FY2014
Trends in Fisheries

FY2015
Fishery Policy

White Paper on Fisheries: Summary

This document is a report on fishery trends and the policy implemented during FY2014 in accordance with the provisions of Article 10, paragraph (1) of the Fisheries Basic Act (Act No. 89 of 2001) as well as the policy to be implemented in FY2015 in accordance with the provisions of paragraph (2) of said Article.

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Chapter I: [Special Feature] Sustainable use of fish resources in waters surrounding Japan

○While it is important to ensure a stable supply of high-quality fish and fishery products at reasonable prices, appropriate conservation and management of fish resources is essential for achieving sustainable use of fish resources.
○In addition, in order to ensure a stable supply of fish and fishery products, it is necessary to secure stable fishery business management and a stable supply of raw materials and products.
○This special feature analyzes fish resources in waters surrounding Japan from various aspects and discusses measures necessary for sustainable use of fish resources in waters surrounding Japan and for sustainable development of Japan's fisheries.

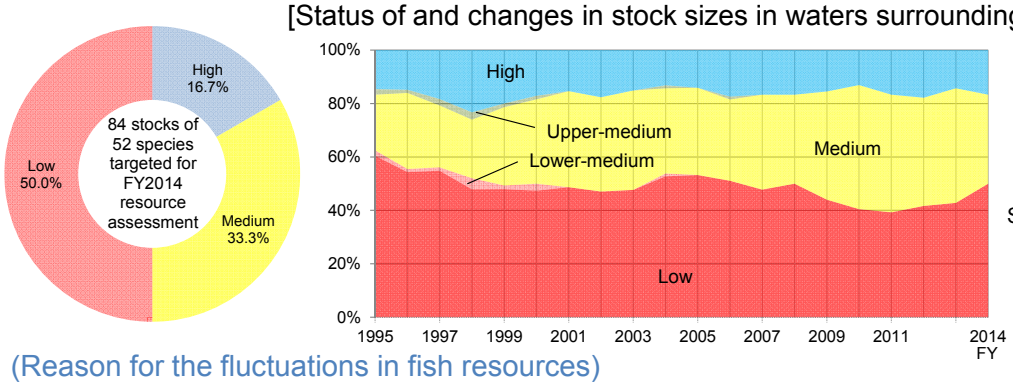
Section 1 Changes in fish resources in waters surrounding Japan

(1) Changes in fish resources in waters surrounding Japan

(Trend of fish resources in waters surrounding Japan)

○According to the FY2014 resource assessment in waters surrounding Japan, among the major 84 stocks of 52 species, the stock size was high for 14 stocks (17%), medium for 28 stocks (33%), and low for 42 stocks (50%). Stocks of a medium stock size decreased and stocks of high and low stock sizes increased.
○As for the stock sizes of species subject to total allowable catch (TAC), the stock sizes of sardine, mackerels, and Japanese common squid have increased and the stock sizes of saury, Alaska pollack (pollock) and horse mackerel have decreased, compared to the time of introduction of the TAC system. In recent years, the stock size of horse mackerel has been on a recovery and that of snow crab has been on a decline.
○With regard to species other than those subject to TAC, the stock sizes of Pacific cod, yellowtail and the East China Sea stock of Spanish mackerel have increased, while the stock sizes of Atka mackerel and the juvenile sand lance stock in the Soya Strait, etc. have decreased. The stock sizes of the herring stock in Hokkaido and tiger puffer stocks in the Sea of Japan, the East China Sea and the Seto Inland Sea, etc. remained low.
○Severe stock assessment results were indicated for the following species: for Pacific bluefin tuna [the spawning stock biomass is near historically low levels and the recruitment level is estimated to be relatively low]; for bigeye tuna in western central Pacific [spawning stock biomass is overfished and overfishing is occurring]; and for skipjack in the same area [the stock is currently only moderately exploited and fishing mortality levels are sustainable, but the continuing decline in stock size and increase in fishing mortality are recognized]. In particular, the International Union for Conservation of Nature (IUCN) raised the status of Pacific bluefin tuna to the "vulnerable" category on its Red List of Threatened Species in November 2014.

[Status of and changes in stock sizes in waters surrounding Japan]



Source: Fisheries Agency and Fisheries Research Agency, *Assessment of Fishery Resources in Japan's Surrounding Waters*, and others.

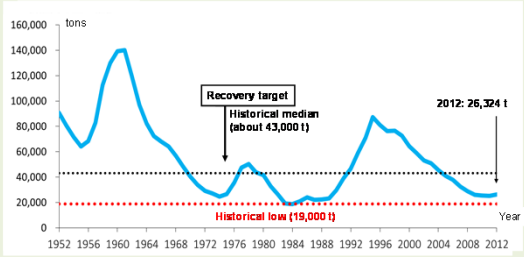
(Reason for the fluctuations in fish resources)

○The factors that affect fish resources are not only human activities, such as fishing and development, but also factors related to natural environment, such as water temperature, ocean current and food, etc. In particular, the stock sizes of mass-caught pelagic fish resources like sardine fluctuate substantially by the natural environmental factors that surround them at their early stage of development.

[Column: Current status of Japanese eel and Pacific bluefin tuna resources]

○The spawning stock biomass of Pacific bluefin tuna in 2012 was assessed to be near the historically lowest levels. The recruitment level of Pacific bluefin tuna in 2014 will be the lowest since 2000.
○The recent catch volume of juvenile Japanese eels (glass eels) is at a low level in the long term. The Japanese eel was listed as "Endangered" on the IUCN's Red List in June 2014.
○Since Japan accounts for a large part of the world production and consumptio of these two species, it has a great responsibility for their sustainable use. Japan needs to take the initiative in their international resource management.

[Changes in spawning stock biomass of Pacific bluefin tuna]



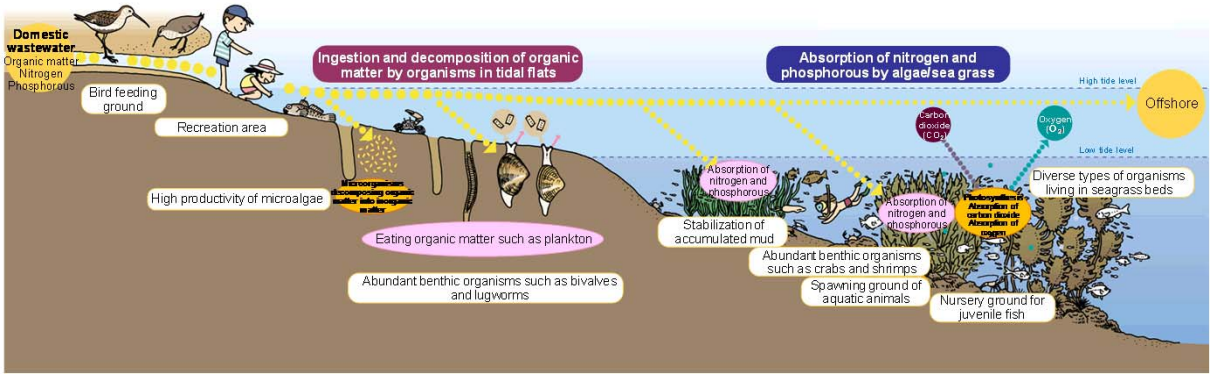
Source: Fisheries Agency.

(2) Changes in the fishing ground environment in waters surrounding Japan

(Importance of seagrass beds and tidal flats)

○Seagrass beds and tidal flats play a significant role in proliferating fish resources by providing spawning grounds and habitats for aquatic animals, and also contribute to purifying seawater.
○Due to sea desertification and development of coastal areas, the area of seagrass beds and tidal flats has decreased considerably, serving as one of the causes for the decline in Japan's fishery production.

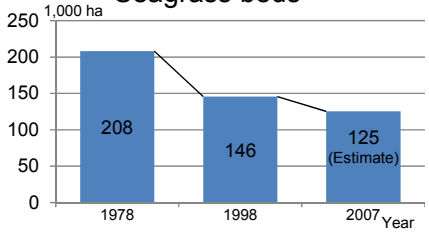
[Seagrass beds and tidal flats that are important grounds for spawning and growth of juveniles]



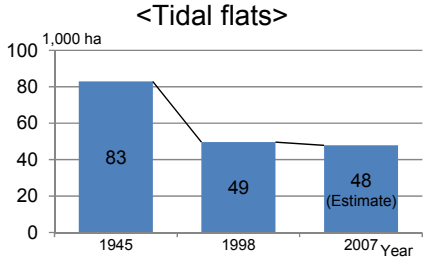
Source: Fisheries Agency

[Changes in the area of seagrass beds and tidal flats]

<Seagrass beds>



<Tidal flats>



Source: Fisheries Agency data (2007) and Ministry of the Environment, *Basic Survey on Conservation of Natural Environment* (other years).

(Environmental changes and changes in the fishing pattern)

○In spring of 2014, water mass with a temperature of 20° C or less, which skipjacks dislike, spread through the waters surrounding Japan. As a result, the catch volume of coastal skipjack fishing vessels in spring hit the lowest level since 2000.
○Since there was a delay in the southward migration of saury, their catch volume in summer, the start of the fishing season, was lower than usual. However, as saury later migrated south, the catch volume for 2014 became the highest since 2010.

(Peculiarity of the fishing ground environment of inland waters)

○The fishing ground environment of inland waters is substantially affected by not only fishing activities, but also various human activities including leisure fishing, installation of flood control structures, discharge of wastewater, etc.
○The Basic Policy on Promotion of Inland Water Fisheries formulated under the Act on Promotion of Inland Water Fisheries (enacted in June 2014) provides that fishers and the national and local governments should unite their efforts to comprehensively promote measures necessary for the promotion of inland water fisheries, such as the recovery of inland water resources, regeneration of fishing ground environments and sound development of inland water fisheries.

(Effects of human activities other than fisheries)

○Pollution by waste plastic, oil or any other chemical substances and occurrence of red tide or blue tide cause damage to aquatic organisms.

(Effects of wildlife and pest animals on fisheries)

○Steller sea lions, longheaded eagle rays, sea squirts, and large jellyfish have caused fishery damage including preying on catch, delaying work, and damaging fishing gear. The national and related local governments have implemented measures to prevent damage, such as expelling such animals.
○In inland waters, the growing number and spreading distribution of exotic fish and great cormorants have presented a problem for fish resources. The national government has efforts to control exotic fish and technical development. Against great cormorants, the national government has supported the efforts of fishery cooperatives, etc. to expel them or scare them away, while prefectural governments have also taken the initiative to promote wide-area efforts.

(Effects of whales on fisheries)

○It is likely that minke whales, which have a strong tendency to eat fish, are in competition with fisheries and are posing a threat to fish resources.

(3) Efforts to increase resources

(Seed release)

○Seeds of about 80 fish species have been released by prefectural sea farming associations and fishers. Regional Sea-Farming Promotion Committees, which have been set up for six sea areas of Japan, have promoted stock enhancement and establishment of seed production/release systems based on coordination between related prefectures for wider distributed species.

[Major species subject to seed release and the number of seeds released] (Unit: 1,000 seeds)

		FY1988	FY1993	FY1998	FY2003	FY2008	FY2009	FY2010	FY2011	FY2012
Species subject to a prefectural resource recovery plan	Abalones	20,580	23,910	28,050	26,810	24,140	24,700	23,180	13,620	12,510
	Sea urchins	20,050	71,520	81,410	79,560	67,810	66,180	70,660	57,990	63,250
	Scallop	3,027,970	3,123,770	2,755,290	3,042,860	3,266,680	3,263,690	3,183,340	3,180,950	3,296,320
Species subject to a cross-prefectural resource recovery plan	Red sea bream	17,370	20,610	22,850	19,760	14,020	14,070	14,240	12,230	11,040
	Japanese flounder	8870	19,470	26,280	25,440	23640	21,910	19,940	15,890	15,490
	Tiger prawn	323,960	304,240	225,130	153,260	105,190	107,270	106,340	107,950	132,840
Salmon		2,050,000	2,053,000	1,868,000	1,817,000	1,809,000	1,852,000	1,199,000	1,652,000	1,617,000

Source: Fisheries Agency, Fisheries Research Agency and National Association for the Promotion of Productive Seas , "Materials on the production and release of fingerlings for stock enhancement."

Note: The FY2010 data on salmon does not include the data for the prefectures on the Pacific side of Honshu (Japan's main island) because the number of seeds released is unknown due to the effect of the Great East Japan Earthquake.

[Column: National Convention for the Development of an Abundantly Productive Sea]

○The National Convention for the Development of an Abundantly Productive Sea has been held annually in the presence of the Emperor and Empress with the aim of widely disseminating to the public the importance of various activities conducted by fishery-related entities for the recovery of fish resources, such as sea farming including seed release and the cleaning up of coastal areas, and promoting and developing Japan's fishing industry by pushing forward cultivating fisheries.

○In 2014, the 34th convention was held in Nara Prefecture. The 35th convention is to be held in Toyama Prefecture.

Emperor and Empress releasing seeds
(Photo courtesy of Nara Prefectural Government)

(Development of offshore fishing grounds)

○In order to increase stock sizes in offshore areas, the national government has implemented the Fishing Ground Development Program in Japan's EEZ to install artificial reefs, create nursery grounds for aquatic animals and plants, etc. since 2007. In the artificial nursery reefs targeting snow crab and flathead flounder developed in the western Sea of Japan (off Hyogo to Shimane Prefectures), notable effects were observed with the habitat density in the reefs increasing to about 2.5 times that in the surrounding waters for snow crab and to about 3.6 times for flathead flounder.

(Comprehensive efforts to maintain the fishing ground environment)

○Prefectural governments have formulated cross-prefectural master plans for improvement of the fishery environment based on the Program for Comprehensive Measures to Nurture Abundantly Productive Sea. As of the end of March 2015, master plans for the improvement of the fishery environment were formulated for 15 districts.

○The national government has supported the activities of fishers and local residents to conserve seagrass beds and tidal flats under the Program for Measures for the Demonstration of the Multiple Functions of Fisheries. In addition, it created Guidelines on Measures Against *Isoyake* (rocky-shore denudation) and Guidelines for Increasing the Productivity of Tidal Flats, compiling measures to respond to sea desertification and decline of productivity of tidal flats.

(Integrated coastal management and *sato-umi*)

○There has been a gradual spread of the concept of integrated coastal management, which is to manage coastal sea areas in an integrated manner including conservation of the fishing ground environment as well as management of the onshore environment and development that affect the coastal sea areas. Also, there has been intensification of activities of utilizing coastal sea as *sato-umi* (a coastal area where biological productivity and biodiversity has increased through human interaction), similar to *sato-yama* (such area of a mountain), in which humans maintain and preserve biodiversity through interacting with nature in a manner consistent with nature, and thereby maintaining and increasing fish resources, which are constituent elements of the ecosystem.

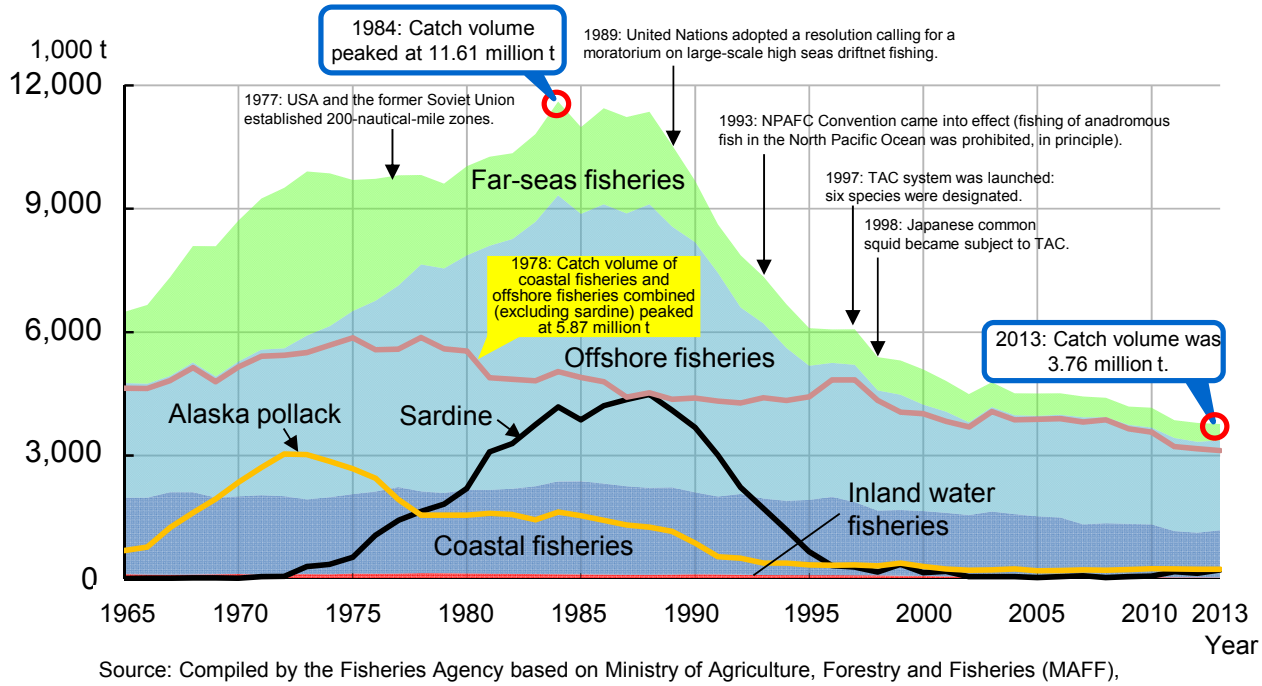
○Cooperation among a broad range of stakeholders is essential for promoting integrated coastal management and *sato-umi*. Fishery cooperatives are expected to act as coordinators in this regard.

