

Fisheries and Japan: A case of multiple roles?

by

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1. Introduction

Fisheries in Japan is of a rather particular nature. First, the sheer importance of fish in the national diet² and hence a strong demand for fish is particularly pronounced in Japan. Second, Japan has a long tradition of coastal community based fisheries management that has been used to ensure that the resource base is harvested in a sustainable manner. As an important “side effect”, the community based fisheries management system has been of key importance for the well being of fisheries’ dependent coastal communities. In the development of the Japanese coastal fisheries management systems, the coastal communities play a key resource management role. In this process several additional functions have developed that are also of importance for the livelihood of fishers.

Until the mid 1980’s fisheries managers in most countries focussed mainly on the biological outcome of the fisheries management systems. Often the fisheries were managed exclusively in the domain of marine biologists that saw it as their job to ensure that fish stocks were harvested at the maximum sustainable yields. During the beginning of the 1980’s the focus changed to include the economic aspects as well, and the concept of maximum economic yield became a management objective in some countries.

During recent years, however, fisheries managers have begun to focus more on the social aspects and functions of fisheries. This has largely developed in response to the fact that many fisheries are overexploited and that fishing profits have been falling. In fisheries where fisheries remuneration is largely based on so-called “share basis” the effects of fewer fish have immediate income consequences for skipper and crew alike, and hence also impact the coastal communities that are dependent on fish as a source of employment and livelihood. Furthermore researchers³ make the point that the viability of fisheries management systems, and fishers adherence to the rules, depend largely on social and cultural aspects and to a lesser degree on biological and economic aspects of fishing.

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² Per capita supplies of fish and fish product in Japan is estimated at 70.6 kg per year compared to a world average of 15.9 kg.

³ See for example Torben Vestergaard “Social Adaptations to a Fluctuating Resource”, monograph, Department of Ethnography and social Anthropology, Aarhus University, Denmark.

The development and implementation of a particular fisheries management system have important repercussions in terms of biological, economic and social outcomes for fishers and fishing communities alike. The purpose of this paper is to discuss some of the important outcomes that one would expect from the fisheries co-management system⁴ in Japan. The paper also provides a brief introduction to the Japanese fisheries sector as a background to understand the different management systems that are applied. Finally the paper discusses the multiple roles of fisheries and discusses whether the concept of multifunctionality, which has been intensely discussed in the agriculture sector, would be a useful analytical framework to fisheries.

2. The Japanese fisheries sector – some basic facts and data⁵

2.1 Catch/harvest

Japanese fisheries can be divided into three main types: 1) distant-water fisheries, 2) off shore, and 3) coastal fisheries. These three categories are quite different both in terms of resource management and fishing techniques used. The relative importance of the three types of fisheries has changed considerably over recent decades as, with the introduction of 200 mile EEZ, Japan lost access to traditional long distance fishing grounds in many places around the globe. Furthermore, overexploitation and fluctuating stocks of some resources have had impacts on the relative importance of the three types of fisheries.

In 2000 Japan harvested a total of 6,250,000 tons of fish to a total value of around JPY 1.76 trillion from marine fisheries and aquaculture (corresponding to some USD 11 billion). By quantity this made Japan the second largest producer in the world with only China producing more. Nevertheless, at 6.25 million tons this is a comparatively meager harvest as the post war peak production reached in 11.83 million tons (12.82 million tons if freshwater and aquaculture are included) in 1984. However more detailed statistics on the catch composition (see table 1) reveals that the decrease in production has been caused largely by a drop in the long distance and off shore catches while catches in coastal waters has experienced less dramatic changes.

While distant water and off shore fisheries are characterized by volumes, the coastal fisheries target high valued species with ready market demand. Japanese consumers are willing to pay high prices for freshness. Hence, and despite falling quantities, the value of the coastal fisheries is high and contributes most of the three types of fisheries to the overall value of Japan's catches, see Table 1.

Table 1. Japanese catch composition, 1984, 1990 and 2000, million tons & trillion Y

| | Total | Distant water | Off shore | Coastal |
|-----------------------|-------|---------------|-----------|---------|
| 1984 million tons | 11.83 | 3.27 | 6.92 | 3.33 |
| 1990 million tons | 11.05 | 1.54 | 6.05 | 3.30 |
| 2000 million tons | 6.25 | 0.89 | 2.54 | 2.79 |
| 2000 value trillion Y | 1.76 | 0.21 | 0.45 | 1.10 |

Source: Japan's Fisheries, fiscal 2001

2.2. Harvesting sector structure

According to the Japanese census (2000) of the fishing sector the total number of fishing operators (fishing enterprises) amounted to 150 000, 140 000 (93 per cent) of which operated in coastal fisheries and 10 000 in distant water and off shore fisheries. The fishing operations employed a total of 280 thousand workers

⁴ In *Towards Sustainable Fisheries* the term "co-management" is defined as "a process of management in which government shares power with resource users, with each given specific rights and responsibilities relating to information and decision making".

⁵ Statistical information on Japanese fisheries has been drawn from "The 10th Fishery Census of Japan (1988)" and "Annual Report on Japan's Fisheries" (2000 and 2001).

and of these 240 thousand (85 per cent) operated in coastal fisheries and 40 thousand in distant water and off shore sectors. Of the 240 thousand persons working in coastal fisheries 200 thousand (83 per cent) had status as self employed while 40 thousand were employed. In the distant and off shore fisheries only 5 thousands (12 per cent) were self employed and 35 thousands employed. In 1998 the fishing sector employed 230 thousand males and 50 thousand females.

