the period analysed since fishing rights/permits are temporary.

Domestic subsidies

Although the levels of subsidies are not nearly as great as those applied in developed countries, they are non-actionable under WTO rules due to their characteristics, the fisheries industry operating in Argentina with different capital origin has received a series of explicit and implicit (or budgeted and unbudgeted) subsidies as well as environmental subsidies in the 1990s. No study to date has fully analysed the issue in relation to domestic subsidies to fisheries. Essentially, subsidies are of the following kinds:

- reimbursements for fisheries processed products and for exports from Patagonian harbours;
- fuel tax subsidy for Patagonian activities;
- environmental subsidies.

Export promotion: reimbursements for exports from Patagonian harbours, for on-board processed products and others

The reimbursement applied to all fisheries products until 1996, and from then on just to products processed on land in the Patagonian region. The total subsidization, including all products and not only fisheries, was US\$ 92 million per year.¹⁰

From 1988 to 1993, the Patagonian provinces experienced a growth in their exports of fisheries products of 275 per cent, while during the same period, all exports (including fish products) from this region increased 141 per cent. For example, the PROMEX project for the export of non-traditional products was created in 1992 with

⁹ "Spain Annual Seafood Report", AGR Number: SP5039, US Embassy, Madrid, 1995.

¹⁰ Government of Argentina, "SUBSIDIES NOTIFICATIONS PURSUANT TO ARTICLE XVI.1 OF GATT 1994 AND ARTICLE 25 OF THE AGREEMENT ON SUBSIDIES AND COUNTERVAILING MEASURES", World Trade Organization, Committee on Subsidies and Countervailing Measures, G/SCM/N/3/ARG. 25 March, 1996.

the goal of increasing Argentine exports of non-traditional agricultural products (such as fish and fish products) in foreign markets. Specific export subsidies in the form of reimbursements for the fishery industries have oscillated between 0 and 10 per cent depending on product, without taking into account harbour of origin.

Fuel tax subsidy for Patagonian activities

Fuel tax receives a subsidy in the Patagonian region. Although, as in other cases presented here, it cannot be said that fuel tax subsidies in this region have been exclusively used for fisheries activities, fisheries exploitation is one of the main endeavours of this regional economy.

Environmental subsidies

Subsidies on the use of resources themselves have been identified in studies on fisheries' subsidies. In the case of Argentine fisheries, rent extraction mechanisms for the exploitation of fisheries resources has been practically non-existent in the period analysed. In the case of Argentina, the amount of management costs recovered from fees and royalties only covered an estimated 14.5 per cent of the annual fisheries management budget for some periods of time.¹¹ In the Argentine case, as in most if not all intensive natural resource use instances, a strong environmental subsidy is present.

Labour in the Argentine fisheries sector

Employment

A major component of the analysis is the employment generated by the fisheries sector. The total number of people directly employed in the fisheries sector is about 24,000. Some estimates indicate that, in total, some 100,000 jobs (direct and indirect) depend upon the fisheries sector. The industry is divided into a harvesting and a processing sector, with about 50 per cent of employment in each sector. The following analysis on labour in Argentine fisheries follows this distribution and clearly implicates labour variances.

Employment in the harvesting sector

The harvesting sector employs about 12,000 people. The processing fleet is the larger employer, hiring 72 per cent of workers. The ice trawler fleet hires 18 per cent of the workers, the coastal inshore fleet 6 per cent, and the artisanal fleet the remaining 5 per cent. Labour costs account for an estimated 50 to 55 per cent of the vessels' total variable cost.

¹¹ Estimates by other sources are much more critical. For 2001, a collection of only 0.6 per cent of the total value of fisheries exports is foreseen. (Comunidad Pesquera, 6 July 2001.)

Employment in processing activities

Total employment in the processing on-shore sector is estimated at 12,400 people, including cooperative workers (about 30 per cent of the total). Between 1987 and 1996, total employment has decreased by 11 per cent, and many plants moved from Buenos Aires to Patagonia (due to incentive measures, promotion policies, subsidies). In the hake processing plants, labour accounts for 10 to 15 per cent of all costs. Labour cooperatives were created to reduce labour costs as these cooperatives hired their work force on a piece meal rather than a wage basis. This reduced overall costs by 30 per cent, and has led to the creation of a large informal sector.