(4) Transition in the production status of Japan's fisheries using fishing vessels

A. Declining catch volume of Japan's fisheries using fishing vessels

○The catch volume of Japan's fisheries using fishing vessels, which peaked in 1984, sharply dropped from around 1988 to around 1995. Since then, the volume has been moderately declining, marking 3.76 million t in 2013, a 1% fall from the previous year.
○ Compared to 1984, the catch volumes of sardine, Alaska pollack and mackerels substantially declined and those of yellowtails, etc. increased. Over the past 10 years, the catch volumes of sardine and Pacific cod, etc. have increased.

[Changes in catch volumes by sector and the situation surrounding fisheries]

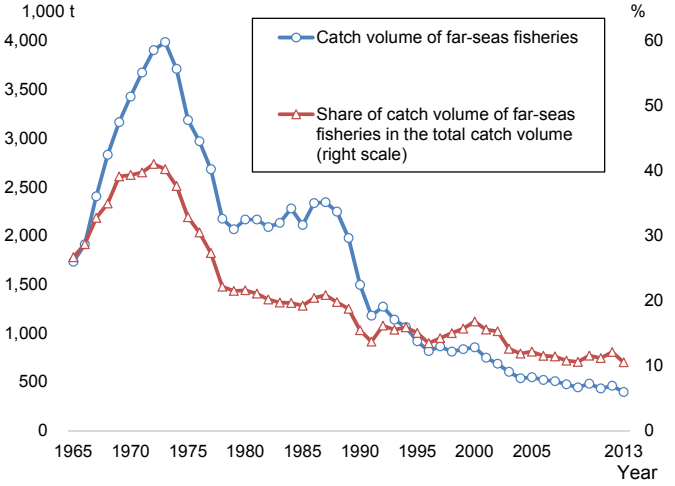


Source: Compiled by the Fisheries Agency based on Ministry of Agriculture, Forestry and Fisheries (MAFF), *Annual Statistics on Fishery and Aquaculture Production*.

B. Changes in the situation surrounding Japan's fisheries in recent years (Changes in far-seas fisheries)

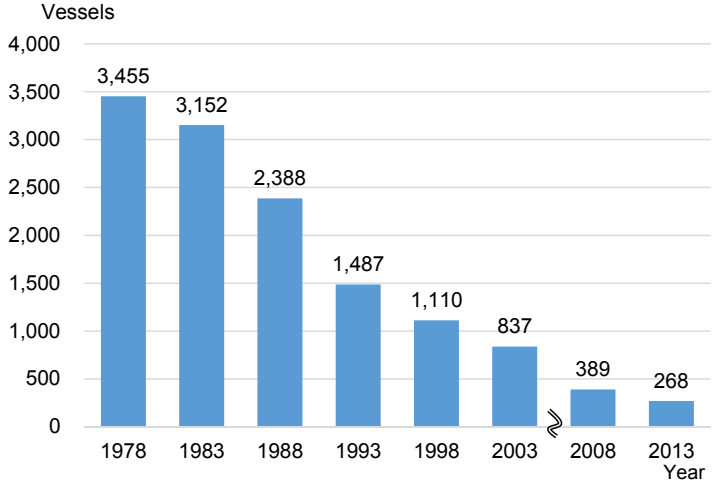
○Far-seas fisheries, which once accounted for a large share in Japan's fisheries (a 41% share in the total catch volume of Japan's fisheries in 1972), but the share declined to 11% of the total production by 2013.
○In the late 1970s, many countries established 200 nautical miles zones. As a result, a large number of far-seas fishing vessels had to withdraw from existing fishing grounds, and the catch volume of Alaska pollack, etc. decreased substantially. The catch volume declined further due to intensified competition with foreign fishing vessels in tuna fisheries, etc. and reinforcement of international management, including introduction of national catch quotas or bans on fishing.

[Changes in the share of catch volume of far-seas fisheries in the total catch volume of fisheries using fishing vessels]



Source: MAFF, *Annual Statistics on Fishery and Aquaculture Production*.

[Changes in the number of fishing vessels of far-seas fisheries]

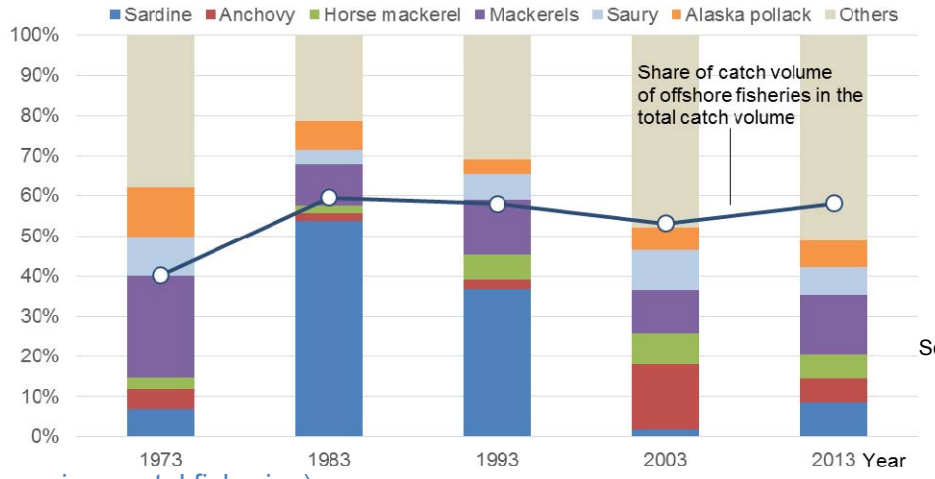


Source: MAFF, *Census of Fisheries*.

(Changes in offshore fisheries)

○The catch volume of offshore fisheries has accounted for 50% to 60% of the total catch volume of Japan's fisheries since the decline of far-seas fisheries. Due to the wild fluctuation in the stock sizes of mass-caught pelagic fish, which are the major fisheries target species, the composition of species has changed considerably.
○The major species was mackerels in the 1970s and sardine in the 1980s. In the 1990s, sardine sharply decreased while horse mackerel and saury increased. However, due to the sharp decrease of sardine, the total catch volume declined substantially. In recent years, there have been no specific species that are caught in the particularly large volumes that mackerels and sardine were in the past.

[Changes in the share of catch volume of offshore fisheries in the total catch volume of Japan's fisheries and the breakdown of major species in the catch volume of offshore fisheries]

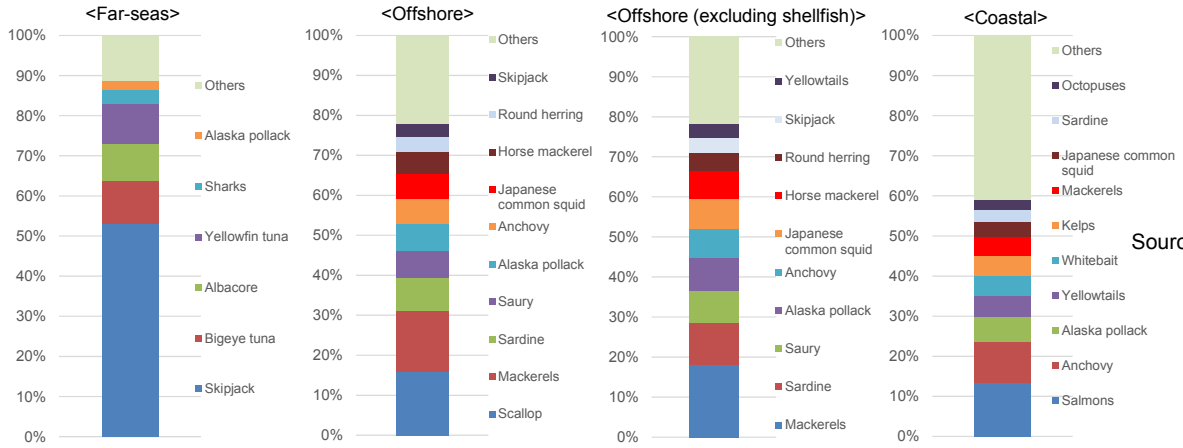


Source: Compiled by the Fisheries Agency based on MAFF, *Annual Statistics on Fishery and Aquaculture Production*.

(Changes in coastal fisheries)

○Coastal fisheries had accounted for 30% of Japan's catch volume in the late 1950s to early 1960s, but due to the development of far-seas and offshore fisheries, the share dropped to 20%. Following the decline of the catch of far-seas and offshore fisheries, the share recovered to around 30%. Changes in the catch volume are relatively moderate due to the large variety of target species, but the total catch volume has been on a decline, mainly with regard to demersal fish.
○The catch volume of coastal fisheries is 50% to 60% of that of offshore fisheries, but the catch value of coastal fisheries is 30% higher, and the unit price of the catch is more than double that of offshore fisheries.

[Breakdown of catch volume of far-seas, offshore and coastal fisheries by species (2013)]



Source: Compiled by the Fisheries Agency based on MAFF, *Annual Statistics on Fishery and Aquaculture Production*, etc.

(Changes in inland water fisheries)

○In inland water fisheries, the catch volume has declined for almost all species except for salmons. The decrease was particularly notable for carp, crucian, eel, sweetfish and freshwater clam. The major causes include changes in the habitat environment of rivers and other resources, the spread of invasive fish (e.g., largemouth bass) and pest birds and animals (e.g., cormorant), and damage from their preying on resources.
○In recent years, resource recovery efforts made or some fish resources have brought positive results in Lake Biwa, etc.

(Development of new fishing grounds and fisheries target species facing difficulty)

○To date, Japan has developed such species as the red snow crab, pelagic armorhead and Atka mackerel into target species by exploring new fishing grounds mainly in far seas or making those speicies, which had not been used in the past, usable through improvement of freezing/processing technology.
○Now that fishing grounds and fish species have been well developed by many countries which are interested in fisheries, it has gradually become difficult to develop new fishing grounds or new species.

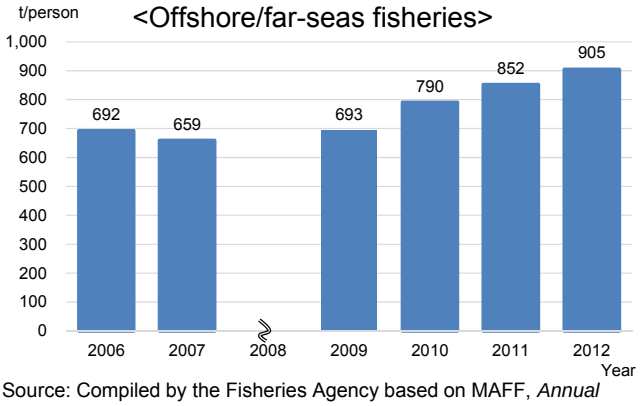
C. Japan's fisheries from the viewpoint of fisheries productivity

(Changes in the catch volume per fishery worker)

○The catch volume per fishery worker has been increasing overall.

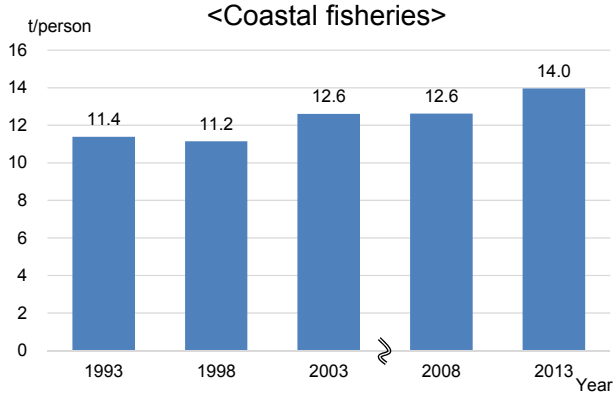
[Changes in the catch volume per fishery worker]

<Offshore/far-seas fisheries>



Source: Compiled by the Fisheries Agency based on MAFF, *Annual Statistics on Fishery and Aquaculture Production* and *Survey of Persons Engaged in Fishery*.

<Coastal fisheries>



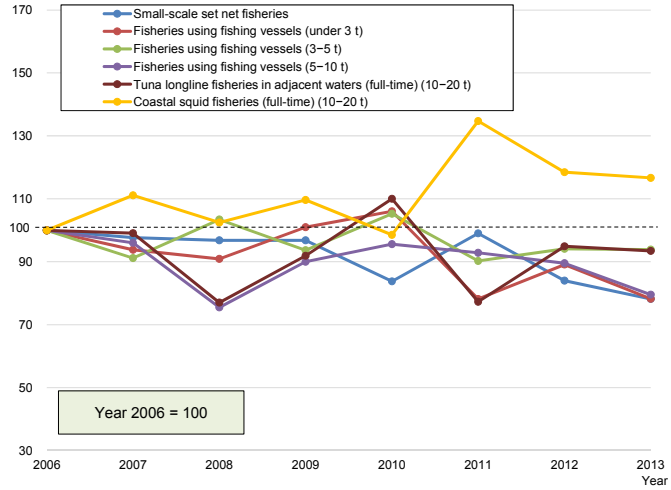
Source: Compiled by the Fisheries Agency based on MAFF, *Annual Statistics on Fishery and Aquaculture Production* and *Census of Fisheries*.

(Changes in the catch volume per fishery cost)

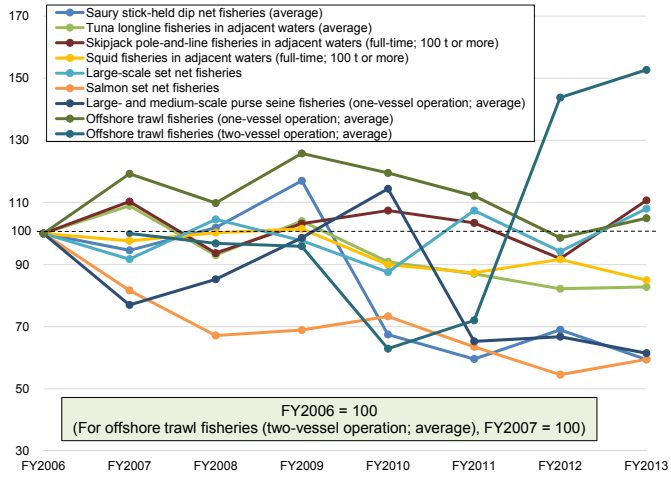
○The catch volume per fishery cost has been on a decline for many types of fisheries. The cause for the decline is the increased cost resulting from the steep rise in the fisheries material prices. Since it is difficult to predict the future catch volume, it is important to increase the added value of products and to reduce costs.

[Changes in the catch volume per fishery cost for major types of fisheries]

<Individual operators>



<Corporate operators>



Source: Compiled by the Fisheries Agency based on MAFF, *Statistical Survey on Fishery Management*.

D. Causes for the decline in the catch volume of Japan's fisheries in recent years

○Assumable causes for the decline in the catch volume of Japan's fisheries in recent years are not only direct effects including the sudden decrease of mass-caught pelagic fish (e.g., sardine), whose stock size fluctuates substantially according to the environment, and the loss of far-seas fishing grounds, but also the effects of changes in the natural environment, such as shrinkage of seagrass beds and tidal flats in coastal areas, on fish resources.
○Meanwhile, the catch volume excluding sardine and far-seas fisheries, has also been declining moderately. The decrease of fishery operators looks closely related to the decrease of the catch volume.

Section 2 Current status and challenges of Japan's resource management

(1) Basic character of fish resources and the necessity of appropriate resource management

○Such fish resources as biological resources have a self-renewable character, and they can be used sustainably if appropriately managed.
○The fish resources study has advocated the concept of maximum sustainable yield (MSY). In actual fish resource management, the resource management approach called "adaptive management" is important.
○It is important to consider and implement effective and feasible management measures, on a case-by-case basis, by comprehensively taking into account the character of target species, marine environment, the character of fishing operators and the social and economic conditions.