Of particular importance to the future of the Japanese fishing is the fact that the age distribution of the fishing sector employment is very skewed; figures for 1998 reveal that 3 per cent of the workforce were under age 25 but 42 per cent over age 60. It may thus be expected that the demography of the fishing sector will undergo considerable change in the coming decade as the elderly leave the industry but are not replaced by younger entrants. It will in particular be noted that the basis for future fisheries operations, i.e. the younger age groups of 15 to 39 years, have decreased considerably.

In terms of households dependent on fisheries in Japan, some 200 000 households with a total of 730 000 members are dependent on fishing activities as a direct source of income. To this should be added another 210 000 working in fish processing industry. These figures exclude post-harvesting activities such as transport and distribution, whole sale and retail sale of fish and fish products, as well as the activities of the supply industries. Hence it is likely that 1.5 to 2 million people depend directly or indirectly on fishing as a source of income.

There are 6 245 (1998) fishing communities in Japan defined as a “regional fisheries society formed with a certain geographical and social territory centering in a fishing port in a partial area of a fishing district”⁶. Fishing communities are usually located around fishing ports of which there are 2 931 (2002) in Japan. These fishing communities are the nucleus in the management of the coastal resources of Japan.

In 1998, the number of powered marine fishing vessels was 236 000, a decline of 12% compared to 1993. 95% of total fishing vessels (225 000) were small fishing vessels of less than ten tons.

It should also be mentioned that recreational fishing is an important activity in Japan. While the total catch by recreational fishing is marginal, for certain fish stocks, there are some cases where the catch by recreational fishing is more than that of commercial fisheries. The number of persons taking part in marine recreational fishing reached 39 million man-years (1998).

3. Japanese fisheries management⁷

The three types of Japanese fisheries have distinct characteristics in terms of how they are managed. The following will briefly highlight the three management systems but will provide particulars on the coastal type fisheries that are of special importance to fishing communities due to the number of people employed. The principal laws that regulate fishing activities in Japan are “The Fisheries Law”, the “Living Aquatic Resources Protection Law” and the “Law Concerning Conservation and Management of Marine Living Resources.” These laws were amended in 2000/01 to be in line with the “Basic Law on Fisheries Policy”.

The central and prefecture governments regulate fishing efforts in terms of fishing method, gear use, fishing seasons and other technical measures.

3.1. Coastal fisheries

The basis for the management of coastal fisheries is a fishery right system divided into three types i.e.

- Common fishery rights

⁶ Source: “Visual Japan’s Fisheries – Fiscal 2001”, Fisheries Agency, Japan

⁷ This section draws in large part from *Towards Sustainable Fisheries* (OECD, 1997). The Literature list at the end of the paper provides other sources and additional reading on the fisheries management systems applied in Japan.

- Demarcated fishery right
- Set-net fishery right

with the common fishery right system being the most common and “normal” practice. The demarcated right system is used in the mari-culture industry. The set-net fishery right is exclusively used in set net fishing operations. Coastal fisheries are characterized by small-scale operators with strong community links and are of particular importance to the coastal regions. Due to serious problems of depletion of some of the coastal resources, a system of total allowable effort (TAE) has been introduced.

The right to fish is granted by the prefecture government to the local Fishermen’s Co-operative Association (FCA) with responsibility for a particular geographical area and whose membership are fishers from communities within this area. These rights granted to the FCA are exclusive but the rights cannot be transferred to others and only members of the FCA can fish in the area where the right is applicable. Rights to fishing given by the prefectures specify season, area closure and other regulations but do not set harvesting limits. Subsequently the FCA sets specific rules within the framework laid out by the prefectures. Any resident in the area of the FCA can become a member under certain conditions and start fishing but in practice, as fishing rights are transferable within families, this does not happen often.

For the purpose of the Japanese census, planning and implementing community-based fisheries management (CBFM), FCAs often set themselves up as (or merge into) Fisheries Management Organizations (FMO). FMOs are usually gear specific groups of fisheries (members of FCA) and according to the 1998 census the number of FMO totaled 1 734 and have the following functions:

- Management of fish stocks, fishing grounds and catch/harvest
- A voluntary association of fishers
- Active management of resources within its geographical area

3.2 Distant water fisheries

Participation in distant water fishing is limited through licences issued by the central Government. Licence conditions specify gear use, fishing grounds, fishing season, base port and other relevant conditions. Due to the importance of the Japanese long distance fisheries operations, Japan is a member of several international frameworks for the conservation and management of tuna stocks such as ICCAT, IATTC, CCSBT and IOTC.

Japan participated in the negotiations for establishing the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. Furthermore, regarding the north Pacific, Japan has participated in the “Interim Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean” and has carried out resource evaluation and other measures for tuna and tuna-like species in this area⁸.

Japan has been making efforts towards the establishment of an appropriate framework for the management and conservation of tuna and tuna-like species. In this regard, an interesting private initiative was the launch of the Organization for the Promotion of Responsible Tuna Fisheries (OPRT). The activities of this organization include the scrapping of tuna long-liners engaged in IUU fishing activities, white listing of tuna vessels and eco-labelling with the purpose of ensuring a responsible high seas tuna fisheries.