The legal framework for the fisheries sector

Constitution and environmental norms

Argentina is a federal republic, which divides responsibilities between a federal government and the provinces. Navigation activities and international trade, as well as inter-provincial trade fall under federal jurisdiction. Although the principles of sustainable development are embedded in the National Constitution, several different jurisdictions and rights over natural resources compete, making the legal implementation of environmental laws difficult.

Background to the Federal Fisheries Law

Historically, fisheries exploitation was reserved to national exploitation. National Law N° 17 500 of 1967 and other complimentary norms regulated this area until the current Federal Fisheries Law of 1998. During this period (i.e. 1967-1998), labour, capital investments, vessels' flags and fisheries' processing had to be Argentine and carried out in Argentine territory. Nevertheless, certain occasional exceptions were permitted through special international treaties (e.g. Acuerdos Marco), for fishing in Argentine territorial waters or for foreign investment made to Argentine enterprises.

Up until 1991, fishing permits were unrestricted. Ships could capture any species in any amount solely by obtaining a fishing permit. Permits were granted per vessel.¹² In 1991, new reforms paving the way for the Agreement with the EU were introduced. A latter resolution¹³ attempted to fix limits to the fishing capacity of vessels that would allow exploitation. Argentine fisheries for the first time (by replacing older vessels) limited their annual capture allowance.

The Federal Fisheries Law

The Federal Fisheries Law of 1998 changed the issue of provincial domain over natural resources inherent in much Argentine legislation related to natural resources.

¹² These are still current, although as it will be seen below, there are now other sorts of licenses involved, creating a mixed system until the individual quota system is fully implemented.

¹³ Resolución No. 985/1994.

The norm established objectives, defined authorities and different mechanisms for regulating all aspects of fishing activity in Argentine territorial waters. It set controls, finance and research mechanisms as well as conservation, protection and administration of living resource regimes. Further, it explicitly regulated fisheries exploitation and established sanctioning systems.

Regarding environmental objectives, the Law states that there should be "... rational use of living resources ..." as well as "...long term conservation of resources ...". In addition, the "development of fisheries processes that are environmentally appropriate".

Concerning productive objectives, the norm states that fisheries exploitation should promote "... exercise of fisheries seeking maximum development...", "...sustainability of fishing activities...", and "... obtaining maximum value added (to products from fisheries)." Article 2 especially determines that fishing activities and marine living resources processing are an industrial activity. Regarding labour, the Law establishes that fisheries' activities should promote the maximum employment of Argentine labour force. The Law also established the creation of the Federal Fisheries Council, with representation from national and provincial authorities. It also established a secretariat for implementing fisheries policies, regulating exploitation, supervision and research.

The Federal Fisheries Council

Its functions are to:

- set a national fisheries policy;
- establish a research policy;
- determine total allowable catch;
- approve permits and establish rights and royalties;
- regulate artisanal fishing;
- modify the distribution of income from the National Fisheries Fund.

According to the Law, the establishment of a fisheries policy should be based on research and recommendations carried out by the National Institute for Fisheries Research and Development (*Instituto Nacional de Investigación y Desarrollo Pesquero*, INIDEP).

Fishing practices

To be able to fish in areas under Argentine jurisdiction, it is stated the vessels should have a permit. However, this permit only allows access to the fishing zone.

International issues in the Federal Fisheries Law

Access to Argentine waters by foreign vessels is permitted through international treaties for unexploited or under-exploited species. In the Federal Fisheries law, several considerations are regulated, such as opening markets of the foreign contracting country, conservation of resources in areas adjacent to the export promotion zone, and negotiating reciprocal rights for fishing in distant waters for Argentine fleets.