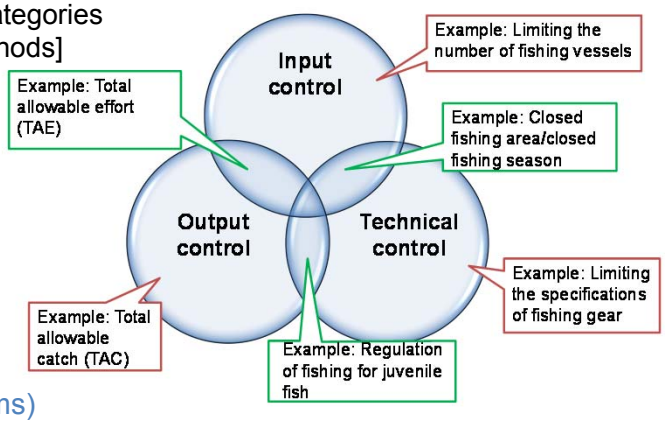
(2) History of resource management

○The fisheries industry has been actively operated in Japan from ancient times. Fishers have jointly managed and used fishing grounds since before the modern period.
○In the Edo period (from the 17th century to the late 19th century), there was the principle that “inshore is for shared use among the fishers of the local fishing community, while offshore is for free use.” Under this principle, an inshore fishing ground was jointly managed by fishers of the local fishing community, while an offshore fishing ground was jointly used by fishers of surrounding fishing communities and the manner of its use was adjusted between the users.
○With the enactment of the old Fishery Act in 1901, the fishery right system and the fishery cooperative system were established on the basis of the systems in the Edo period. These systems underwent the 1910 revision of the Fishery Act and lasted until immediately after World War II.
○In 1949, the current Fishery Act was enacted. While democratizing fisheries, the Act maintains the conventional philosophy of conducting resource management based on agreements between the related entities. Further, in 1951, the Act on the Protection of Fishery Resources was enacted.

(3) Resource management methods

○Resource management methods can roughly be categorized into the following three: (i) input control that limits fishing pressure at the entrance; (ii) technical control that demonstrates specific management effects, such as the protection of juvenile fish; and (iii) output control that limits fishing pressure at the exit.
○Since the three methods have their respective advantages and challenges, it is necessary to select and bring these methods together appropriately to implement resource management while considering various factors including the mode of fisheries, the number of fishers and the conditions of resources.

[Correlation between the three categories of resource management methods]



Source: Fisheries Agency.

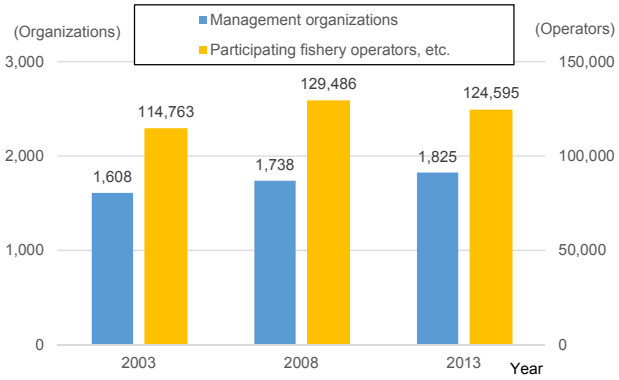
(TAC system and IQ/ITQ systems)

○In addition to the conventionally implemented resource management combining input control and technical control, Japan started the implementation of output control based on the TAC system in 1996. At present, saury, Alaska pollack, horse mackerel, sardine, mackerels (chub mackerel and spotted mackerel), Japanese common squid, and snow crab are subject to TAC.
○Generally, methods to implement the TAC system can be divided into the following: the system of managing TAC as a total quota without dividing it (the “total quota management system”); the individual quota (IQ) system which allocates catch quota for each fisher or fishing vessel; and the individual transferable quota system premised on the IQ system which allows transfer of IQs between fishers.
○The total quota management system (i) enables flexible management according to an increase or decrease of specific fish resources, and (ii) contributes to maintaining supply balanced with demand and to stabilizing fishery business management when divided allocation of quotas or voluntary management is conducted in order to prevent adverse effects on resources from concentration of fishing. On the other hand, it is pointed out that the system has such hindrances as causing overinvestment, shortening the fishing season due to concentration of fishing operation, and undermining ocean safety due to conducting fishing operations beyond the fishers’ capabilities, etc. However, in Japan, the number of vessels is strictly managed through fishing permits, and fishing operations are conducted under a system whereby TAC is distributed among the minister’s fisheries management organizations and the related prefectures and each fisheries organization or prefecture formulates a plan for using the distributed TAC and a management agreement. Therefore, there have been no cases where such hindrances have presented a major problem.
○The IQ system contributes to securing the effectiveness of the TAC system and is expected to have the effect of encouraging fishers’ business management efforts, while its detriments that have been pointed out include concerns about discarding of small fish of low value and underreporting of catches, and the involvement of large costs for surveillance and control. At present, the national government implements the IQ system for far-seas tuna longline fishing vessels fishing for southern bluefin tuna and Atlantic bluefin tuna and for red snow crab fisheries in the Sea of Japan fishing for red snow crabs. In response to recommendations by the ad-hoc Task Force on Fisheries Resource Management (March to July 2014), the national government started a trial IQ system for some large- and medium-scale purse seine fishing vessels fishing for mackerels in the North Pacific in October 2014.
○The ITQ system, in addition to having the same benefits and challenges as the IQ system, facilitates adjustment of the fisheries structure in the medium to long term. On the other hand, it is indicated that the system would increase the economic burden on new entrants, etc. who do not have a catch quota, and that small-scale coastal fishers with a weak management base would lose in the competition to survive, which not only results in a loss of the practices and order of fishing operations that have been cultivated over a long time, but also has a serious effect on fishing communities. The Study Group on Desirable Resource Management concluded that it is still too early to introduce the ITQ system in Japan.

(Public management and voluntary management)

- ○The legal and institutional characteristics of resource management methods can be divided into public regulation (top-down approach) and voluntary efforts planned and implemented by fishers themselves (bottom-down approach).
- ○A management method targeting extensive sea areas and various types of fisheries needs to be implemented as the government's public regulation.
- ○A management method targeting only a specific area or a specific type of fisheries may be left to fishers' voluntary efforts. By doing so, feasible measures that suit the actual conditions of the fishery concerned will be devised. Further, mutual monitoring among fishers called *tomo sengi* can reduce the government's surveillance and control costs. Fishers' voluntary resource management in Japan has been highly regarded by the international community as an effective resource management method for areas with a large number of small-scale fishers.
- ○The national and prefectural governments, in cooperation with fisheries organizations, have promoted a framework of resource management policies and plans in order to carry out resource management efforts in a more comprehensive and integrated manner. The management style combining public regulation and voluntary efforts is called "co-management" and has drawn worldwide attention.
- ○In Japan, not only small-scale fishers, but also large-scale fishing vessels operating offshore are also carrying out voluntary management.

[Changes in the number of fisheries management organizations, etc.]



Source: MAFF, *Census of Fisheries*.

Note: A fisheries management organization refers to a management organization that makes well-planned resource management efforts, such as restriction of the fishing season/gear and maintenance and management of seagrass beds/tidal flats, and that satisfies all of the following requirements: (i) the organization comprises multiple fishery operators that use the same fishing ground or that engage in the same type of fisheries; (ii) the organization voluntarily manages fish resources, fishing grounds or catches; (iii) the organization has documentary arrangements on fisheries management; and (iv) a fishery cooperative or a federation of fisheries cooperatives is involved in the organization.

[Measures for managing/recovering fish resources]

<table>
<tr><th>Measure</th><th>Contents</th><th>Implementation status</th><th>Method</th></tr>
<tr><td>Fishing permit system</td><td>○A fishing permit system targeting major types of fisheries

○Restricting the number of vessels, gross tonnage, fishing season, fishing area, fishing gear, etc.</td><td>○Fisheries under a minister's permit: 18 types of fisheries (13 designated fisheries [large- and medium-scale purse seine fisheries, offshore trawl fisheries, etc.] and five specified fisheries under a minister's permit) designated as those that need to be restricted for breeding and protection of aquatic animals and plants, or fishery adjustment and those that should be uniformly restricted by the national government due to the existence of an international arrangement or due to the risk that the imposition of different region-specific restrictions could cause a fishery adjustment problem between regions
○Statutory fisheries under a prefectural governor's permit: fisheries (medium-scale purse seine fisheries, etc.) of which the management is basically left to the discretion of the prefectural governor since the management should be conducted according to the circumstances of the region, but the upper limit of the number of vessels, etc. is specified by the Minister of Agriculture, Forestry and Fisheries from the viewpoint of managing the total allowable effort across prefectures, etc.
○Other fisheries under a prefectural governor's permit: fisheries (small-scale purse seine fisheries, gill net fishery, etc.) managed by the prefectural governor by establishing prefectural rules according to the circumstances of the region</td><td>Input control
Technical control</td></tr>
<tr><td>Total Allowable Catch (TAC) system</td><td>○ Targeting fish species that satisfy such requirements as large catch volume and high economic value, and for which there is sufficient scientific information to decide the total allowable catch volume

○ The upper limit of the annual catch volume set by the national government

○ The system introduced in FY1996; seven species designated at present</td><td>
<table>
<tr><th>Target species (management period)</th><th>TAC (1,000 t) (2014 fishing season)</th><th>Fisheries managed by the minister (1,000 t)</th><th>Fisheries managed by the prefectural governor (1,000 t)</th></tr>
<tr><td>Saury (Jul.–Jun.)</td><td>356</td><td>North Pacific saury fisheries (242)</td><td>Saury stick-held dip net fisheries under 10 t, gill net fisheries, etc.
Hokkaido Pref. (33), Iwate Pref. (5) and Mie Pref. (3); six other prefectures (small volume)</td></tr>
<tr><td>Alaska pollack (Apr.–Mar.)</td><td>257</td><td>Offshore trawl fisheries (160.6)</td><td>Longline fisheries, gill net fisheries, etc.
Hokkaido Pref. (93.9); six other prefectures (small volume)</td></tr>
<tr><td>Horse mackerel (Jan.–Dec.)</td><td>226.2</td><td>Large- and medium-scale purse seine fisheries (87)</td><td>Medium- and small-scale purse seine fisheries, etc.
Quota distributed among Shimane Pref. (38), Nagasaki Pref. (27) and four other prefectures; 28 other prefectures (small volume)</td></tr>
<tr><td>Sardine (Jan.–Dec.)</td><td>429</td><td>Large- and medium-scale purse seine fisheries (225)</td><td>Medium- and small-scale purse seine fisheries, etc.
Quota distributed among Mie Pref. (33), Shimane Pref. (33), Kanagawa Pref. (25) and four other prefectures; 17 other prefectures (small volume)</td></tr>
<tr><td>Chub mackerel and spotted mackerel (Jul.–Jun.)</td><td>902</td><td>Large- and medium-scale purse seine fisheries (523)</td><td>Medium- and small-scale purse seine fisheries, etc.
Quota distributed among Mie Pref. (56), Nagasaki Pref. (32) and seven other prefectures; 20 other prefectures (small volume)</td></tr>
<tr><td>Japanese common squid (Apr.–Mar.)</td><td>301</td><td>Offshore trawl fisheries (47.3)
Large- and medium-scale purse seine fisheries (14.6)
Squid fisheries (60.5)
Small-scale Japanese common squid fisheries (83.4)</td><td>Squad fisheries under 5 t, etc.
Twenty prefectures (small volume)</td></tr>
<tr><td>Snow crab (Jul.–Jun.)</td><td>4,961 t</td><td>Offshore trawl fisheries and snow crab fisheries (3,355 t)</td><td>Small-scale trawl fisheries, etc.
Quota distributed among Ishikawa Pref. (352 t), Niigata Pref. (365 t) and six other prefectures; two other prefectures (small volume)</td></tr>
</table>
</td><td>Output control</td></tr>
<tr><td>Individual Quota (IQ) method</td><td>○The upper limit of the annual catch volume per fishing vessel set by the national government</td><td>
<table>
<tr><th>Target species (time of introduction)</th><th>Number of vessels</th><th>Landing ports</th><th>Standards for quota allocation</th></tr>
<tr><td>Southern bluefin tuna (Apr. 2006)</td><td>91 (as of Apr. 2013)</td><td rowspan="2">Limited to eight ports (Port of Shimizu and Port of Yaizu in Shizuoka Pref., Port of Misaki in Kanagawa Pref., etc.)</td><td rowspan="2">The quotas are allocated by taking into account the following:
(i) the quota allocated to Japan by the Commission for the Conservation of Southern Bluefin Tuna and the International Commission for the Conservation of Atlantic Tunas; and
(ii) the operation status of the fishers and fishing vessels.
If the total of the requested catch volumes by individual fishing vessels does not exceed Japan's total allowable catch, the quotas are allocated as requested.</td></tr>
<tr><td>Atlantic bluefin tuna (Aug. 2009)</td><td>Eastern: 22
Western: 5</td></tr>
<tr><td>Red snow crab (Sep. 2007))</td><td>12 (as of Aug. 2012)</td><td>Two out of 17 ports selectable as landing ports; currently landed at four ports (Port of Sakai in Tottori and Shimane Pref., Port of Kasumi in Hyogo Pref., Port of Niigata in Niigata Pref., and Port of Etomo in Shimane Pref.)</td><td>The quotas are allocated by taking into account the following:
(i) the allowable biological catch calculated based on scientific data; and
(ii) the operation status of the fishers and fishing vessels, etc.
Specifically, the quotas are set according to the size of the fishing vessel, the past fishing results, etc.</td></tr>
</table>
</td><td>Output control</td></tr>
<tr><td>Framework of resource management policies and resource management plans (from FY2011)</td><td>○Basically targeting all fishers of all types of fisheries
○ Fishers carrying out operations based on a voluntarily created resource management plan, according to the resource management policies formulated by the national or prefectural government</td><td>○The national and 40 prefectural governments have already formulated resource management policies.

○Fishers are implementing resource management measures based on their resource management plans created according to the resource management policies.</td><td>Input control
Technical control
Output control</td></tr>
</table>

Source: Fisheries Agency survey.

(4) Specific examples of resource management

○The catch volume of sandfish in Akita Prefecture recovered as a result of the total ban on fishing for three years from September 1992, and reduction of the fishing efforts after lifting the ban.
○In sakura shrimp fisheries in Suruga Bay, efforts to establish a collective fishing operation framework and catch control and to introduce a mechanism to evenly distribute profits among fishers (the pool system) proved effective for maintaining/stabilizing prices and reducing costs.
○For Alaskan pink shrimp in Sado City, Niigata Prefecture, catch quotas were set and allocated to individual fishers, and the mesh size has been enlarged. The catch volume from 2011 to 2013 stayed level and the unit price rose by 5% to 8%.
○With regard to the Pacific stock of chub mackerel, from 2003, the national government took measures to reduce the number of operating days or suspend fishing operations of large- and medium-scale purse seine fisheries in the northern Pacific. In addition, the national government and relevant prefectural governments collaborated to develop frameworks to investigate and assess the target resources and to instruct relevant fishers, etc. As a result, the stock size increased, and the unit price at major landing ports increased.
○The catch volume of Spanish mackerel in the Seto Inland Sea recovered as a result of reducing the pressure on the resources through the prohibition of autumn fishing in a wide area and mesh size regulation, etc., as well as releasing seeds and developing a framework for appropriate progress control of the resource recovery plan.
○With regard to Atlantic bluefin tuna, the International Commission for the Conservation of Atlantic Tunas (ICCAT) drastically reduced fishing quotas, and introduced a system to collect and manage information on all phases from fishing to distribution (Catch Documentation Scheme) in order to prevent the distribution of catches that are in violation of the ICCAT regulations. Moreover, fishing of small fish of less than 30 kg was prohibited, in principle, and a closed fishing season was set. As a result of these measures, the resources have been recovering.
○Meanwhile, the stock size of tiger puffer that live in the area from the East China Sea to the Seto Inland Sea and in the Sea of Japan hit a record low level in 2013 in spite of measures including control of the number of fishing vessels, establishment of a period for suspending fishing, and limitation on the minimum fish length. In response, effective measures to avoid fishing immature fish are considered under a uniform policy adopted by the relevant prefectures.
○The spawning stock of Pacific bluefin tuna is at a historical low. With the decision of a regional fisheries management organization, efforts to halve the catch volume of small Pacific bluefin tuna (less than 30 kg) started in January 2015.