3.3 Off shore fisheries

Off shore fisheries are regulated through a TAC system introduced in 1997 combined with licenses that are issued by prefecture governments. Today the TAC system includes 7 major species of high economic value

⁸ *Review of Fisheries, 2000-2001* (forthcoming).

which are caught in large volumes and in particular need of management. The most important off shore fisheries include Alaska pollack, jack mackerel, sardine, mackerel, saury, common squid and snow crab and are all managed with TACs.

The seven fish species that are subject to the TAC system cover about 30% of total fishing in Japan in 2000. The TAC system assigns TAC allocations to each fishery separately, not to individual fisherman. TAC are set by the central government (Fisheries Agency).

4. Outcomes of the use of community based fisheries management and comparisons with other OECD fisheries management systems

Before describing the principal observations from the *Towards Sustainable Fisheries* with regard to the use of co-management systems it should be observed that many types of management is in use among OECD member countries. Annex 3 provides a synopsis of management systems in OECD Member countries.

It will be noted that many countries have experience with co-management at local levels. However, only few countries have published information on these experiences probably as the cases are confined to specific situations and fisheries and not generally applied. The material submitted to the *Towards Sustainable Fisheries* limited the analysis to three countries that, in addition to Japan, included the Netherlands and Denmark. As with the Japanese co-management system, the Danish and Dutch experience show the importance of flexibility in management processes. In the meantime, little is known about the economic and biological results in the Danish and Dutch cases.

This makes the Japanese co-management system unique, partly as it is applied sector-wide to coastal fisheries, partly as it is fairly well documented. The potential use of co-management systems in fisheries of other countries was also investigated in the *Towards Sustainable Fisheries*. A key conclusion from this was that co-management systems can be an *important tool to improve economic performances* in the fishing sector. Furthermore, the Study notes that user participation in the development and implementation of fishery management plans may be a *critical element* for successful management.

However, the Study also notes that “There are no universal solutions to the fisheries management problems. The right solution will be different in different countries and at different points in time due to differences in circumstances and differences in political objectives. To find the right solutions requires complex and bold political decision.”

4.1 Outcomes of the Japanese community based fisheries management

In analyzing the evidence brought forward in the OECD publication *Towards Sustainable Fisheries*, a number of important points are raised regarding the use of community based fisheries management in Japan. The observations from the Study all point to the multiple roles that fishing communities have. Some of these are directly associated with the core management activity of the FCAs, others are a by-product of the management system itself and are produced in a synergistic way. Furthermore some of the roles and functions are additional activities/services that are not necessarily related to the management activity itself.

The first observation is the important efficiency gains that potentially exist by having management decisions taken at the local level rather than at central levels. This comes through a reduction in transaction costs related to both production and management. In this regard, co-managed fisheries allow more flexibility, which makes the fishery more profitable. By the same token, management objectives can be more precisely satisfied and can be geared to local conditions. This is clearly an important core and direct outcome associated with managing the resources.

Another important observation is that co-management promotes voluntary compliance through peer group pressure⁹. This is also likely to reduce transaction costs in particular as central enforcement may be minimized. The fishers collectively have an interest in securing the long-term sustainability of the resource and enforcement costs can thus be reduced. The Study observes that the vast majority of compliant behavior is the result of social fabric and considerations rather than enforcement per se, suggesting that the fishing community structure, through social control, works as an important lever for the fulfillment of management objectives. Furthermore, as fishers closely participate in the management process, they are more likely to be motivated in protecting fishing and fishing grounds. In other words, what in many other fisheries situations would be conceived as unpopular decisions (e.g. quota reductions, scrapping of effort), will have a better chance of success in community based fisheries management settings.

The second set of observations relates to the local knowledge of stocks, fish biology and environment in general that for obvious reasons is more advanced at the local level. Such knowledge can be utilized through local community-based management approaches. While also reducing transaction costs related to stock assessments, local knowledge can provide valuable additional information that can complement biological data from central research programs. Further, this knowledge has developed over time and is likely to receive more recognition by fishers than formal research.

The third set of observations relates to the broader social function of fishing communities. In Japan, many coastal fishing communities consist of homogenous social units or families that share a cultural heritage and, in common, work towards shared fishery management objectives. As noted in *Towards Sustainable Fisheries* various methods are used in Japan by the local FCAs for the allocation of catch possibilities to individual fishers. It varies, among other things, according to the social structure of the fishing community. This may, for example, entail a first right for elderly fishers to harvest easily accessible species. In addition to having the management function bestowed upon it, the FCAs also provide additional services that may include credit facilities, supplies of inputs (e.g. fuel, nets, and ice) and other social functions like schooling¹⁰. In general, Japanese fishing communities develop additional activities in support of the harvesting sector including processing, handling and marketing.

Finally, it should be mentioned that the support provided by the central government to the FCAs is of high significance. The support includes legal, technical and financial assistance and may be an additional reason for the longevity of the community based fisheries management system in Japan. The support to the FCAs and the financial transfers to port infrastructure in Japan are the principal Government financial transfers to the fishing industry which in 2001 totaled JPY 313 billion. Annex 2 provides more details on the government financial transfers in Japan for the years 2000 and 2001.

5. The multiple roles of fisheries

In the meantime, it is clear from the Japanese experience that in particular the coastal fishing sector and the fishing communities have many roles and include, to paraphrase the sustainable development paradigm, both a social, economic and environmental functionality. This has developed as a consequence of the particular management system in use in Japan's coastal fisheries and the fact that this type of management has a particular long tradition.