National Fisheries Fund (FONAPE)

The Secretariat of Agriculture, Animal Husbandry, Fisheries and Food administer the fund with the participation of the Federal Fisheries Council. These funds come from royalties, fishing permits, penalties, sale of decommissioned vessels, and other such sources. The fund is shared between the federal government and the governments of maritime coastal provinces.

Infractions regime

A wide and strict sanction regime for different activities that breach fishing norms was established. The current norm, it is agreed, was not the best law needed for a country with a fisheries sector in crisis, given that it was a norm that mainly promoted fishing and fishing activities without adequate sustainability caveats. The Federal Fisheries Law substituted dispersed and dated norms that concentrated most decisions on the Federal Executive Power. Furthermore, several stakeholder groups, such as some sub-federal governments and private interest groups, resist the quota system which is one of the main innovations in the Law.

The international legal framework for fisheries

Background to the international legal framework for Argentine fisheries

Argentina is a party to several international accords directly dealing with fishing activities. Besides these, Argentina is also party to a multiple number of other international norms and accords that tangentially deal with fisheries or impact on fisheries (for example, the agreement on maritime pollution, high seas safety, double flag, etc.). The United Nations Convention on the Law of the Sea legally established the 200-mile Economic Exclusive Zone (EEZ) for fishing rights for coastal countries, and sovereignty over living marine resources. Chapter 17 of Agenda 21 provided for the protection of oceans, seas, coastal areas etc., and all the living resources therein. This was the main driving force behind the UN Agreement on Straddling fish stocks.

United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks

The Argentine Parliament has ratified this agreement.¹⁴ A recent ratification is Law No. 25 263,¹⁵ which regulates fisheries in the Antarctic zone and which

¹⁴ National Law No. 25290 “APROBACION DEL ACUERDO SOBRE LA APLICACION DE LAS DISPOSICIONES DE LA CONVENCION DE LAS NACIONES UNIDAS SOBRE EL DERECHO

determines a functional relation to the Federal Fisheries Council since it is this organization that should grant fishing rights in this area to Argentine vessels. The norm also establishes management guidelines (control, surveillance and research).

Code of Conduct for Responsible Fisheries

The Code, which is voluntary in nature, includes several measures, such as the precautionary principle. It also promotes several conservation and rational utilization standards, as well as regional perspectives to fisheries.

Fisheries Agreement with the European Union

This Agreement was a forceful instrument which regulated the entry of European vessels and capital into Argentina. It facilitated the import of vessels from the EU, and the formation of joint ventures. It was also explicitly established that the "transformation of Argentine fisheries resources would be within a perspective of priority supply to the Community's market". The agreement went further into detail as to regulate the species to be fished, the maximum captures, incidental catch, and other issues related to the management of resources.

To support fisheries exploitation, one of the expressed conservation objectives of the norm is the joint research to promote preservation and conservation of living resources (Article 3). This Accord was key in the fishing activity and fishing policy of Argentina and also dealt with conservation issues. As a result, an enormous flow of capital and material resources were transferred toward Argentine fishing activities.

Administrative layout of the fisheries sector in Argentina

National administration

The policy and administrative arrangement of fisheries issues in Argentina is highly elaborate. The Secretariat of Agriculture, Animal Husbandry, Fisheries and Food is the highest authority (implementation authority) at the national level in fisheries policy, and the Secretary presides over the Federal Fisheries Council (*Consejo Federal Pesquero*). Within the Secretariat, the specific area dealing with fisheries is the National Fisheries and Aquaculture Directorate.¹⁵

The Secretariat is, as stated above, the implementation authority charged with conducting and executing policy as fixed by the Federal Fisheries Council. The National Institute for Fisheries Research and Development (*Instituto Nacional de*

DEL MAR RELATIVAS A LA CONSERVACION DE PECES", becoming effective on 17 August 2000.

¹⁵ National Law No. 25 263 "REGIMEN DE RECOLECCION DE RECURSOS VIVOS MARINOS EN EL AREA DE APLICACION DE LA CONVENCION PARA LA CONSERVACION DE LOS RECURSOS VIVOS MARINOS ANTARTICOS (CCRVMA), becoming effective on 25 July 2000.