(5) Measures to ensure compliance with resource management measures

(Japan's fisheries regulation)

○In Japan, authorized fisheries enforcement officers appointed from among Fisheries Agency officials or prefectural government officials engage in regulatory activities, along with Japan Coast Guard officers and police officers.
○In addition, fishers in the respective areas carry out activities to prevent poaching, such as monitoring fishing grounds and reporting suspicious fishing, under the initiative of fishery cooperatives.

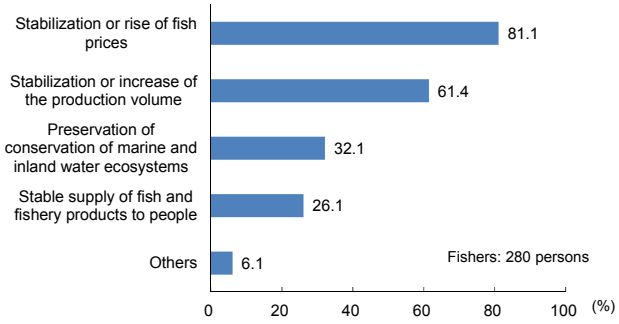
(Regulation of foreign fishing vessels)

○In 2014, the Fisheries Agency seized 14 foreign fishing vessels, conducted 81 on-board inspections, and confiscated 20 pieces of fishing gear that were set illegally (gill nets, crab pots, etc.).
○From autumn to early winter of 2014, a large number of Chinese vessels, exceeding 200 vessels at some point, appeared in Japan's territorial waters and exclusive economic zone around the Ogasawara Islands and Izu Islands. The vessels not only poached precious coral, but caused various problems including obstructing the operations of local fishing vessels from the Ogasawara Islands. The Japanese government took actions in concert, such as reinforcing surveillance and control on the ocean as well as strongly protesting against the flag state of poaching vessels through diplomatic routes and seeking effective measures and concrete outcomes from them. The government also strengthened legal measures against illegal fishing by foreign fishing vessels, including raising the amount of fines against unauthorized operations in Japan's waters and against refusal to receive on-board inspections by authorized fisheries enforcement officers.

(6) Awareness of resource management measures

○According to *Opinion Survey concerning Food, Agriculture and Fisheries*, a questionnaire monitoring survey conducted from December 2014 to January 2015, targeting monitors nationwide, the effects of resource management that fishers most expect were "stabilization or rise of fish prices" and "stabilization or increase of the production volume." Fishers have high expectations that resource management would stabilize fishery business management.

[Expected effects of resource management]



Source: MAFF, *Opinion Survey concerning Food, Agriculture and Fisheries* (conducted December 2014–January 2015).

(7) Challenges relating to resource management measures and fishery business management

○It is necessary to give consideration to the characteristics of each type of fisheries and implement resource management measures that suit such characteristics. It is also important for the people concerned to fully recognize the importance of resource management and the meaning of specific measures, and to deepen their mutual cooperation.
○Resource management measures should be implemented or existing measures should be reinforced as early as possible before fish resources deteriorate.
○In order to ensure the stability of business management of fishers who engage in resource management, the national government implemented “resource management/fishery business management stability measures” which compensate for the decrease in production value resulting from resource management.

Section 3 Current status of fisheries in foreign countries and Japan’s fisheries

(1) Status of fisheries production and resource management in countries with high production volumes

A. Status in each country

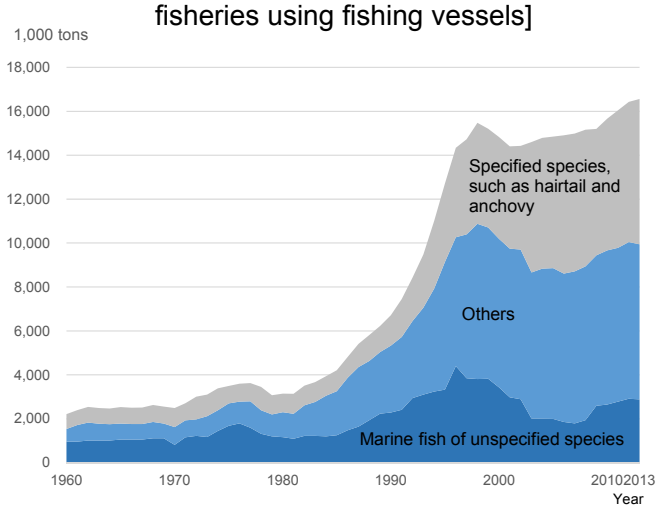
(Status in China)

○China has the highest production volume of fisheries using fishing vessels (not including aquaculture production volume; the same applies hereinafter) in the world. After reaching above 14 million tons in 1996, the production growth slowed down. While catching species that are uncommon worldwide in large volumes, the catches of species that had been the major target species in the past have reached their limits in recent years.
○Resource management measures implemented include the vessel registration system, fishing permit system, simultaneous suspension of fishing in summer, and fishing gear regulation. Tightening of the control system is a challenge.

(Status in Indonesia)

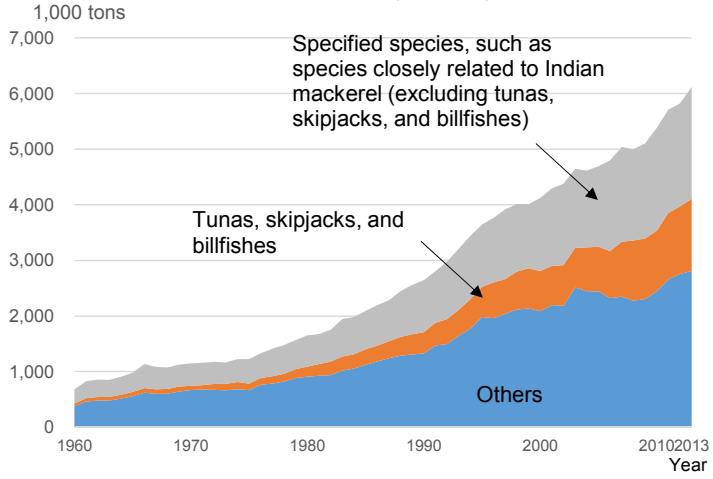
○Indonesia’s production volume of fisheries using fishing vessels surged from the 1990s, reaching the second highest in the world in 2013. It is the world’s largest fishing nation for skipjacks and tunas. Similar to China, while fishing large volumes of resources that are uncommon worldwide, the catches of species that had been the major target species in the past have reached the limits in recent years.
○Basically, resources are managed under the fishing permit system. A fishing permit is required for fisheries using fishing vessels of 5 tons or more. Challenges include the lack of effective control against illegal operations.

[Changes in China’s production volume of fisheries using fishing vessels]



Source: Compiled by the Fisheries Agency based on FAO, *Fishstat (Capture Production)*.

[Changes in Indonesia’s production volume of fisheries using fishing vessels]



Source: Compiled by the Fisheries Agency based on Food and Agriculture Organization (FAO) of the United Nations, *Fishstat (Capture Production)*.

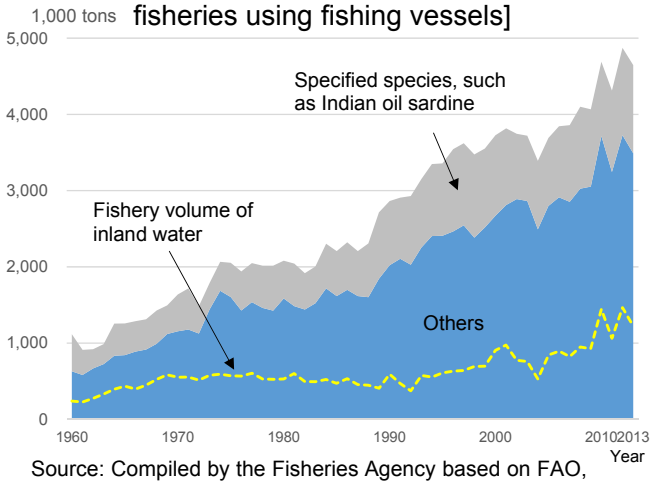
(Status in India)

○India’s production volume soared from the 1990s. While the growth of production volume of marine fisheries using fishing vessels has slowed down in recent years, production volume of inland water fisheries has steadily increased, expanding its share to about 30% of the total. Most fishers are small-scale businesses, mainly using non-powered fishing vessels. The fisheries authorities are promoting the expansion of operation areas through a shift to the use of powered fishing vessels.
○Resources of coastal fisheries are mainly managed through mesh size regulation and the establishment of closed fishing areas and closed fishing seasons.

(Status in Peru)

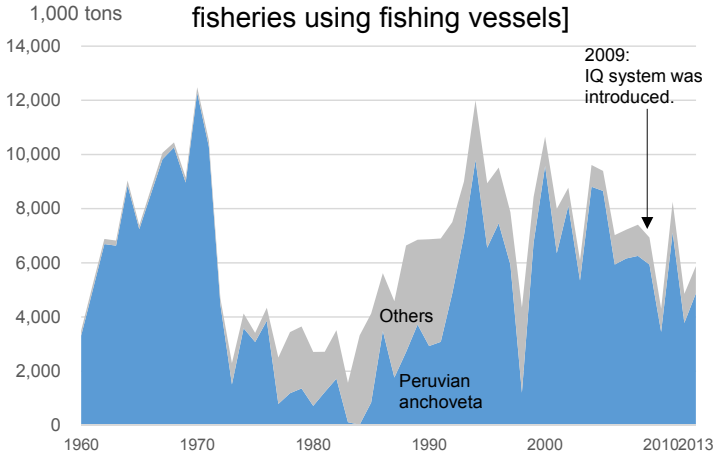
○Peru’s fisheries production largely depends on Peruvian anchoveta, and the production volume fluctuates widely year by year.
○In 2009, the IQ system for each fishing vessel was introduced for fisheries, excluding small-scale fisheries. After the introduction of the system, the quality of catches improved, particularly in large-scale fisheries. Consolidation of fishing vessels is also progressing. Meanwhile, the stock size remains unstable, and the TAC and production volume also changes dramatically. In particular, the spawning stock size decreased to about 1.45 million tons in 2014.

[Changes in India's production volume of fisheries using fishing vessels]



Source: Compiled by the Fisheries Agency based on FAO, *Fishstat (Capture Production)*.

[Changes in Peru's production volume of fisheries using fishing vessels]



Source: Compiled by the Fisheries Agency based on FAO, *Fishstat (Capture Production)*.

B. Summary of the status in the respective countries

○Fisheries production was expanded through the development of fishing grounds for species that were uncommon previously, species in offshore areas and beyond including skipjacks and tunas, and inland water species. In particular, China and Indonesia increased their fisheries production by overcoming competition with other countries.
○Countries other than Peru basically manage fish resources through input control and technical control. However, China and other countries are facing difficulty in smoothly implementing the resource management measures. In Peru, the production volume has been unstable even after introducing the IQ system.

(2) Status of fisheries production and resource management in European countries and the United States

A. Status in each country

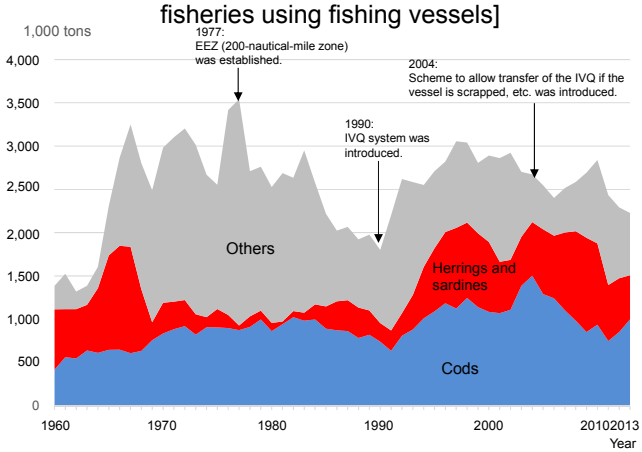
(Status in Norway)

○The main types of fisheries in Norway are trawl and purse seine fisheries. Cods, herrings and sardines, which are the target species of these fisheries, account for 68% of the total production volume. The production volume has been declining since 2010. The number of fishery workers (including those engaged in aquaculture) was 17,867 in 2012, about one-tenth of the number in Japan. More than 90% of the catches are exported.
○In addition to the IQ system for each fishing vessel, input control and technical control including mesh size regulation and prohibition of discarding catches at sea are implemented. Fishers have exclusive distribution rights for fish and fishery products, and every year, representatives of fishers and buyers decide on the minimum price for each species and size.

(Status in New Zealand)

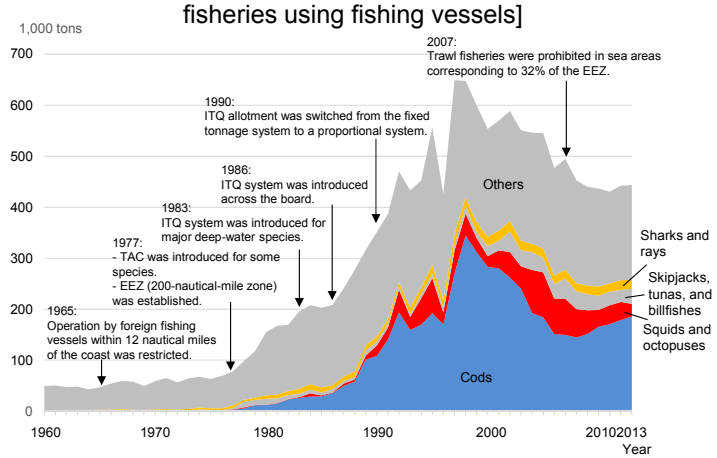
○The main types of fisheries are trawl fisheries targeting cods and squids, and longline fisheries targeting tunas and sharks. These four species account for 58% of the total production volume of fisheries using fishing vessels. The production volume has been on a decline after peaking in 1998. The number of fishery workers (including those engaged in aquaculture) was 2,311 in 2012, about one-hundredth of the number in Japan. Most of the catches are for export.
○In addition to the ITQ system that was introduced across the board in 1986, input control and technical control including mesh size regulation are implemented. It has been pointed out that catch quotas are concentrated on specific fishers, and that small-scale fishers have disappeared as a result.

[Changes in Norway's production volume of fisheries using fishing vessels]



Source: Compiled by the Fisheries Agency based on FAO, *Fishstat (Capture Production)*, and various data.

[Changes in New Zealand's production volume of fisheries using fishing vessels]

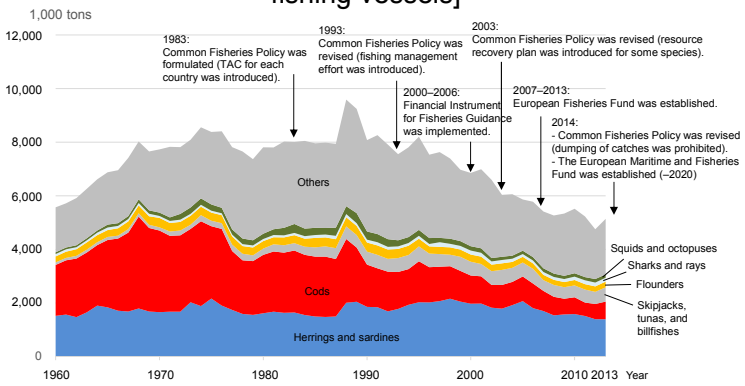


Source: Compiled by the Fisheries Agency based on FAO, *Fishstat (Capture Production)*, and data from New Zealand Ministry for Primary Industries.

(Status in EU)

○The production volume of fisheries using fishing vessels has decreased to half of the 1988 peak level. While small-scale fishers are dominant in Mediterranean coastal countries, a small number of large-scale fishers are main operators in Scandinavian countries.
○Under the Common Fisheries Policy (CFP), the TAC system for each country with regard to target species in EU common waters has been introduced and a fishing capacity ceiling has been set for each country. In addition, as country-specific systems, some countries have established the fishing permit system and fishing gear regulation, etc. Some have introduced the IQ or ITQ system, but many countries limit the target species to specific species, such as internationally managed species.
○The dumping of low value fish, such as small fish, at sea has become a problem. A measure to prohibit discarding of catches in the ocean, in principle, is to be introduced in a phased manner from 2015 to 2019.

[Changes in EU's production volume of fisheries using fishing vessels]



Source: Compiled by the Fisheries Agency based on FAO, *Fishstat (Capture Production)*, and data from EU.
Note: Production volumes are those for 28 countries that were members of the EU as of 2013.