The multiple roles of fisheries as practiced in local fishing communities along Japan's coastline are depicted in the following graphic. In community based fisheries management approaches, as practiced in

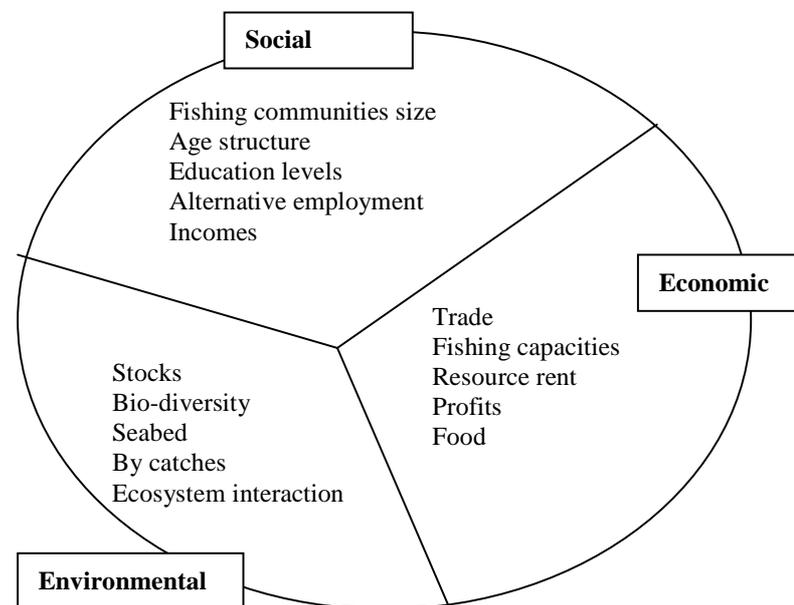
⁹ In co-management systems the responsibilities are shared among participants as compared to systems in which individuals compete against each other for the largest share of the catch e.g. so-called "olympic" fishing.

¹⁰ "Socio-cultural and Economic Indicators for Responsible Fisheries at a Community Level" by Dr. Kayo Ohmagari, Socio Economic Research Station, Institute of Cetacean Research, paper submitted to the OECD Committee for Fisheries' activity on Fisheries Sustainability Indicators (2001).

Japan, it is the social function that “glues” together the other parameters and ensures that the economic and environmental objectives are satisfied within the constraints imposed by the socio-cultural function.

It is the right balance between the three factors of the sustainable development paradigm that will ensure that the fishing is sustainable. The co-existence of the three types of management of fisheries in Japan (i.e. distant water, off shore and coastal fishing) constitutes an interesting case. Each type of fishery pursues a particular fisheries management model to ensure sustainable fisheries and in so doing each type of fishery management model will satisfy the three factors of the sustainable development to various degrees. The particularity of the Japanese coastal fishery management systems is the emphasis on the social functions and the use of this to achieve the economic and environmental objectives.

Graph 1. Fisheries and the sustainable development paradigm.



6. Multifunctionality and agriculture

Within OECD work on multifunctionality in agriculture¹¹ has been on-going for several years. The concept of multifunctionality of agriculture was introduced by the Agriculture Ministerial meeting in OECD in 1998. In the Communiqué from that meeting, it is recognized that beyond its primary function of food production agriculture activities also shape landscapes, provide environmental benefits and contribute to the socio-economic viability of farming communities and rural areas. Work on agriculture has clarified the concept of multifunctionality and sought to establish a common analytical framework and terminology.

The work program on multifunctionality covers three areas:

¹¹ See “Multifunctionality: Towards an Analytical Framework”, OECD, 2001

- The production relationships underlying the multiple outputs of agriculture as well as the externality and public goods aspect associated with these outputs.
- Methodological and empirical issues related to the measurement of the demand for non-commodity outputs, criteria and procedures for specifying domestic policy objectives and mechanisms for evaluating progress, and
- Policy aspects of multifunctionality including implications for policy reform and trade liberalization.

The work, which so far has concentrated on the first aspect (i.e. production relationships), identified the key elements of multifunctionality to be the existence of multiple commodity and non-commodity outputs jointly produced by agriculture and where some of the non-commodity outputs exhibit the characteristics of externalities or public goods. The outcome of this is a proposed analytical framework that ensures rigorous, objective and consistent consideration of identified non-commodity interests and outputs.

The analytical framework examines cases where there is a non-commodity output associated with the marketed agriculture output (jointness) and whether this jointness can be released or relaxed (disassociated). Secondly, if jointness exists, the non-commodity output should be further examined to determine whether there is a tendency for it to be under-supplied as a result of market failure due to externalities or the public good nature of the output. If this is the case, it is necessary to determine if there are non-governmental options to minimize the market failure.

While it may be difficult to apply this framework in practice due to the complexity of agriculture production structures and the data demands for the analysis, the framework provides a useful tool to ensure that multifunctionality aspects are being identified.

7. Final observations

This paper has highlighted that the Japanese fisheries sector consists of three distinct types of fisheries settings i.e. a distant water fishing, an off shore fishery and a coastal fishery. The three fisheries are managed with quite different approaches reflecting different economic, social and environmental objectives. The paper has provided more insight into the coastal fisheries and in particular the use of co-management systems. While Japan is not the only OECD country that uses co-management approaches, it is the country that has developed this approach most, reflecting the particular importance that is associated with fish and fishing as an activity and the fact that this approach has been applied through centuries.