¹⁶ This structure is current as of the latest national administrative changes of December 1999. Although some of the literature and reports refer to the Under-Secretariat of Fisheries, this division does not exist any longer.

Investigación y Desarrollo Pesquero) is an autonomous division of the Secretariat. INIDEP is the main and official research organization in the country oriented toward the development of fisheries. INIDEP has a programme of on-board research assessment and observation of fishing practices, and collects extensive amounts of data on fisheries resources. The Federal Fisheries Council sets INIDEP's general areas of work. INIDEP also recommends the total allowable catch amount to the Federal Fisheries Council, based on information determining maximum sustainable yield (MSY).

The Ministry of Foreign Affairs, International Trade and Religion is in charge of foreign policy and international negotiations. The Ministry has a seat in the Federal Fisheries Council. The Secretariat of Sustainable Development and Environmental Policy deals with environmental and conservation issues, such as environmental quality, natural resource management, biodiversity. It has a seat in the Federal Fisheries Council.

The Federal Fisheries Council

The Federal Fisheries Council (*Consejo Federal Pesquero*) is a new figure in the administrative scheme established by National Law No. 24 922 of 1998. The Council is in charge of setting fisheries policy.

National Parliament

Following are descriptions of both house committees specifically dealing with fisheries. The National Senate's Committee on Fishing, Maritime and Harbour Interests (*Comisión de Pesca, Intereses Marítimos y Portuarios*) is the specific area within the Senate to deal with fisheries issues. It has distinct yet very wide capacity to pronounce itself on "all matters related to the exploitation in terms of sustained use for all of the sea's living resources; to the administration, investigation and destiny of economic resources drawn from surpluses; harbour assistance; industrialization linked to the fisheries potential of the Argentine sea's continental platform, incentives to aquaculture, sanitary control, fisheries statistics and information, shipbuilding industry related to fisheries and all matters related to fisheries exploitation."¹⁷ The Chamber of Deputies also has a permanent committee for dealing with fisheries, especially with preservation, development and exploitation of renewable and non-renewable water resources, harbour and navigational systems, research, shipbuilding and transport.

Sub-Federal Government

Several levels of the Sub-Federal Government do have an important role to play vis-à-vis ocean fisheries in Argentina. All maritime coastal provinces do have, by law, a seat in the Federal Fisheries Council.

¹⁷ Art. 76 del Reglamento del H.S.N.

Control and enforcement

Enforcement and surveillance carried out by the coast guard and the navy falls under two categories:

1. Control of the Argentine flag fleet
2. Control of foreign fleets operating illegally within the country's Economic Exclusive Zone.

Regional fisheries bodies

Argentina is part of several regional and supra-national commissions dealing with ocean fisheries, as can be expected from a coastal country which shares several of its resources.¹⁸ Most of these agreements deal with preservation and the rational use of marine resources. Research and development, especially on different forms of conservation, can also be a part of the mandate of these bodies. Data dissemination and information gathering also forms an important aspect of some of these agreements.

The fisheries industry structure

The industrial structure of the Argentine fisheries system is extremely complex, and data and available information are neither comprehensive, nor homogeneous, nor well developed. Economic groups operating in this industry may have several integration forms.

Harvesting sub-sector

Although no comprehensive studies on the industrial structure of the extractive sector exist, the level of concentration in the hake fishery appears to be high. INIDEP estimates that even though the number of business groups that own vessels which harvest hake has increased from 49 to 98 between 1987 and 1996, a small group of firms control a majority of the hake landings: the largest 10 per cent of the firms control over 70 per cent of the catches while 77 per cent of small and medium sized firms control only 10 per cent of the catches.

Fleet composition

According to size, range and operational mode or fishing gear, the fleet can be grouped into three types: coastal or inshore vessels, ice trawlers and processing vessels. In the 1990s the number of freezers and factory vessels grew rapidly from 28 per cent in 1989 to 67 per cent in 1998.