[Main output control measures and fisheries structures in major EU countries]

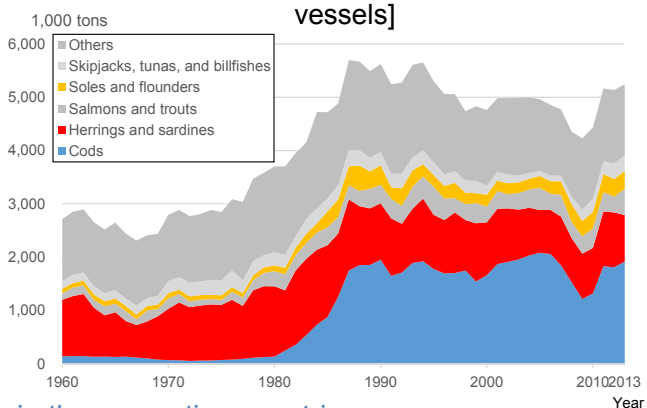
Country	TAC	IQ	ITQ	Number of species that account for 80% of the total catch volume	Number of fishery workers (persons)
Ireland	○			8	4,579
United Kingdom	○	○	○	13	12,445
Italy	○	○Note 1		More than 60	28,916
Netherland	○		○	7	2,791
Greece	○			More than 60	36,370
Sweden	○	○	○	3	1,560
Spain	○		○Note 2	39	37,460
Denmark	○		○	8	2,000
Germany	○	○	○	9	2,684
France	○	○		48	14,273
Poland	○	○		24	2,947
Portugal	○		○Note 3	23	16,559

Source: Compiled by the Fisheries Agency based on MRAG, IFM, CEFAS, AZTI Tecnalia, and PolEM, *An analysis of existing Rights-Based Management (RBM) instruments in Member States and on setting up best practices in the EU-Final report: Part II* (February 2009), etc.
Notes: 1) IQ for Italy is applied to Atlantic bluefin tuna in the Mediterranean Sea.
2) ITQ for Spain is applied to demersal fish in the waters of the North East Atlantic Fisheries Commission (NEAFC), swordfish in the waters of the International Commission for the Conservation of Atlantic Tunas (ICCAT), and Atlantic bluefin tuna in the Mediterranean Sea and the Straits of Gibraltar.
3) ITQ for Portugal is applied to demersal fish in the NEAFC waters and swordfish in the ICCAT waters.

(Status in the United States)

○The production volume of fisheries using fishing vessels has been flat. Alaska pollack accounts for 26% of the total production volume of fisheries using fishing vessels.
○Fisheries management is conducted for each of the eight divided regions. Since overfishing and poverty of fishing communities became a problem in the 1990s, the TAC system was introduced for major species. The ITQ system was introduced for some species, but due to the increased exits of small-scale fishers and fatigue of fishing port areas that failed to be selected as landing ports, some restrictions, such as ceiling of catch quota owned by one fisher, were set. Later, fisheries management measures called "catch shares," which distribute the right to access fishing grounds (or an area of fishing grounds) or catch quota among fishers, were introduced. ITQ is positioned as one method of catch share. Catch share programs have been formulated at various locations as of 2013.

[Changes in the U.S.'s production volume of fisheries using fishing vessels]



Source: FAO, *Fishstat (Capture Production)*.

B. Summary of the status in the respective countries

○The production volume of fisheries using fishing vessels has been flat or declining in all of the countries in recent years.
○In addition to input control and technical control, the TAC system has been introduced for major species.
○The IQ or ITQ system has been introduced on a country-specific basis while taking into account the circumstances of the area. After the introduction, the correctness of catch reports and at-sea discarding of low valued small fish became a problem. Particularly after introducing the ITQ, small-scale fisheries shrank.

(3) Status of fisheries in countries with high catch volumes and western countries, and comparison with Japan's fisheries

○The countries are implementing resource management through various methods based on the actual conditions of their fisheries, but none of them is able to perfectly control the stock sizes of the resources. They also face various challenges, including how to secure effective surveillance and control. Every country is actually painstakingly implementing resource management measures.
○It is difficult for Japan to develop new fishing grounds or target species or to overcome the low-cost competition with other countries, as in the case of countries with high catch volumes. A realistic approach would be to take a way to enable sustainable fishery business management, as in the case of western countries. However, since Japan has a large number of fishing vessels and diverse target species and types of fisheries, it is not appropriate to directly apply the fisheries management systems of Norway or New Zealand, which have different circumstances to Japan's fisheries.
○In particular, in Japan, where small-scale fishers hold an important position in fisheries production and fishing communities, careful consideration would be required in introducing the ITQ system, which reportedly affects small-scale fisheries and consensus building in fishing communities. It may be possible to introduce the IQ system for some types of fisheries such as far-seas and offshore fisheries, where the target species are limited and the number of related fishers is relatively small.
○When introducing the IQ system, strict surveillance and control measures must be taken, while also allocating catch quotas appropriately and building a framework for managing such allocation.

Section 4 For sustainable use of fish resources in waters surrounding Japan and sustainable development of Japan's fisheries

(1) Ensuring conservation of the fishing ground environment and maintenance of the ecological balance

(Conservation of the fishing ground environment)

○In order to achieve sustainable use of fish resources, it is important to promote efforts to conserve and regenerate seagrass beds and tidal flats, etc. as well as activities including integrated coastal management and *sato-umi*.

(Maintenance of the ecological balance)

○With regard to some species which are in competition with fisheries, such as whales, it is necessary to continue investigation and research into their effects on the ecosystem and their appropriate population size. It is also important to prevent the introduction of alien species.
○Upon seed release, due consideration should be given to the ecological balance, including the habitat range of the released species and the stock size of their prey.

(Fishing operations adapting to changes in the fishing ground environment)

○Due to changes in the environment, it has become increasingly important to analyze information to search fishing grounds including the latest data on seawater temperature and the most recent fishing conditions. It is also necessary to adapt to such changes as shortening of the fishing seasons and dispersion of fish schools.

(Mitigation of fishing pressure on natural fish resources through promotion of full-cycle aquaculture technology)

○As for species of which resource conditions are deteriorating considerably, it is important to ensure their stable supply to the market without imposing pressure on natural resources, by establishing full-cycle aquaculture technology and shifting to aquaculture production.
○Technology must be further developed to be able to manufacture aquaculture feed (fish meal) from various ingredients, so as to reduce the effect of the resource fluctuation of the current ingredient, mass-caught pelagic fish, on aquaculture production.

(2) Implementation of resource management measures based on the status of Japan's fisheries

(Measures for securing resource sustainability)

○Desirable resource management efforts should continue to be made in the future by maintaining/recovering resources through appropriate selection/combination of resource management methods. Efforts must be made by both the public and private sectors, including reviewing of the framework for implementing resource management measures and formulating resource management plans.
○Whereas the TAC for the northern Sea of Japan stock of Alaska pollack had exceeded the allowable biological catch (ABC) in the past, the TAC became equivalent to the ABC in the FY2015 fishing season as a result of improvement efforts. It is necessary to make continued efforts to operate the TAC system appropriately. Continuous study will be made on the need for TAC management and its effects, etc. with regard to anchovy, yellowtail, Atka mackerel, Pacific cod, and round herring, which account for high catch volumes following the TAC species.
○Assessment of fish resources and analysis of the marine environment, etc. should be continued under a national investigation and research network. It is desirable to reinforce mutual understanding and cooperation between researchers and fishers, such as researchers informing fishers and other people concerned of the scientific findings, and fishers providing catch data to researchers.

(Future of Japan's fisheries and resource management measures)

○On the premise of the diversity of Japan's fisheries, resource management in Japan needs to be implemented while giving consideration to the multiple roles of Japan's fisheries, such as stably supplying fish and fishery products to people and maintaining local communities. Fisheries management systems and frameworks that respect the autonomy of fishers have been developed, taking into account the actual circumstances of the area and the fisheries.
○When considering Japan's future fish resource management, it is necessary to give sufficient consideration to the future of Japan's fisheries and coastal communities. Challenges include achieving an appropriate balance between improving the economic efficiency of the fishing industry and the multiple roles of fisheries.
○It is important to verify whether management methods including the IQ system are feasible and will prove effective in Japan, and what kind of influence they would have.

(3) Effective resource management measures compatible with stable fishery business management

(Fishery business management and resource management)

○A balance between fishery business management and resource management is essential for sustaining fisheries as an industry. Overly strict resource management measures that disregard the continuity of fishery business would be inappropriate unless the resource conditions have extremely deteriorated. However, the longer the introduction of resource management measures is delayed, the stricter the measures would need to be. Therefore, it is important to implement necessary resource management measures from a long-term perspective.
○If resource stability is achieved through appropriate resource management measures, it leads to stability of catch volume, and results in the stability of fishery business management. Further, it is also important to add high value to limited catches.

(Importance of measures to mitigate the impacts of resource management on business management)

○Introduction or reinforcement of resource management measures may cause negative effects such as a decrease in the catch volume and deterioration of business management.
○It is vital to smoothly implement "resource management/fishery business management stability measures" and to take measures to support reinforcement of the sales capability and development of the "sixth industry."

(4) Mutual cooperation among users of shared marine and inland water fish resources

(Wide-range cooperation among fish resource users)

○Management of fish resources requires good relationships not only among people involved in fisheries but also with recreational fishers, as well as strict management of foreign fishing vessels operating in waters surrounding Japan.
○For the conservation of the inland water and marine environment, it is important to improve the land environment, such as afforestation and purification of waste water. It is also essential to give consideration to the influence of development activities, and make adjustment among the people concerned as needed.

(Adjustment among fish resource users)

○In order to securely manage fish resources, it is important to establish a setting for making adjustment among resource users. On a local community level, fishery cooperatives are expected to play such function. For fish resources that are used nationwide, a nationwide framework for cooperation and adjustment among users should be developed, and for fish resources that are used internationally, such as tuna, cooperation and adjustment should be made through regional fisheries management organizations.

(Further improvement of the surveillance and control framework against illegal acts)

○For securely implementing resource management measures, the collection of information on fisheries activities and effective surveillance and control activities would be essential.
○Against any acts in violation of international arrangements on resource management, strict measures must be taken to stop such acts under cooperation among the countries concerned through regional fisheries management organizations.

(Understanding of distributors and consumers about the necessary costs for sustainable supply of fish and fishery products)

○Implementation of resource management measures may cause fluctuation of catch volumes, and this could lead to tightening of the supply and demand balance and a price hike in the short term. It is important to provide sufficient information to distributors and consumers for wider understanding in advance.

Chapter II: Review of Japan's Fisheries Since FY2013

Section 1 Trends in Japan's fisheries

(1) Trends in fisheries and aquaculture

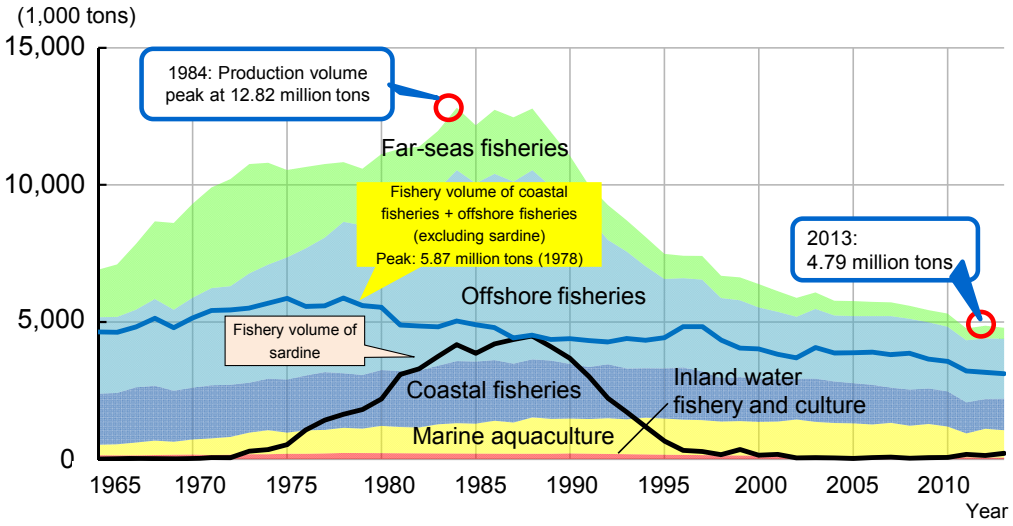
A. Domestic fisheries and aquaculture production

○The total fisheries and aquaculture production volume in 2013 was 4.79 million tons, declining 70,000 tons (2%) from the previous year. The production volume for marine fisheries was 3.73 million tons, a 20,000 ton (1%) fall from the previous year. By species, the production volume of salmons, sardine, etc. increased, while that of saury, etc. decreased. The production volume for marine aquaculture was one million tons, a 40,000 ton (4%) drop from the previous year. By species, the production volume of coho salmon, wakame seaweed, etc. increased, while that of yellowtails, scallop, lavers, etc. decreased.

○The fisheries and aquaculture production value in 2013 was 1.4396 trillion yen, increasing 21.5 billion yen (2%) over the previous year. The production value for marine fisheries was 948 billion yen, a 32.2 billion yen (4%) rise over the previous year. By species, the production value of whitebait, albacore, etc. decreased, while that of salmons, saury, Japanese common squid, etc. increased. The production value for marine aquaculture was 405.9 billion yen, a 7.3 billion yen (2%) fall from the previous year. By species, the production value of lavers, wakame seaweeds, etc. decreased.

[Changes in the fisheries and aquaculture production volume and value]

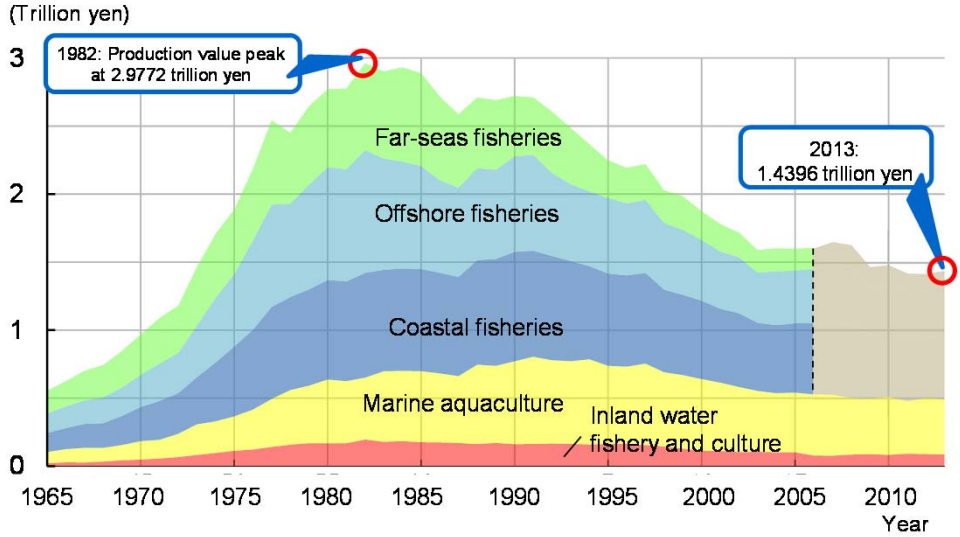
<Production volume>



(1,000 tons)

		2013
Production volume	Total	4,791
	Marine	4,730
	Fisheries	3,734
	Far-seas fisheries	396
	Offshore fisheries	2,188
	Coastal fisheries	1,150
	Aquaculture	996
	Inland water	61
	Fisheries	31
	Aquaculture	30

<Production value>



(100 million yen)

		2013
Production value	Total	14,396
	Marine	13,539
	Fisheries	9,480
	Far-seas fisheries	…
	Offshore fisheries	…
	Coastal fisheries	…
	Aquaculture	4,059
	Inland water	857
	Fisheries	169
	Aquaculture	687

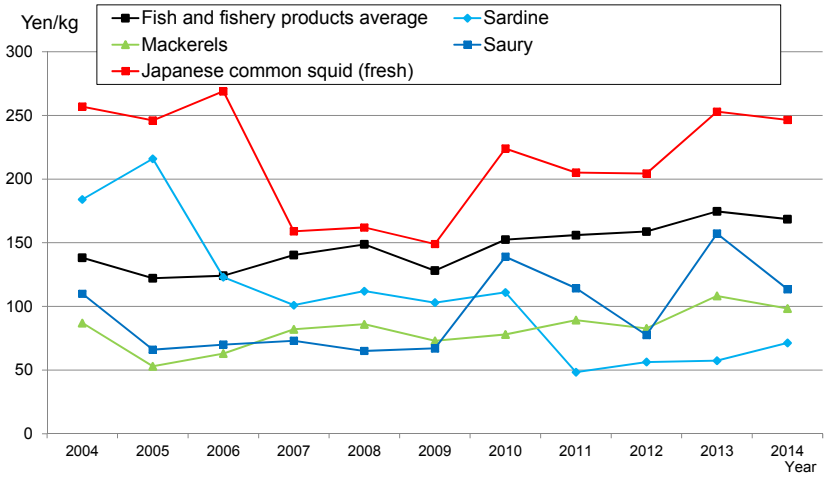
Source: MAFF, *Annual Statistics on Fishery and Aquaculture Production*.