The paper highlights the multiple roles that the Japanese coastal fishing communities provide in particular through the Fishermen's Co-operative Associations. In addition to fishing, there are important socio-economic functions including training, post-harvesting activities, financial services etc. that are provided through the FCAs. These functions may be perceived as being additional to the core activity of managing the fisheries resources in the FCAs geographical area of operation. Seen from the perspective of the sustainable development paradigm, fisheries can produce economic, social and environmental outcomes. However, the degree to which any particular part of the paradigm will be produced will depend on management objective and the practical implementation of the fishery management system.

Based on work of the OECD's Committee for Fisheries, there are important synergies that are associated with co-management systems. This concerns in particular the transaction costs of production and management where co-management systems offer significant efficiency gains, more advanced levels of compliance, increased management flexibility, and better use of local knowledge. Furthermore, the incentive for co-operation is high in local co-management and the implementation of new management rules is made easier when co-management exists. The *Towards Sustainable Fisheries* notes however that the right solution to managing fisheries will be different in different countries and at different points in time due to differences in circumstances and differences in political objectives.

The paper also provides a short overview of the OECD's work on multifunctionality in agriculture and a natural question is if a similar conceptual approach would be useful in fisheries. In this regard, at least two

important differences between agriculture and fisheries should be highlighted. First, most fisheries are common property fisheries although, as is the case in Japan's coastal fisheries, a degree of (community) property right has been introduced. Secondly, fisheries need to be managed by public authorities and through this may influence other (ex-fisheries i.e. environmental, social) outcomes. Any economic activity, including fisheries, is likely to produce several additional benefits and outputs over and above the core activity. In fisheries one may think of by-catches as well as other stakeholders who benefit from well-managed fish stocks (e.g. recreational fishers).

In sum, the usefulness of the concept of multifunctionality may be addressed through considering cases where the core output is accompanied by non-core outputs. In the fisheries case, the specific question that one may raise is if outputs, not related to the fishing sector, would be lost in the case the fishing activity did not exist (e.g. closure of the fishery). In this regard, the relative success of alternative forms of institutional design is relevant for the multifunctionality concept only if it concerns benefits outside the sector itself. In relation to fisheries, improved management or better social conditions for fishers does not constitute a case of multifunctionality, as it relates to the sector itself.

All types of fisheries management are likely to produce "by-products" in addition to managing fish resources. These additional outcomes need to be better identified and analyzed for their positive and negative effects (e.g. catches of non-targeted species) and a framework is needed that can measure their relative importance and provide guidance with tradeoffs. In this regard the sustainable development paradigm provides a framework that can help ensure that economic, environmental and social factors are being considered in a comprehensive way.

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OPRT website at www.oprt.or.jp

ANNEX 1: STATISTICS

No of sea surface power fishing vessels in 1999 and 2000 in Japan

| Tonnage | Number of vessels | |
|--------------|-------------------|----------------|
| | 1999 | 2000 |
| 0 - 4.9 | 100 12 | 98 263 |
| 5 - 9 | 15 332 | 15 264 |
| 10 - 19 | 8 680 | 8 656 |
| 20 - 29 | 33 | 32 |
| 30 - 49 | 152 | 136 |
| 50 - 99 | 615 | 599 |
| 100 - 199 | 727 | 685 |
| 200 - | 864 | 827 |
| Total | 127 315 | 124 462 |

Source :Ministry of Agriculture, Forestry and Fisheries "Fisheries Dynamic Statistics".

Number of Employees in 1993 and 1998

| Age | Number of vessels | |
|-------------------|-------------------|----------------|
| | 1993 | 1998 |
| <i>Male total</i> | 267 863 | 230 599 |
| 15 - 24 | 10 050 | 6 966 |
| 25 - 39 | 44 475 | 32 040 |
| 40 - 59 | 122 569 | 94 207 |
| 60 - | 90 769 | 97 386 |
| <i>Women</i> | 57 023 | 46 443 |
| Total | 324 886 | 277 042 |

Source: Ministry of Agriculture, Forestry and Fisheries "Fishing Census".

**Annex 2. Financial support of marine capture fisheries in 2000 and 2001
(million JPY)**

| | 2000 | 2001 |
|--|-------------|-------------|
| Marine Capture Fisheries | 308 806 | 307 612 |
| Direct payments | 2 050 | 2 050 |
| Payment for fleet reduction | | |
| Cost Reducing Transfers | 4 043 | 3 909 |
| support for introduction of vessels and gear | | |
| General Services | 308 060 | 306 741 |
| Resource management costs, including | | |
| - support for strengthening community-based fisheries management | | |
| - surveillance and enforcement | | |
| - support for the improvement of national and prefecture Fish Farming Centres/ release of seedlings | | |
| Support for fisheries facilities and infrastructure, enhancement of fishery communities environment, including | | |
| - Support for construction of fishing ports | | |
| - Support for establishing artificial reefs | | |
| Research and development of fishery technologies | | |
| Research on deep-sea marine living resources | | |
| Promotion of international fisheries cooperations | | |
| Cost Recovery Charges | 0 | 0 |
| Aquaculture | 710 | 551 |
| Direct payments | 0 | 0 |
| Cost Reducing Transfers | 0 | 0 |
| General Services | 710 | 551 |
| Advancement | | |
| Prevention of epidemics | | |
| Cost Recovery Charges | 0 | 0 |
| Marketing and Processing | 4 638 | 4 537 |
| Direct payments | 0 | 0 |
| Cost Reducing Transfers | 53 | 45 |
| Support for management of processing enterprises | | |
| General Services | 4 585 | 4 492 |
| Research and development of fishery technologies | | |
| Advancement of distribution, processing and consumption | | |
| Cost Recovery Charges | 0 | 0 |
| GRAND TOTAL | 314 154 | 312 700 |

Annex 3: A short review of major management measures applied by OECD countries¹²

AUSTRALIA

State governments have the responsibility for administering Australia's fisheries within three nautical miles from the coastline. Most fisheries are managed using a variety of input controls, although quota management systems are in place in a small number of fisheries. Management within the states is generally centralised within the relevant departments with responsibility for fisheries. The exception is Queensland, where the Queensland Fisheries Management Authority manages state fisheries.