The main characteristics of the fleet are:

- Inshore fleet:

¹⁸ Argentina is also a member of FAO's Committee on Fisheries (COFI).

Coastal boats are the most important and technologically more advanced in this category. This fleet consists of boats ranging from 17 to 25 metres in length and possess large refrigerated holds. They account for 88 per cent of total landings, while representing only 40 per cent of the boats. Mar del Plata (65 per cent) and Rawson (21 per cent) are the main operating ports. Artisanal vessels (60 per cent of the total), account for the remaining 12 per cent of total landings; they are smaller - 10 to 17 metres in length - and do not possess any cooling equipment; they pack their catch in ice. They are concentrated in Mar del Plata (70 per cent of the total) and are family operated.

- Ice trawler fleet:

They range from 25 to 63 metres in length, possess refrigerated holds but don't process the fish on board. The fish are preserved in layers of ice. The fleet provides chilled products to processing plants on shore. This operation tends to be vertically integrated: most of the boats are owned by firms which have on-shore plants in Mar del Plata, Puerto Madryn, or Comodoro Rivadavia. Most of the ice trawler fleet (77 per cent) operates from Mar del Plata.

- Processing fleet:

These consist of freezer (arrastreros), factory (with fishmeal plants), surimi, scallop, shrimp trawlers, jiggers and longliners. The trawler component varies in size depending on the resource they exploit. This fleet chills the catch and does some processing on board. Jiggers concentrate on squid, while large trawlers target squid and hake. Most of the freezer and factory fleets operate out of Patagonia.

On-shore processing sub sector

Processing activities

According to the National Industrial Fisheries Census of 1996, there were 240 active processing plants and 81 active cooperatives (processing and filleting of fresh and chilled seafood), mostly concentrated in Mar del Plata, Buenos Aires. Plants located in Patagonia had received promotional benefits from national and regional economic policy.

Processing costs

In the hake processing plants, raw material for filleting accounts for 60 to 70 per cent of the costs, and labour for 10 to 15 per cent. Seafood prices for Argentine exports (mainly hake and squid) are formed in international markets and are influenced by scarcity in other fishing areas and in the availability of other fishing grounds. Argentine exports are of commodity type and most exports are frozen fish blocks, frozen fillets, H&G and minced products.

Towards a typology of agents in the fishery system

Several typologies of agents operating in the fishery industry have been proposed by different studies, but none have estimated the economic importance of different agents. The first classification is by different kinds of fleets. Another important classification is by ownership of foreign capital. In the case of hake, an additional classification by the number of years fished in the South Atlantic waters is also included. INIDEP provisional data on total costs, showed that salaries accounted for 40 per cent for coastal and ice trawler ships, and of 35 per cent for the freezer fleet.

Labour and private organizations

Labour organizations

Labour organizations include different trade unions as well as other types of associations for on-board and on-land workers. Among unions, there are several agglutinating food industry workers and fisheries workers' trade organizations.

Business sector organizations

Business sector organizations are differentiated regarding the type of vessel and working modalities, as well as geographical location. There are also business associations of fish processing firms and of canning enterprises. This diversity reflects also excisions and changing factors in the fisheries business sector.

Valuation of trade liberalization

Environmental impact

Fish stock reduction and impact on fishing effort

Research has indicated that there are six commercially utilized species of endangered fishing stock.¹⁹ Three essential indicators were examined for these species in order to be able to determine environmental impacts: total biomass estimations, reproductive biomass as well as fishing effort.²⁰

¹⁹ These fish species are: Merluza / Argentine hake (*Merluccius hubbsi*); Polaca / Southern blue whiting (*Micromesistius australis*); Corvina rubia / Croaker or White Croaker (*Micropogonias furnieri*); Pescadilla de red / Striped weakfish (*Cynoscion guatucupa*); Besugo / Red porgy (*Pagrus pagrus*); Merluza negra / Patagonian Toothfish (*Dissostichus eleginoides*); and Merluza austral / Southern Hake (*Merluccius australis*). Source: Casal J. L. y Prenski L. B. (Editors). *Diagnóstico de los Recursos Pesqueros de la República Argentina*, INIDEP. Mar del Plata, Argentina, 2000.