Note: The marine fisheries production value for each type of fisheries is not compiled for the period from 2007 onward.

B. Trends in fishery business management

○The average price of fish and fishery products in production areas has been on an increase since 2009, marking 169 yen/kg in 2014.
○The fishery earnings of coastal fishery households with fishing vessels in 2013 were 1.9 million yen, declining 150,000 yen from the previous year. Their business earnings, including non-fishery business earnings, were 2.08 million yen.
○The fishery expenditure of corporate operators engaged in fisheries using fishing vessels increased by 7.51 million yen, expanding the deficit in the fishery profit further from the previous year. Corporate operators have continued to make up for the deficit in the fishery profit with the profit from non-fishery business, such as fishery processing business, and non-operating profit.
○The fuel price has risen sharply over the past ten years. The crude oil price turned to a decline in July 2014, but the future trend remains unpredictable.
○The fishery earnings of individual operators engaged in feeding aquaculture increased by 2.37 million yen from the previous year to 4.93 million yen. These operators continue to have the business management structure where the feed cost and seed cost account for most of the fishery expenditure. In the case of corporate operators, the deficit in the fishery profit shrank by 6.9 million yen from the previous fiscal year to 8.08 million yen. Their operating profit including non-fishery profit was 3.89 million yen.
○The fishery earnings for management bodies engaged in non-feeding aquaculture increased by 950,000 yen over the previous year to 5.07 million yen.
○The fish meal price soared due to a sharp decrease in the stock size of its ingredient, Peruvian anchoveta.
○Aging of fishing vessels has continued. Among fishing vessels which have been permitted to operate designated fisheries, those aged over 20 years account for 56% of the total. Such old vessels account for 71% of the total when including fishing vessels engaged in coastal fisheries.

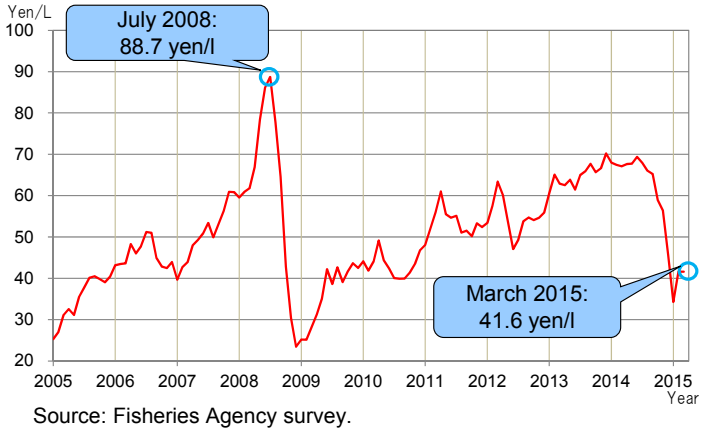
[Change in the prices of fish and fishery products in production areas]



Source: Figures for 2004 to 2009 are compiled by the Fisheries Agency based on MAFF, *Annual Report of Distribution Statistics on Fisheries Products*, and figures for 2010 to 2014 are based on Fisheries Agency survey.

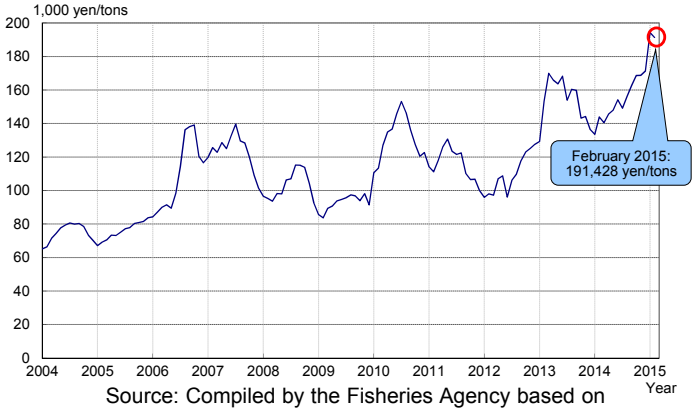
Note: "Fish and fishery products average" is a weighted average of tuna (fresh, frozen), albacore (fresh, frozen), bigeye tuna (fresh, frozen), yellowfin tuna (fresh, frozen), skipjack (fresh, frozen), sardine, round herring, anchovy, horse mackerel, round scad, mackerels, saury, Atka mackerel, and Japanese common squid (fresh, frozen).

[Changes in the crude oil price]



Source: Fisheries Agency survey.

[Changes in the import price of fish meal]



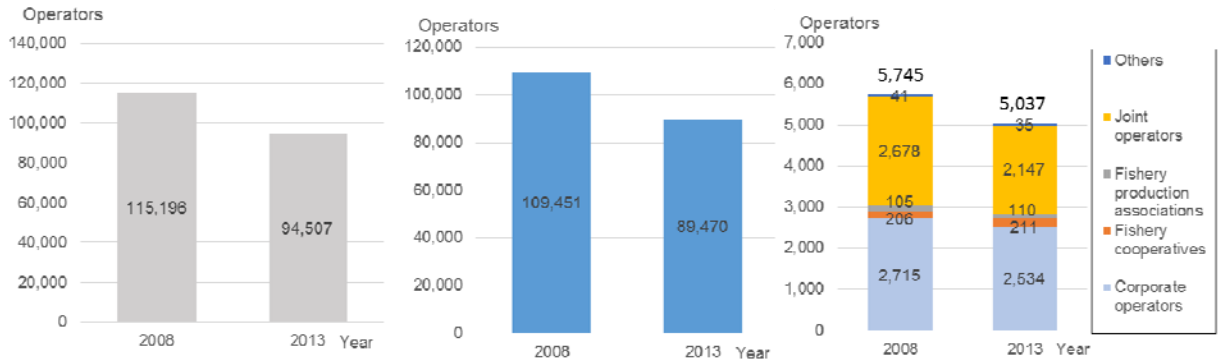
Source: Compiled by the Fisheries Agency based on Ministry of Finance, *Trade Statistics.*

C. Trends in people involved in fisheries production

○The number of fishery operators in 2013 was 94,507, declining 18% from 2008. In particular, the number of individual operators and joint operators decreased substantially.
○The number of fishery workers in Japan in 2014 was 173,030, a 4% decrease from the previous year. Meanwhile, the number of fishery workers aged 44 or under was 42,830, increasing by 1% over the previous year.
○The number of new recruits has been generally flat since 2008. In 2013, 1,790 people newly became fishery workers. Nearly 70% of new recruits to coastal fisheries are younger than 40.

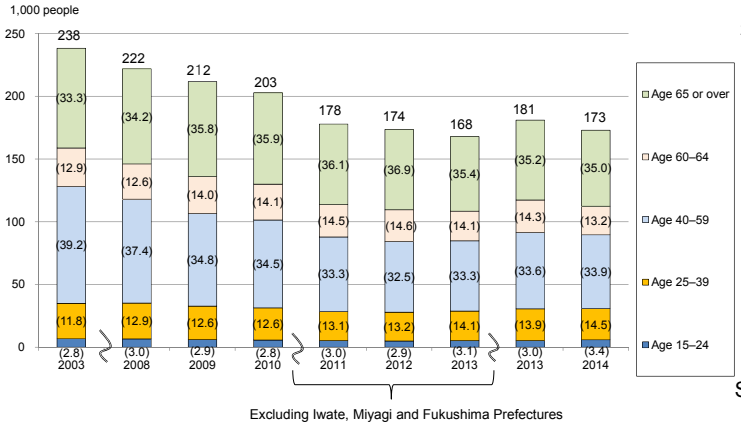
[Changes in the number of fishery management bodies by entity type of management body]

<Overall> <Individual operators> <Group operators>



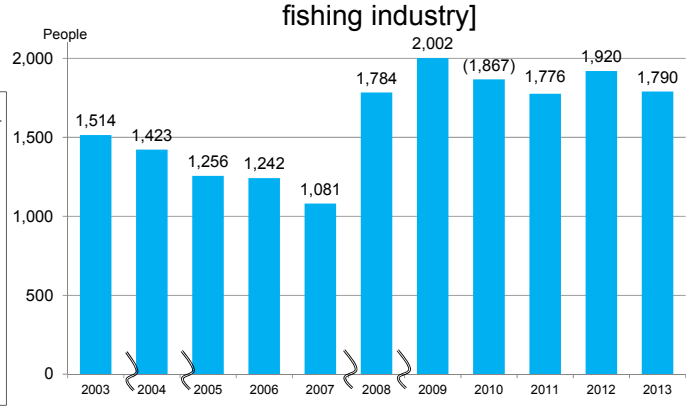
Source: MAFF, *Census of Fisheries.*

[Changes in the number of fishery workers]



Source: MAFF, *Census of Fisheries* (figures for 2003, 2008, and 2013) and *Report on the Survey of Fishing Industry Employment Trends* (figures for 2009 to 2012 and 2014).

[Changes in the number of new recruits to the fishing industry]



Source: MAFF, *Results of Survey on New Recruits into Agricultural, Forestry and Fisheries Industries* (figure for 2003) and *Census of Fisheries* (figure for 2008). Figures for 2004 and 2009 to 2013 are estimated from surveys on new recruits conducted by prefectural governments. Figures for 2005 to 2007 are based on the results of questionnaire surveys conducted by the Japan Fisheries Association on fishery cooperatives.

Note: The figure for 2010 is estimated from the national trend excluding Iwate, Miyagi and Fukushima Prefectures, based on the number of new recruits for 2009.

D. Securing a good working environment for fishery operations

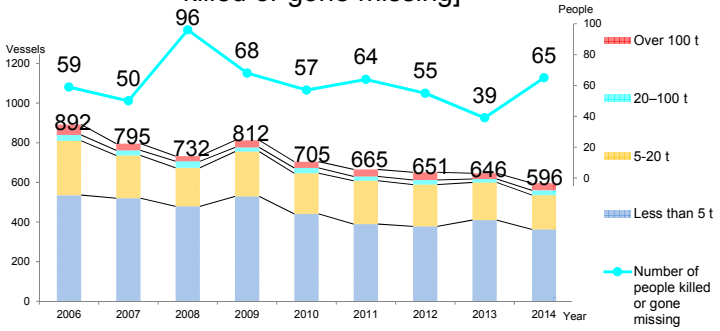
○Of marine accidents involving all types of vessels, marine accidents involving fishing vessels accounted for 28% of the total in terms of the number of vessels, and 65% in terms of the number of people who were killed or went missing. Small fishing vessels in particular are required to carry out operations with increased consideration given to safety.

○Since fishery work is basically conducted on board, there are many cases of workers accidentally falling overboard into the sea. In 2014, 104 people fell overboard from fishing vessels into the sea (accidents resulting in injury or death). Among them, 76 were killed or went missing.

○The incidence of work accidents in the fishing industry is high, at about six times the average of all industries.

○It is important to use fishing vessels that have high stability, install an automatic identification system (AIS), wear life jackets, learn safety knowledge, and identify and take measures against hazardous places in advance, etc.

[Changes in the number of fishing vessels involved in marine accidents and the number of people killed or gone missing]



Source: Japan Coast Guard.

Note: Excluding marine accidents due to heavy snowfall in the San'in region (two vessels in 2010; 215 vessels in 2011).

[Incidence of work accidents of vessel crew and onshore workers (FY2013)]

Industry	Incidence of accidents (per 1,000 people)
All industries	**2.3**
Forestry	28.7
Mining	12.0
Fisheries	13.5
Construction	5.0
Onshore freight handling	8.3

Source: Ministry of Land, Infrastructure, Transport and Tourism, *Report on Incidence of Accidents and Illness of Vessel Crew (Article 111 of the Mariners Act)*.

(2) Trends in fishery cooperatives

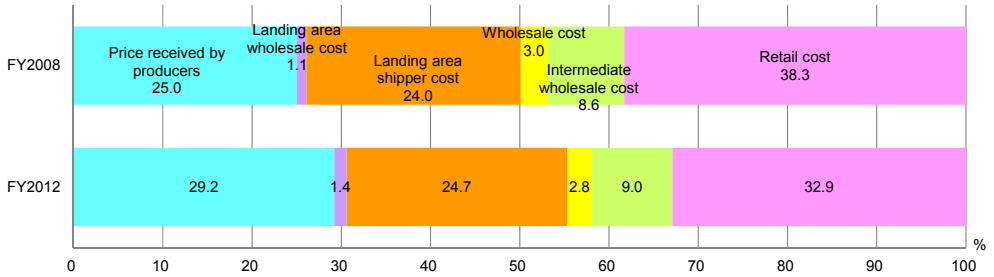
○Due to the decline in the number of fishers and the fishery production value, the business management of fishery cooperatives is generally facing difficulty. In FY2012, 70% of fishery cooperatives in coastal areas recorded a deficit worth 6.3 billion yen in total in operating profit.
○In recent years, mergers of fishery cooperatives have been promoted within each prefecture. The number of fishery cooperatives in coastal areas was 1,510 at the end of March 2004, but decreased to 974 as of the end of March 2014.

(3) Trends in distribution and processing of fish and fishery products

(Status of fish and fishery product distribution)

○In fish and fishery product distribution, wholesale markets in landing areas and consuming areas play an important role.
○The wholesale market in landing areas, which functions to collect, select, and settle payments for landed fish, is particularly important for coastal fisheries. In FY2012, the number of such markets was 328, which is 97% of the FY2002 level, which was 337.
○Meanwhile, fish and fishery products distributed through wholesale markets in consuming areas, which function to appropriately supply fishery products to retailers and restaurants, have been decreasing. The national government promoted the consolidation of such markets to achieve proper market locations, and as a result, the number of local wholesale markets in consuming areas in FY2012 was 272, which is 85% of the FY2002 level, which was 321.

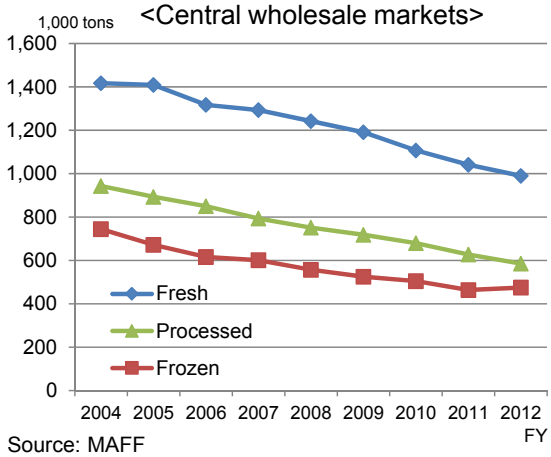
[Price structure of fish and fishery products]



Source: MAFF, *Survey of Food Prices at Various Stages of Distribution* (Survey on Fish and Fishery Product Costs) (figures for FY2008 and FY2012).

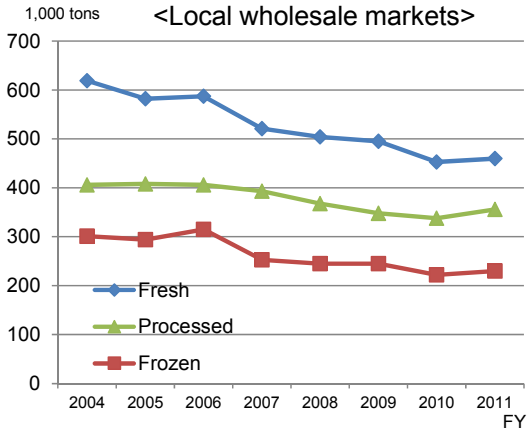
[Changes in the actual handling of fresh, frozen, and processed products in wholesale markets in consuming areas]

<Central wholesale markets>



Source: MAFF

<Local wholesale markets>



(Status of the fishery processing industry)

○Of Japan's fish and fishery products for domestic human consumption, 60% is shipped to processors. The shipment value of the fishery processing industry in 2013 was 3 trillion yen, accounting for 12% of the shipment value of the entire food manufacturing industry.
○Due to the increased consumer preference for easy-to-eat food products in recent years, the importance of the fishery processing industry has further increased, and the development of products that meet consumer needs has become an urgent task.
○A decrease in the catch volume and changes in the types of locally landed fish and fishery products gave rise to cases where it became difficult to secure processing ingredients. Also, since fish and fishery products used as processing ingredients need to satisfy various requirements, such as being a certain size, there were also cases where domestic products were not enough to cover all ingredients. Securing of processing ingredients through import has also gradually become difficult in recent years due to a rise in the import prices.
○HACCP needs to be introduced in order to export products to the United States and the EU. Therefore, the government supports the holding of seminars and renovation of fishery processing facilities for acquiring the HACCP authorization. In addition to the Ministry of Health, Labour and Welfare, the Fisheries Agency became an authorization body of the HACCP for exports to the EU, and started the authorization activity in October 2014. The number of authorized facilities is expected to increase in the future.