Under the Fisheries Management Act 1991, AFMA may allocate four separate types of fishing concessions — statutory fishing rights, fishing permits, scientific permits, and foreign fishing licenses. Statutory fishing rights are defined as:

- A right to a specified quantity or proportion of fish;
- A right to use a boat in a managed fishery;
- A right entitling a person to use specified type or quantity of fishing boats or equipment; or
- Any other right in respect of a managed fishery.

These rights include quota for fish and boats and/or gear units. Fishing permits are defined in a similar manner to statutory fishing rights, but are used in fisheries where no management plan exists. Scientific permits are granted to allow an agreed program of scientific research to be carried out. Foreign fishing boat licenses are fishery-specific and have a maximum period of one year.

BELGIUM

Belgium is a member of the European Union, and its fishery policy is regulated by the European Union which imposes technical measures and quotas, and entails a number of administrative obligations. Technical measures include minimum size regulations, trip limits on sole, and gear restrictions. Belgium is allocated TACs of European Union stocks. Licensing of fishing vessels is required, and has been used to limit expansion of the fleet. The Belgian government has, since 1986, restricted the number of days at sea for vessels in order to curtail effort, and seasonal catch limits are imposed to spread fishing throughout the year. Individual quotas have also been used since 1992.

CANADA

The Department of Fisheries and Oceans uses a variety of management techniques to address instability and mitigate the common property problem in commercial fisheries. The choice of management methods depends on species characteristics, specific fleets and locations fished. Such methods include regulating the type and size of gear used, vessel length, fishing times and areas. Other tools for regulating access and effort include catch limits, limiting the number of licenses available to fish, and quasi-property rights (individual quotas) in some fisheries.

DENMARK

Denmark follows the EC Common Fisheries Policy that allocates quota to each member state.

^{12.} The text in this annex are excerpts reproduced from "*Towards Sustainable Fisheries: Economic Aspects of the Management of Marine Living Resources*" (OECD, 1997).

The Danish authorities then implement different management systems according to the stock characteristics. The main aim of national management measures is to ensure that the allocated quotas are utilised to as great an extent as possible. At the same time direct limiting systems have been introduced in certain areas, *e.g.* permissions (licenses), attached to species and/or areas. A variety of measures including seasonal catch limits, periodic bans, vessel rations according to vessel size, tie-up schemes, bonus quotas in the pelagic fisheries for vessels harvesting a high percentage of catch for human consumption. In addition vessel licenses are also required in either specialised or fisheries under special fishing pressure. These include the pelagics, cod, salmon, mussel and horse shrimp fisheries.

FINLAND

Today the Finnish water areas can be divided into three groups on the basis of ownership: those areas owned by single individuals, those jointly owned by groups of private real estate holders, and the public water areas owned by the state. For the management of the stocks, IBSFC also makes recommendations to the contracting parties on the various management regulatory measures. These are gear regulations, minimum landing size regulations, closed seasons and closed areas, and total allowable catches (TAC). Since the very beginning of IBSFC, TACs have been used as a main tool for managing Baltic Sea fish stocks.

FRANCE

French maritime fisheries are managed under the EU Common Fishery Policy framework. The Ministry of Agriculture and Fisheries is responsible for administering the sea fisheries and marine aquaculture sectors. Within this Ministry, the Directorate for sea fisheries and marine aquaculture is responsible for determining policy guidance with regard to sea fisheries and marine aquaculture, and implements the regulations relating to activities and public intervention in the sector. The Directorate divides out the fishing quotas awarded each year to France under the CFP between local and regional Producer Organisations. The participation and involvement of the sector in resource management is ensured in particular by the National Committee of Sea Fisheries, an inter-trade organisation representing all stakeholders in the sector. The National Committee must be consulted concerning any national or community measure regarding fisheries conservation and management, the conditions applicable to professional fishing and the working of inter-trade relations *per se*. The regional and local sea fishery committees, for their part, provide industry with technical assistance and information and play an active part in drawing up measures taken at the national level with regard to regional committees and social action.

After consultation with these institutions, particular measures limiting the access to fisheries are taken, in order to achieve a rational and sustainable management of the resource: introduction of catch quotas, issuing of licences by the administration or by the sea fisheries trade association etc.

Concerning the Overseas French Territories, excluded from the Treaty of Rome establishing the European Community, the resource management within the EEZs are in general attributed to the Territories Administrations. However, accordingly to their status, some management aspects could be excluded from their attribution.