²⁰ Fishing effort measures are gauges that attest to the effectiveness of fishing, and – together with other indicators such as biomass estimation – can act as index to species abundance. They are recorded in local literature as captured tons per hour of trawl (Captura por Unidad de Esfuerzo – CPUE) or simply in hours. When examined over time, this indicator can grant impact evidence.

Hake was the species most at risk of collapse. The average size of captured hake has decreased. Fishing effort analysis concurs with biomass assessments. For example, for the commercially most important hake, in the period 1986 – 1997 there has been a change in fishing effort measured in captures per unit of effort, which rose 68 per cent while total standard effort increased 2.6 per cent in this period. Furthermore, when analysing by fleet, other drastic change in fishing effort can be perceived.

Ecosystem impact of fisheries: other indicators

Other indications are the impact on coastal systems and coastal cities with a large amount of fishery activities. The increased environmental impact of fisheries and adjoining activities (such as increased harbour transit, impact of processing plants, and so on) are repeatedly reported. In sum, several strong indicators are present that show there are several ecological impacts when fisheries are analysed as a system and not only on a species by species basis.

Social analysis of the fisheries sector in Argentina

Every sustainable development assessment should incorporate a social analysis, given the inter-relationship between natural resources and the productive sector. The following section will deal with an evaluation of the impact that fisheries development has had on labour opportunities, examining in particular the possible impact that a collapse of hake fisheries could have on labour issues.

Impacts of the hake crisis and industry restructuring on employment

It has been indicated that in the period of growth in the fisheries sector in Argentina, 11 per cent of fishery-related jobs were lost in the period 1987 - 1996. Thus the increase in catch did not lead to higher employment rates in all areas. Workers can be classified as on-shore or on-board. Cooperatives dominate on-shore employment.

Cooperative arrangements represent nearly 30 per cent of total on-shore employment. When analysing the social impacts of the hake crises, it is estimated that the number of workers directly involved in the hake catch and processing activities is about 8,200 people. The minimum impact hypothesis presents impact on 70 per cent of hake-related on-shore employment and 65 per cent on hake-related on-board employment. The maximum impact scenario presents a impact of 100 per cent on-shore and 80 per cent on-board of hake-related employment.

Scenario I: Minimum impact:

On shore impacts	
Hake	70%
Other species	15%
On board impacts	
Hake	65%
Other species	10%

Scenario II: Maximum impact:

On shore impacts	
Hake	100%
Other species	20%
On board impacts	
Hake	80%
Other species	20%

In addition, several instances of social conflict and even violent conflict have been documented by the media and other types of public information. Conflict was concentrated between towns that have fishing as a traditional activity and those which have entered into it as an industrial activity.

Cost-benefit analysis ²¹

For the future, the fisheries crisis imposes the urgent adoption of better sustainable management policies. The present Fisheries Law provides an acceptable legal and regulatory framework for improving the effective control and management of the sector activities.

The comparison of the net benefits of two scenarios (a) with current policies and (b) with optimum policies, would clearly show the costs of adopting the wrong policies for fisheries control and management. The CBA is applied exclusively for the case of hake fishing. Furthermore, hake represents a historically high proportion of fisheries resources traded, and is consequently the species most studied from several perspectives.

The identification of costs and benefits

The positive impacts of sectoral policies and benefits estimate These could include primarily the following:

- increase in fisheries catches (production);
- increase in exports;
- increase in employment;
- improvement and growth of the fisheries fleet;
- technological innovation in the sector;
- opening of new markets and trade relations;
- increase in public income.

²¹ This section follows the methodology presented in Villalobos, Ruy de, "Notes on the valuation of renewable natural resources", Mimeo, 1999.

The net value added for the economy should correspond to the fisheries production and its related sectors (i.e. construction, capital goods production, etc.)²² Value added has been estimated at 89 per cent of gross production value.²³

The negative social, economic, and natural resource impacts and costs estimates

The main negative impacts (costs) have been the following:

- degradation of the hake biomass (i.e. the value of the natural resource);
- increased costs for fisheries regulation and control;
- subsidies costs;
- non-diversification of catches;
- investment oversizing (fleets, ports, etc.)