(Trend of fishery eco-label certification within Japan)

○In recent years, the activity of fishery eco-label certification has become active. It is an activity to attach a label to fish and fishery products in stores to inform consumers that the products have been caught or produced through fishing or aquaculture certified to be in conformity with resource management measures or ecosystem/environment conservation measures.
○The fishery eco-label certifications granted by the Marine Stewardship Council (MSC) are widely used around the world. In Japan, the MSC has granted fishery certification for two cases, and chain of custody (CoC) certification for 68 cases as of the end of March 2015.
○Marine Eco-Label (MEL) Japan, under the initiative of fishery organizations in Japan, also grants fishery eco-label certifications. As of March 2015, MEL Japan has granted production-stage certification for 22 cases and processing/distribution stage certification for 55 cases.
○The recognition rate of fishery eco-labels in Japan is 19% among fishers, 18% among distributors/processors, and 16% among consumers.

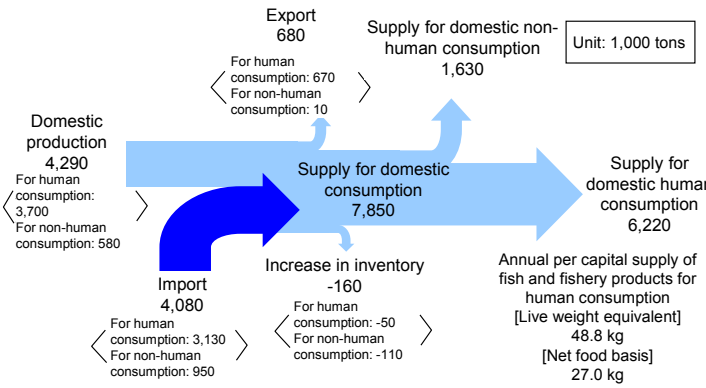
Section 2 Trends in consumption and the supply and demand of fish and fishery products

(1) Trends in the supply and demand of fish and fishery products

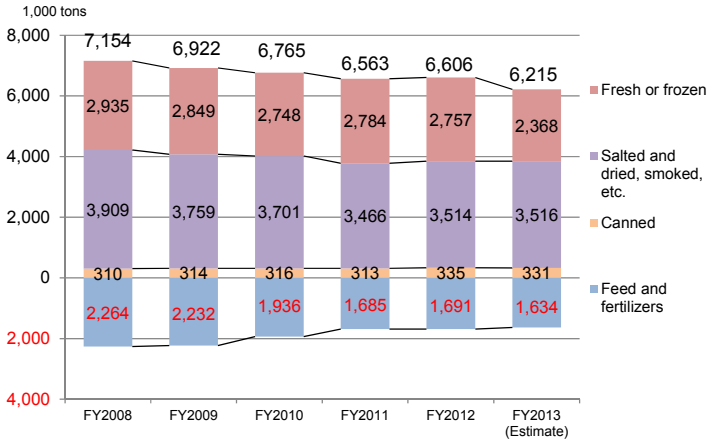
○In FY2013, the supply of fish and fishery products for domestic consumption in Japan (original fish weight equivalent) was approximately 7.85 million tons, out of which 79% (6.22 million tons) were for human consumption and 21% (1.63 million tons) were for non-human consumption (feed and fertilizers).
○The supply for domestic human consumption decreased by 13% (930,000 tons) from FY2008.
○The self-sufficiency rate of Japan's fish and fishery products for human consumption in 2013 was 60%, increasing by 3 points over the previous year, due to a significant decline in the supply for domestic consumption resulting from such factors as a sharp drop in the import volume beyond the decline in the domestic production volume.

[Structure of production and consumption of fish and fishery products in Japan and changes thereof]

<Structure of production and consumption of fish and fishery products>
(FY2013 (estimate))

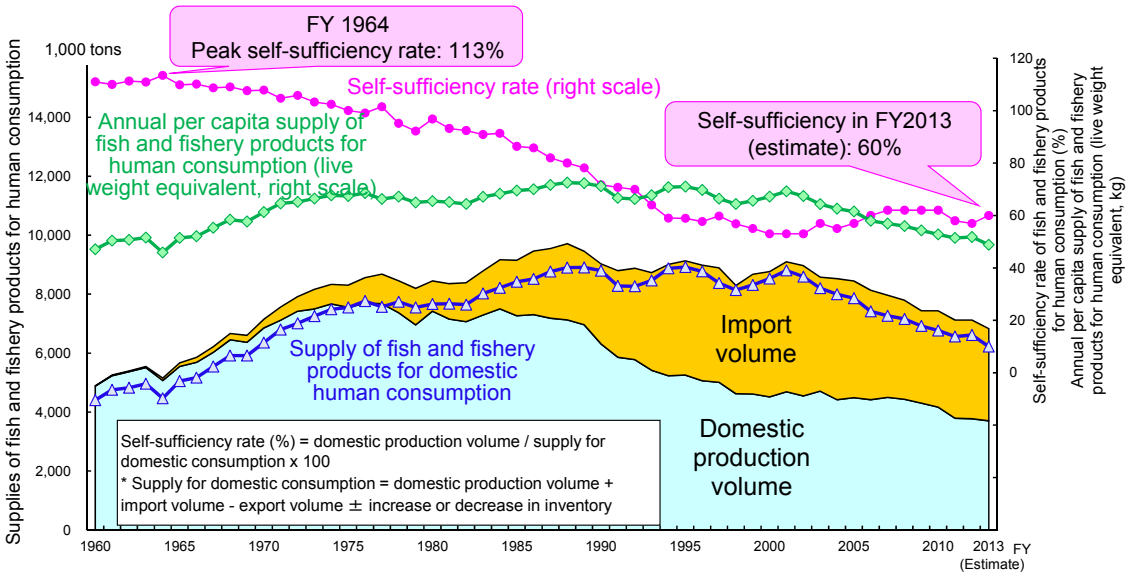


<Changes in the supply of fish and fishery products for domestic consumption >



Source: MAFF, *Food Balance Sheet*.

[Changes in the self-sufficiency rate, etc. of fish and fishery products for human consumption]



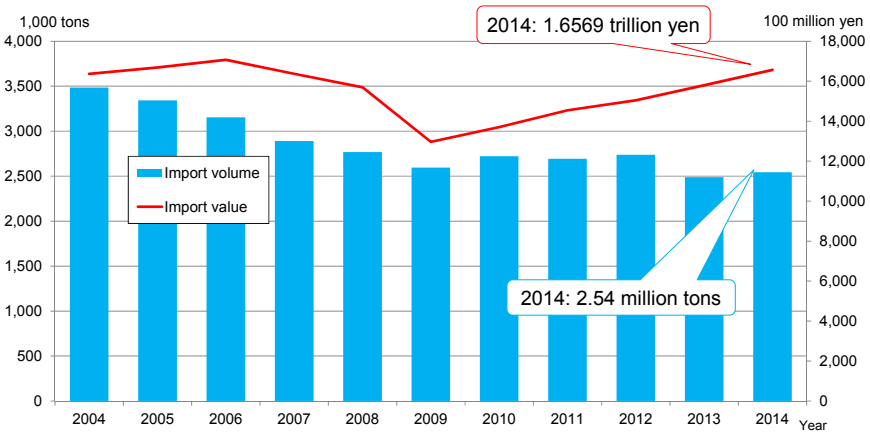
Source: MAFF, *Food Balance Sheet*.

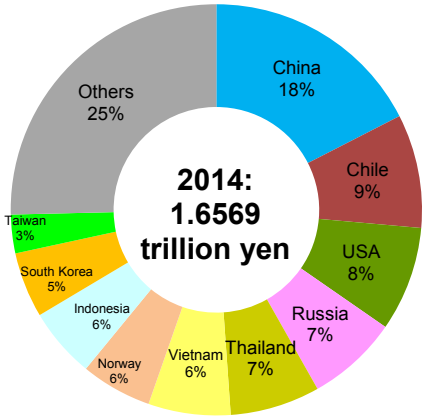
(2) Trends in Japan's fish and fishery product imports and exports

(Trends in Japan's fish and fishery product imports)

○Japan's fish and fishery product import volume (product weight basis) for 2014 was 2.54 million tons, a 2% increase over the previous year, and the import value was 1.6569 trillion yen, a 5% increase over the previous year.
○The highest-ranking items in terms of import value are shrimps and prawns, tunas, salmons and trouts, crabs, and cods, in this order, and they account for 40% of the total import value.
○The highest-ranking supplier country in terms of import value is China, accounting for 20% of the total import value.

[Changes in Japan's fish and fishery product import volume/value and breakdown by country/region]





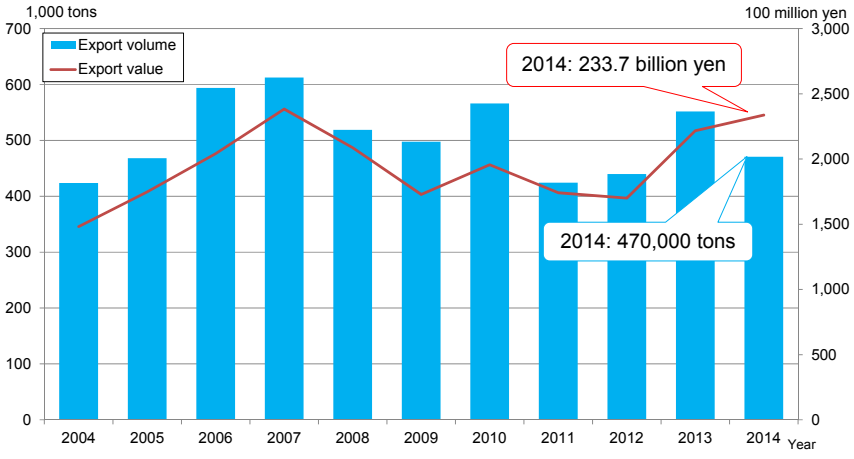
Percentage of the total import value of agricultural, forestry, and fishery products: 17.9%

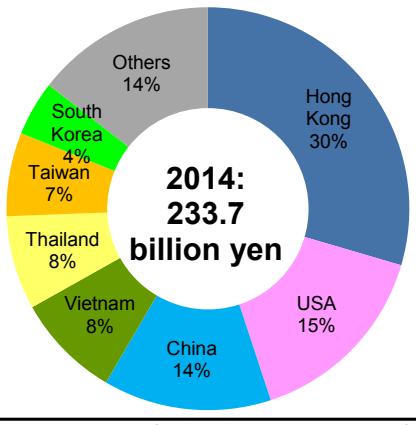
Source: Ministry of Finance, *Trade Statistics*.

(Trends in Japan's fish and fishery product exports)

○Japan's fish and fishery product export volume (product weight basis) for 2014 was 470,000 tons, a 15% decrease from the previous year, and the export value was 233.7 billion yen, a 5% increase over the previous year. In particular, exports of salmons and trouts expanded substantially, increasing by 15% in volume and 37% in value over the previous year. By country/region, the highest-ranking export destination in terms of export value was Hong Kong, accounting for 30% of the total export value .
○Based on the strategy to promote export of agriculture, forestry, and fishery products and foods, the national government has promoted the establishment of quality control frameworks, such as promoting the obtainment of the HACCP authorization for exports to the EU and the United States, and working on export counterparts to achieve the relaxation or the lifting of import restrictions. In addition, it established Japan Seafood Export Promotion Association in order to expand fish and fishery product exports through an all-Japan effort. The organization establishes the brand of Japanese fish and fishery products and promotes efforts to secure a stable supply of products through cooperation between production areas, with the support of the government of Japan and JETRO.

[Changes in Japan's fish and fishery product export volume/value and breakdown by country/region]





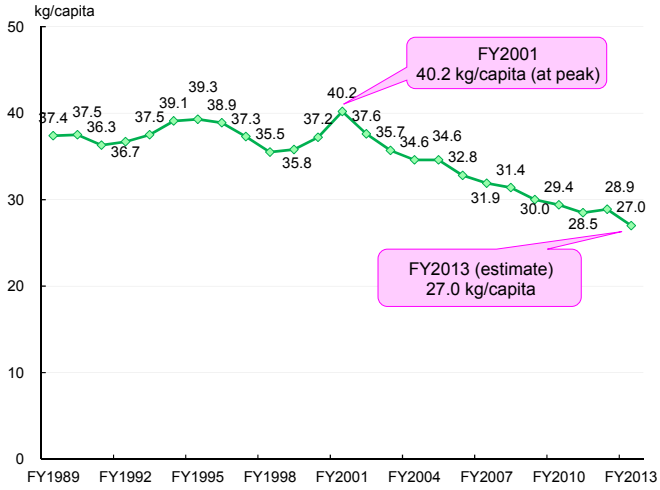
Percentage of the total export value of agricultural, forestry, and fishery products: 38.2%

Source: Ministry of Finance, *Trade Statistics*.

(3) Status of fish and fishery product consumption

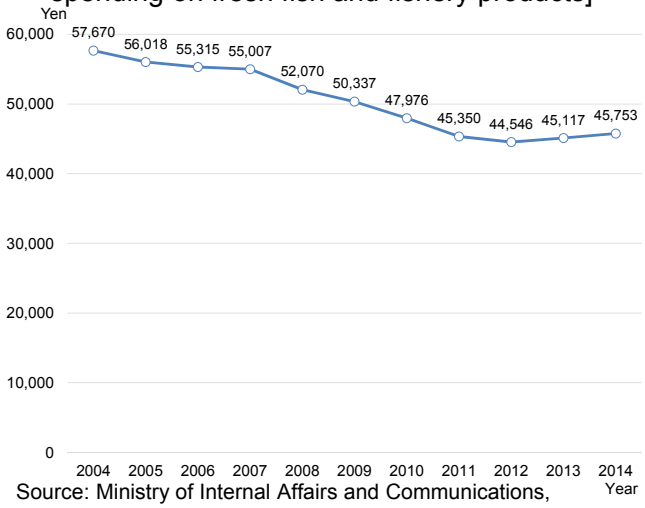
○Japanese people's annual per capita consumption of fish and fishery products, which had been on a decline after peaking in FY2001 at 40.2 kg/capita, was 27.0 kg/capita in FY2013, decreasing by 1.9 kg/capita from the previous year.
○The per household spending on fresh fish and fishery products in 2013 was 45,753 yen, a 1% increase over the previous year. Therefore, the decline in the annual consumption volume in 2013 is likely to have been caused by a decrease in the volume of fish and fishery products which consumers can purchase with their household budget, rather than by a weakening of their consumption appetite for fish and fishery products. According to the National Health and Nutrition Survey conducted in 2013, the daily per capita intake of fish and fishery products was 72.8 g, a 2.8 g increase over the previous year.
○The awareness that fish and fishery products are good for health is shared among many consumers. In a survey, 77% of the respondent mothers answered that they wanted their children to eat fish and fishery products.
○Since it has become difficult to educate children about diet at home, it is important to provide dietary education through school meals, school cooking classes, etc.
○It is important to build a sales strategy adapted to changes in society, such as simpler eating habits associated with the increase of working women and spread of the practice of cooking for enjoyment.

[Changes in the annual per capita consumption volume of fish and fishery products (net food)]



Source: MAFF, *Food Balance Sheet*.

[Changes in the annual per household spending on fresh fish and fishery products]



Source: Ministry of Internal Affairs and Communications, *Family Income and Expenditure Survey.*
Note: Households with two people or more.

[Column: Fast fish and pride fish]

○"Fast fish" are products for enjoying fish and fishery products easily and conveniently. They provide a good chance for people who do not eat fish frequently to readily learn about the tastiness of and how to cook fish and fishery products.
○"Pride fish," by the project of the National Federation of Fisheries Co-operative Associations, are fish and fishery products targeting consumers seeking high-quality tasty products.
○At the Second Fish-1 Grand Prix held in November 2014, fast fish and a pride fish contest was held. The content drew significant attention, attracting a large number of visitors.
○Using handy fast fish on busy weekdays and cooking tasty dishes with high-quality ingredients with pride fish on holidays would be one way consumers can enrich their lives through meals.