GERMANY

The rules of the CFP are implemented in national law by the sea fisheries act and several other national regulations. The Federal Office for Agriculture and Food allocates the national fishing quotas. Professional organisations will be consulted on the allocation of quota and takes into account the structure of the fleet. Quotas are allocated by fish species and area to the deep sea and cutter fleet. In addition, technical conservation measures are applied and enforced by the Federal Office and fisheries inspectorates of the Länder.

GREECE

The General Directorate of Fisheries is responsible for the management, development and maintenance of fisheries resources. Regional and local services are under the supervision of the General Directorate and their duty is to apply fisheries policy. The objectives of fisheries management are to control fishing effort in conjunction with appropriate technical measures which include minimum size and mesh size regulations, closed areas and seasons, and minimum depths and distances from shore.

ICELAND

With the *de facto* recognition of the exclusive 200-mile fishing zone in 1976, practically all Icelandic fisheries have come under extensive management restrictions. The most commonly used fisheries management measures since 1965 have been overall catch quotas, fishery access licenses, individual vessel effort restrictions, individual vessel catch quotas, individual processing plant quotas. Since the mid-seventies there has been a clear trend towards vessel catch quotas in the management of most fisheries, culminating in a uniform ITQ system in practically all fisheries since 1990.

IRELAND

Ireland follows the EC Common Fisheries Policy that allocates quota to each member state. The Irish authorities then implement different management regulations to maximise the catching, sale, and processing of fish. The majority of quota fisheries are managed by the implementation of open and closed seasons. Pressure stocks are subject to additional measures such as licenses, spatial and seasonal controls, and early notification of intention to fish. The pressure stocks include mackerel and herring (weekly boat quotas), hake, and monkfish (monthly quotas) and sole and plaice that generally operate as a by-catch fishery the entire year.

ITALY

A generalised licensing scheme was introduced in 1982. This means that all vessels are required to possess a license, which is centrally managed by the Direction of Fisheries of the Ministry of Agriculture Resource, Food and Forestry. In addition to the licensing scheme, single management measures are applied include minimum mesh size, minimum fish size, selective gears, limits on mesh size, limits on fish size.

JAPAN

Japanese fisheries target a wide variety of species inshore, offshore and in distant waters. In Japan, the number of participants in certain sectors of fisheries is largely controlled through grants of licenses and permissions on the basis of biological, economic and social factors. The type of rights include: common fishery rights, set-net fishery rights, demarcated fishery rights in coastal fisheries, Minister-licensed fisheries in offshore and distant-water fisheries, and governor-licensed fisheries in other fisheries located between the above two.

Rights-based fisheries are based on the traditional use of fishing grounds which have been practiced in coastal areas from olden times. This does not provide an exclusive right *per se* over sea areas, but a right to engage in fisheries based on limited conditions with regard to fishing season, species and fishing methods. To obtain the fishing right, an applicant develops plans for utilizing the fishing grounds (=fishing right use regulatory rules) and the Fisheries Adjustment Committee decides the eligibility of applicants through public hearings. The Prefecture Governor then authorizes the right to successful applicants.

Fisheries licensed by prefecture governors are conducted mainly on the offshore side of the area for fishing-right-based fishery. This system is aimed at protecting and propagating fishery resources, regulating and co-ordinating fisheries, and establishing a fishery order. The total number of licenses under the special governor-licensed fisheries in 1999 was about 54 000, of which about 52 000 were small-type trawling. Other fisheries are licensed in the category of ordinary governor-licensed fishery [gill-net, dip net fishing,

lift net fishing, small-type trawling, beach seine, boat seine, (small-type) purse seine nets, stake net, angling, trolling, longline fishing, basket net fisheries, diving apparatus fisheries]. Fisheries of this type totaled about 137 000 licenses in 1999, of which gill nets accounted for 53 000 and boat seines 21 000. The governor of the Prefectures determines the duration of the licenses to between one and five years possibility of renewal.

KOREA

The principal fisheries management policy instruments employed in Korea are licenses and TACs. While the license system has been the main management tool for the past 50 years, a TAC system was introduced in 1999 for the first time.

The license system limits entry into the fisheries. License systems are classified into inland, coastal, offshore, and distant water licenses. The Ministry of Maritime Affairs and Fisheries is responsible for fishing licenses in offshore and distant waters and foreign-flagged vessels fishing within the Korean EEZ. Local governments at the provincial, city and district levels are mainly responsible for fishing licenses in the coastal waters. To ensure effective management and sustainable production of fishery resources, the maximum number of licenses is decided by the respective authority.

A TAC system was adopted in 1999 on a trial basis for four species (mackerel, sardine, and jack mackerel) in the large seine fisheries, and for red large crab in the offshore fish pot fisheries. The background to this was the decline of commercially important fish stocks in Korean coastal waters despite continued efforts to manage fishery resources using a license system. The TAC system aims to ensure an optimal management system for sustainable fisheries and to control fishing capacity. TACs are determined based on biological, economic, and social considerations.

MEXICO

The exploitation, use and conservation of the living marine resources has been based on the criteria of maximum sustainable yields, the application of seasonal and geographical closures, the definition of catch areas, regulations on the use of fishing gear and minimum size limits.

NETHERLANDS

The sea fishery operates within the framework of the Common Fisheries Policy of the European Union. The inshore fishery is a national concern and must take into account national policies on physical planning, water and nature management. The Ministry of Agriculture, Nature Management and Fisheries is responsible for the national policy on fisheries, which is embedded in the Policy Document on Sea and Coastal Fisheries. The general objective of the Dutch fishery policy is to promote responsible fishing efforts and a balanced exploitation of fish stocks. A variety of management measures are used to achieve this objective including licensing, decommissioning for reducing the fleet, effort limitations, and limitation of access. The Dutch government divides its national quota into individual fishing rights. There is an individual transferable quota system for sole and plaice that gives individuals the right to land a certain quantity of sole and plaice. These individual quota can be traded or leased or be set aside for a maximum of two years.