The CBA undertaken on alternative Argentine fisheries policies during the 1990s has shown that:

- The hake biomass would have a total value of about US\$ 7,900 million, at constant prices.
- The factual policies carried out during the 1990s would have had a net direct cost for the economy of about US\$ 500 million, which includes the assumption of a total degradation of the hake biomass.
- An optimal set of fisheries management policies (simplified as respecting the TAC) would have had a net benefit of about US\$ 5,100 million.
- Therefore, the opportunity cost of the factual policies in the 1990s would amount to about US\$ 5,600 million, if the hake biomass will not recuperate.
- Under a more optimistic scenario, where the hake biomass would recuperate for year 2004, the opportunity cost of the factual policies in the 1990s would amount to about US\$ 2,000 million, provided that the future catches would respect TAC.

²² The assumption of a social price of salaries equal to 0 is rather strong, given the fact that the unemployment rate was not too high during the period 1990-1995 and that skilled labour is required for the sector. This assumption would result in overestimating net benefits. On the other hand, giving several indicators of idle capacity in the Argentine economy, assuming that all incremental operative costs are considered as net costs for the economy, is also a matter of discussion. This assumption would result in underestimating net benefits.

²³ No official (nor reliable) information is available on prices, GPV or VA for the sector. Only exports series seem to be consistent. It has been estimated that, for 1996, a Gross Production Value for the sector equivalent to US\$ 1,500 million while exports for this year were US\$ 1,030 million. Hake constitutes approximately 34 per cent of the value of exports and approximately 400,000 tons (for a total declared hake catch of about 584,000 tons). Therefore, the implicit average price has been estimated at US\$ 900/ton. Estimates indicate that value added is about 85 to 90 per cent of sectoral GPV. For the hake sub-sector, VA was estimated at 89 per cent of GPV (See Schonberger and Agar, 1999).

- The distribution of benefits and costs proves that the main beneficiaries of the 1990s policies would have been the private firms (and the workers), with very low net benefits for the Argentine fiscal revenues (about US\$ 50 million) and an enormous social loss for future generations valued at approximately US\$ 3,500 million.

In conclusion, the adoption of a consistent and strong fisheries control and management policy would have net economic benefits for the economy as a whole and Argentine society that would be worth about ten times the factual economic results obtained so far, as indicated by the products of the analysis above. Furthermore, the value of a sustainable hake and fish biomass for future generations do not have, indeed, any price.

Conclusions

Data and analysis on the commercial structure of the fisheries system are not comprehensive, nor homogeneous between sources, nor well developed. Command and control failures of different sorts are one of the crucial issues to be dealt with in Argentine fisheries. Throughout the whole system of fisheries, high rates of control failures are identified, from weak administrative structures at the national and sub-national level, fragile application of norms, to inadequate systems of vigilance over the activity per se. The high rates of capture (even reported capture) that multiply permitted captures are just one indicator of the command and control failure. The command and control failures have also had an impact on the ecosystem due to pulse fishing patterns present, given the stop-and-go application of biological stops or other fisheries control norms.

Market failure

Economic evaluations, incorporating the issue of subsidies and overcapitalization, have indicated that market failures have occurred in the case of fisheries in Argentina, even by conservative estimates and even by dealing exclusively with quantifiable costs. Economic policy instruments that would derive in sustainable development management have not been applied in this case.

Inter-relationship between management systems and economic aspects of the fisheries sector

Altogether, it can be said that the problems faced by the Argentine fisheries sector after liberalization are due to an ingrained inter-relationship between management questions and economic issues. The problems faced by Argentine fisheries are classic mismanagement regime issues compounded by economic flaws. An *open access* regime is basically a system without control of the quantity of resources fished and where the fish captured is not paid for adequately. Open access regimes for fish-exporting countries (as is the case in Argentina) without trade barriers (which to a certain degree has happened in the Argentine case), leads to fishing being a more profitable activity over time. *Catch control* regimes are an improvement over

open access systems since total catch from a particular species is regulated, either directly or indirectly.

Direct catch control is carried out by setting (and meeting) a total allowable catch or indirectly by curtailing the fishing boats' actions. In the long term, and analysing this with economic issues such as the reduction of trade barriers for fish-exporting countries, the opportunity to sell, and price variations, does not lead to a decline in fish stock given that this is controlled. Formally, this is what the Argentine fishing system was supposed to be until the late 1990s. That is, officially Argentina has operated under a catch control system.

A third organizational regime would be an *effective management* scheme where predetermined catch levels are not only set by biological variables, but also by an economically optimal guide. In this type of regime, government authorities set a maximum capture limit yet give incentives to the industry to maximize the value derived from the catch.

Policy package

Economic instruments for sustainable fisheries management

The economic instruments proposed can be perceived as two types:

- (a) An economic tool to capitalize the sector and generate public revenue that, to some extent, incorporates into the commodity's price full-cost accounting of the natural resource, and therefore reduces market distortion.
- (b) Economic instruments which reduce pressure on resources while at the same time leading to gainful employment and generating revenue.

Market-based instruments: quota management system

As it has been established elsewhere in this study, the National Fisheries Law of Argentina (adopted in 1997) prescribes the implementation of a quota management system (QMS) for fisheries exploitation where individual tradable quotas (ITQs) are set by the Government and are exchangeable via a secondary market. The capture quotas are to be established by species, vessels, fishing zones, and type of vessel.

ITQs are logical extensions to fisheries of tradable emission permits. The management of fisheries resources through economic instruments leads, in theory, to an improvement over other methodologies that allow for a 'run to fish' of open access fisheries. The common property characteristic of public goods, such as fisheries resources, is deficient in a system with large-scale exploitation and diminishing resources. A quota management system implies greater use definition in the Argentine case, as well as improved resource use charges to be levied. The transferability factor implies an opportunity to use market forces in addition to policy, in order to control fisheries exploitation.

Quota design and implementation

In general, the policy attempted through QMS is the reduction of over fishing and 'race for fish'. It should counter the tendency for the concentration of markets and build in social compensation measures.

Labour and fisheries adjustment through a quota system

The adjustment process, which in the Argentine case would be through a quota system, has strong implications for the labour force. Due to the distinguishing factors that fisheries labour has, and the close relationship between a primary natural resource and employment, analysis of the implementation of quota management systems (as other output controls), in a context of responsible fisheries adaptation, has shown the following:

Length of fishing season	Increases
Catch per unit of effort (long term)	Increases
Harvesting employment	Decreases

Other measures to improve management and use of fisheries resources

Many other measures to improve management and use of marine fisheries resources have also been identified, such as:

- Technological and exploitation mode changes

Technological changes imply, in this case, modifications of fishing gear used in fisheries, and exploitation mode changes imply diversification of species used to reduce pressure on any one resource or reduced number. Gear utilized in many cases does not discriminate species, entailing the capture of less desirable species or species with less market value than the target product. Gear that catches juveniles together with adult fish is amply utilized.

- Command and control changes

It cannot be over emphasized that some of the most serious impacts of trade liberalization in the Argentine fisheries sector has been the implicit and explicit lack of control over resource extraction. The following measures are proposed:

- Improvements in surveillance systems
- Enhanced monitoring system.

Trade policy revisions

A running theme in the evaluations is that the problems present in Argentine fisheries have a marked international dimension. New negotiations of international fisheries accords in which Argentina is party, active participation in trade/sustainable development debates, and other such policy-setting mechanisms where the role of fisheries in developing countries are set, are guiding principles for this type of revision.

The failures of the international economic system for non-commodities expansion, such as fisheries from developing countries, are another aspect that must be acknowledged. Disloyal international competition, tariff escalation, and subsidies are integral parts of the policy transformations at the international level that have to be part of the modifications needed to make fisheries sustainable.