NEW ZEALAND

There are three tiers of Government in New Zealand; central, regional and local. Fisheries management is handled by the central government, and the Ministry of Fisheries administers the Fisheries Act. The Quota Management System (QMS) uses ITQs as the primary mechanism for managing commercial fisheries. It applies to 32 species groups in 10 quota management areas. ITQs are fully transferable apart from a range of quota aggregation restrictions, minimum holding provisions, and a restriction that holders must be New Zealand residents or companies less than 25% foreign owned. The quotas are proportions of the Total Allowable Commercial Catch (TACC) for each fish stock. There are 179 TACCs. A variety of other

management methods are used in specific fisheries, often in conjunction with ITQs. These include gear restrictions, size limits, and closed areas.

NORWAY

The important stocks exploited by Norwegian fishermen are cod and herring, salmon and capelin. Furthermore, aquaculture (mainly of salmon) has grown to become an important industry. The number of fishermen is around 20 000, of which 6 000 are part-time fishers and only 3 000 of 20 000 vessels are used the whole year. It is also seen that vessels are generally small, with the exception of the high sea fleet. Since most stocks are shared with other countries, the determination of total TACs is based on international co-operation. Total quotas are based on recommendations from ICES. The national quotas are distributed between different gears and in some cases between individual vessels. The administration of Norwegian fisheries is divided between the Ministry of Fisheries in Oslo, and the Directorate of Fisheries in Bergen. The Salt Water Fisheries Act provides the legal basis for inspection and control of fisheries, including the control of mesh size, of the composition of catches by species, size, etc.

PORTUGAL

With membership of the European Union, Portugal's fishery management system underwent significant changes. This allowed for a change from varied, prescribed fishing regulations of various types (the gear characteristics, the minimum sizes for certain species and the number of authorized shipments allowed to operate), to an integrated system. A main objective is the management of resources and conservation, and as a basic condition to ensure the perennial fishing activity.

SPAIN

Under the terms of the Spanish constitution and the statutes of the coastal autonomous communities, the regulation and management of the fishing industry are shared between the central and regional governments. The central government is responsible for planning, direction and co-ordination of marine fisheries, the structural organization, and environmental protection. The basic management instruments include TACs, licenses and technical measures. Technical restrictions include minimum size and gear restrictions, closed areas, and limits on fishing times and days. The Spanish administration does not normally distribute quota; however, in the case of the "300s" fleet¹³, the access to the catch is distributed through effort allocations. Licenses are used to apply the regulations to fishing taking into account gear, fishing area and species.

SWEDEN

The TACs allocated to Sweden are, in general, not distributed among fishermen in terms of vessel or fishing trip quotas. However, in the case of some stocks, the Federation of Swedish Fishermen applies such regulations on a voluntary basis. The National Board of Fisheries issues bans on fishing when quotas or the TACs are exhausted.

UNITED KINGDOM

UK Fisheries Departments are part of the Ministry of Agriculture, Fisheries and Food, the Scottish Office Agriculture and Fisheries Department, the Welsh Office Agriculture and Fisheries Department and the Department of Agriculture for Northern Ireland. In common with other member states of the European Union, the UK participates in the establishment of rules and regulations under the Common Fisheries Policy. The policy regulates UK fisheries and the UK is responsible for enforcement within its waters.

¹³ Refers to the number of Spanish fishing vessels (above 100 GRT) that were allowed to fish in EU waters when Spain adhered to the EU in 1985.

Within six miles of baselines, and in England and Wales only, Local Sea Fisheries Committees, drawn from those with local knowledge of the fisheries concerned, make and administer with the agreement of the Fisheries Departments concerned, bylaws to regulate and conserve stocks, mainly shellfish. Elsewhere in the UK, these inshore responsibilities fall on the Fisheries Departments. UK quotas for fishing various stocks are administered directly by Fisheries Departments.

Technical conservation measures are established under European Union legislation and include minimum size, minimum mesh sizes, area restrictions, and restrictions on certain types of fishing gear. Certain specific provisions are also applied to UK fishermen under national law. Fisheries Departments must license all UK vessels. These licenses are used to regulate fishing activities. Within these arrangements, fish producer organizations are responsible for managing quotas allocated to them by the Fisheries Departments and together these organizations account for more than 70% of the quota species landed by the UK fleet.

UNITED STATES

The Secretary of commerce through the National Oceanographic and Atmospheric Administration (NOAA) and the National Marine Fisheries (NMFS) service is the ultimate manager of marine resources. However, Federal Fishery Management Plans (FMPs) are developed by eight regional Fishery Management Councils representing diverse interests with members nominated by state governors in each region. For some protected resources, NMFS develops management plans directly.

Responsibility for managing some inshore fisheries is devolved to the states. An important halibut fishery shared by the US and Canada has been managed by the International Halibut commission for many years, though each country regulates their own fleet within the bounds the commission's regulations. Fishery management methods used are diverse and include various combinations of gear, size, and sex limitations, effort and catch limitations, closed areas and seasons, TACs, ITQs and limited entry.