Section 3 International affairs surrounding the fishing industry

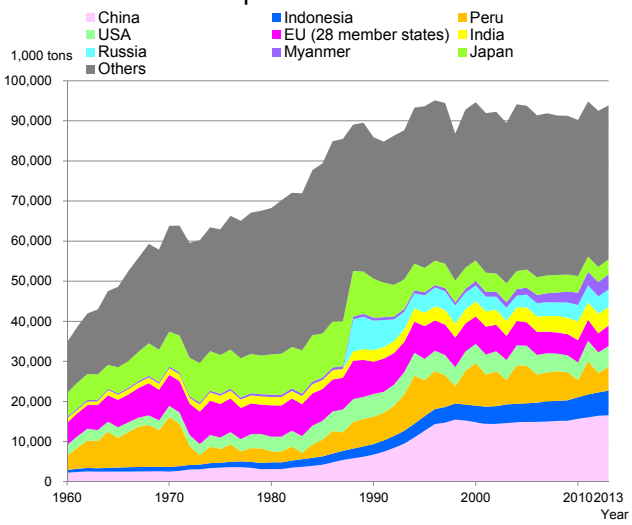
(1) World fishery and aquaculture production

(World fishery and aquaculture production)

○The world fishery and aquaculture production volume for 2013 was 191.09 million tons, a 5% increase over the previous year. Of this amount, the capture fisheries production volume was 93.88 million tons, rising 2% over the previous year, and the aquaculture production volume was 97.2 billion tons, rising 8% over the previous year and exceeding the capture fisheries production volume.
○By country, China has the highest production volume, at 73.67 million tons, accounting for 39% of the total. Japan's production volume (4.79 million tons) accounts for 2.5% of the world production volume.
○Looking at the capture fisheries production volume by species, the volume of herrings and sardines is the highest at 17.47 million tons, accounting for 19% of the total. This is followed by cods at 8.16 million tons (9% of the total), tunas and skipjacks at 7.39 million tons (8% of the total), and squids and octopuses at 4.03 million tons (4% of the total).
○As for the aquaculture production volume by species, the volume of carps and crucians is the highest at 26.79 million tons (28% of the total), red seaweeds at 15.79 million tons (16% of the total), brown seaweeds at 8.23 million tons (8% of the total), clams, cockles and arkshells at 5.16 million tons (5% of the total), and oysters at 4.95 million tons (5% of the total).

[Changes in the world fishery and aquaculture production volume (by country)]

<Capture fisheries>



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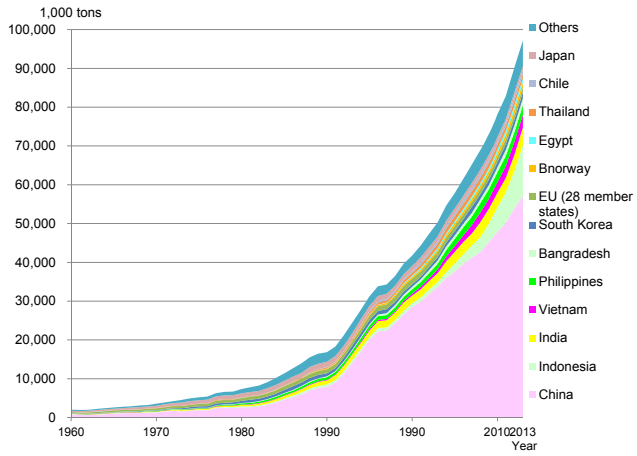
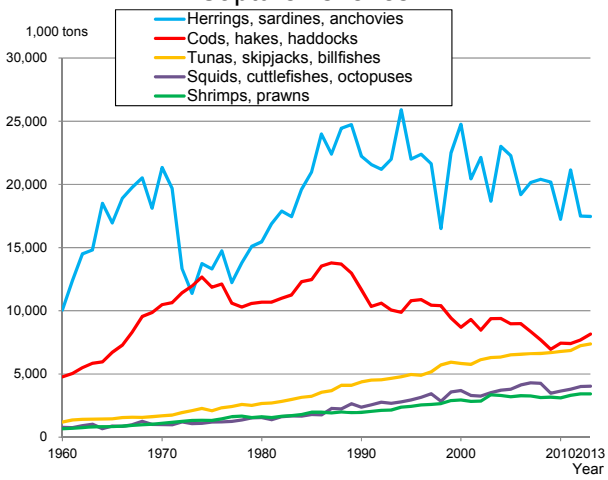


Source: FAO, *Fishstat (Capture Production, Aquaculture Production)* (figures for countries other than Japan) and MAFF, *Annual Statistics on Fishery and Aquaculture Production* (figures for Japan).

[Changes in the world fishery and aquaculture production volume (by species)]

<Capture fisheries>



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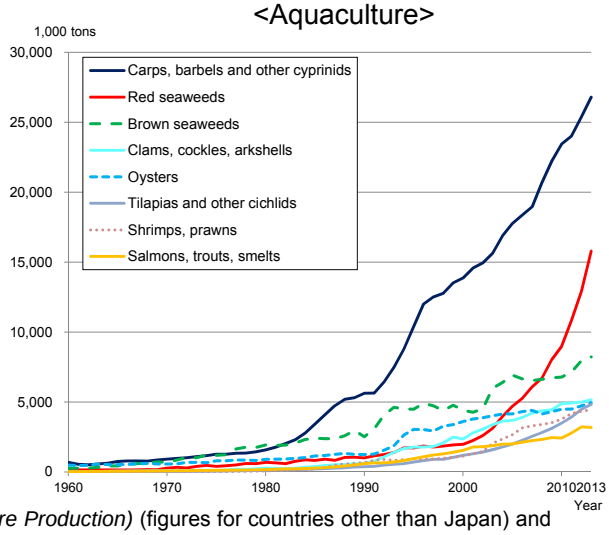
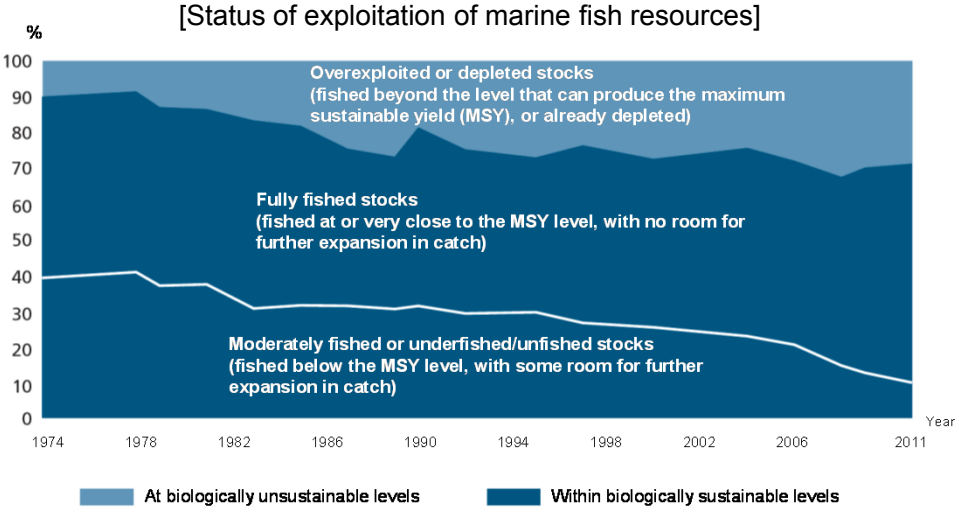


Source: FAO, *Fishstat (Capture Production, Aquaculture Production)* (figures for countries other than Japan) and MAFF, *Annual Statistics on Fishery and Aquaculture Production* (figures for Japan).

(Status of world fish resources)

○According to an FAO assessment of world fish resources, overexploited fish stocks have increased. In 1974, when the FAO started resource assessment, overexploited fish stocks accounted for 10% of the total, but the percentage had increased to 29% by 2011. Meanwhile, the percentage of fully fished stocks had increased from 50% in 1974 to 61% in 2011.

[Status of exploitation of marine fish resources]

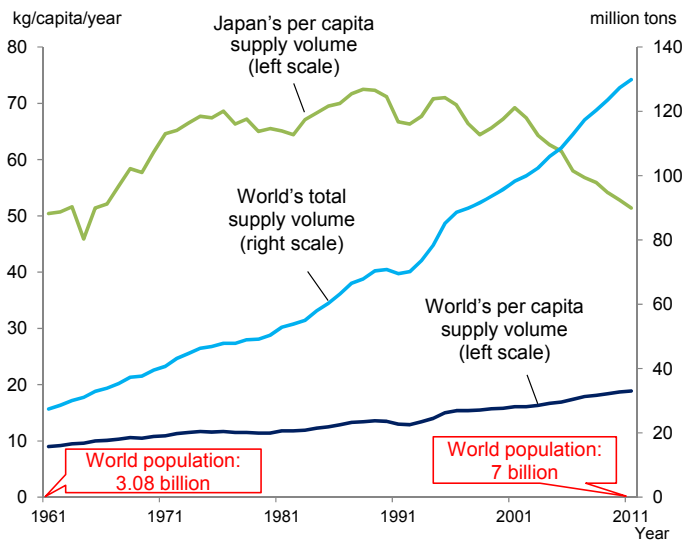


Source: FAO, *The State of World Fisheries and Aquaculture 2014*.

(2) World's fish and fishery product consumption

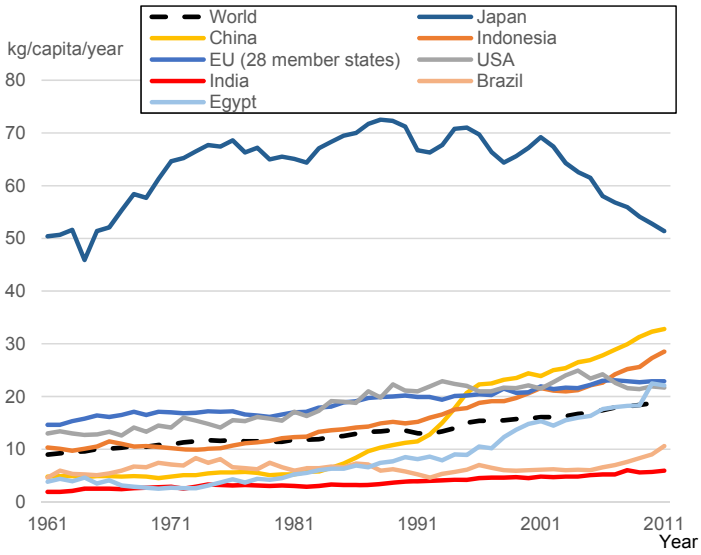
○The world's per capita consumption volume of fish and fishery products for human consumption approximately doubled over the past 50 years. The FAO predicts that the world's fishery product consumption will continue to increase, with the world's per capital consumption volume of fish and fishery products for consumption reaching 20.9 kg/year in 2023.
○Fish and fishery product consumption in Asia, Africa, and South America particularly increased in line with the development of distribution systems for fish and fishery products.

[Changes in the world's supply of fish and fishery products for human consumption and the population]



Source: FAO, *Food Balance Sheets*, UN, *World Population Prospects*, and MAFF, *Food Balance Sheet*.

[Changes in the annual domestic supply of fish and fishery products for human consumption around the world (per capita/by major country)]

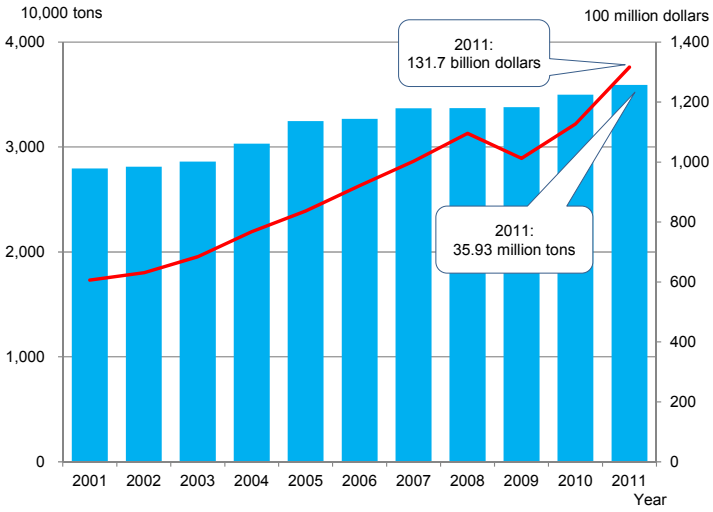


Source: FAO, *Food Balance Sheets* and MAFF, *Food Balance Sheet*.

(3) World trade of fish and fishery products

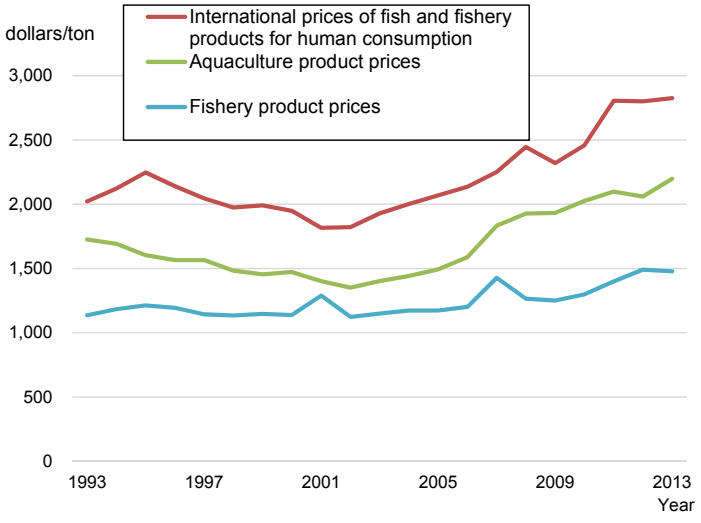
○Amid the growing demand for fish and fishery products worldwide, the world trade of fish and fishery products has been on an increase, both in volume and value.
○The world import trade of fish and fishery products in 2011 was 35.93 million tons in volume and 131.7 billion dollars in value. Shrimps and prawns, salmons and trouts, skipjacks, tunas and billfishes, and cods commanded large shares. The import trade value of these fish species combined constituted approximately 50% of the total import trade value.
○The international trading prices of fish and fishery products for human consumption are on a rise. From 2013 onward, the international prices of fish and fishery products have continued to rise or remain high mainly with regard to species whose supply volume became unstable, such as shrimps and prawns, and salmons and trouts, etc. whose production volume decreased due to the spread of diseases in certain areas.

[Changes in the world trade volume and value of fish and fishery products]



Source: FAO, *Fishstat (Commodities Production and Trade)*.

[Changes in the world's fish and fishery product prices]



Source: OECD-FAO, *Agricultural Outlook 2014–2023*.

(4) International affairs surrounding whales

○Japan recognizes that whale resources should be used in a sustainable manner as food resources, and a spirit of mutual understanding is required for dietary cultures, which have been historically formed in the respective areas.
○The International Whaling Commission (IWC), which was established for the conservation of whales and the development of the whaling industry, is currently dysfunctional, with no ability to make important decisions.
○With regard to Japan's whale research program, in response to the judgment of the International Court of Justice rendered in March 2014, Japan announced the cancelation of Japan's Whale Research Program under Special Permit in the Antarctic (JARPA II), as well as that it would formulate a new research plan and start the whale research in the Antarctic in FY2015. In November 2014, Japan submitted a proposed plan for the New Scientific Whale Research Program in the Antarctic Ocean to the IWC Scientific Committee. Japan will finalize the research plan based on the scientific review of the proposed plan by the committee.

[Outline of the proposed plan for the New Scientific Whale Research Program in the Antarctic Ocean]

Research title	NEWREP-A : New Scientific Whale Research Program in the Antarctic Ocean
Research objectives	(1) Improvements in the precision of biological and ecological information for the application of the Revised Management Procedure (RMP) to the Antarctic minke whale (2) Investigation of the structure and dynamics of the Antarctic marine ecosystem through building ecosystem models
Research area	Latitude: South of 60° S, Longitude: 0° to 120° W (the Management Areas III to VI defined by the International Whaling Commission (IWC))
Research period	12 years (2015/16–2026/27, midterm review after the first six years)
Research methods	(1) Lethal survey a. Whale species: Antarctic minke whales b. Sample size: 333 animals (a) As there is no other means than lethal methods, at this stage, the use of lethal method is indispensable to obtain age data which is necessary for estimating the age-at-sexual maturity (ASM), which makes considerable contribution to achieving the application of the RMP (research objective (1)). (b) The sample size is limited to the number required for the estimation of the ASM with sufficient accuracy. (c) Data obtained through lethal sampling will be utilized to the maximum extent to develop improved ecosystem models (research objective (2)). (2) Non-lethal surveys In addition to the non-lethal methods employed by JARPA and JARPA II including sighting surveys for abundance estimation, biopsy sampling of skin tissue and oceanographic observations, the feasibility and practicability of the following non-lethal methods will be examined. (a) Investigating the feasibility of biopsy sampling from Antarctic minke whales, especially in the offshore area in the Antarctic Ocean (b) Investigating the feasibility of age-determination methods other than ear-plug reading by analyzing DNA extracted from biopsy skin samples (c) Investigating the feasibility of tracking nutritional status indices by the analysis of retinol and saturated fatty acid extracted from biopsy samples instead of the measurement of body condition such as blubber thickness (d) Conducting satellite tagging on Antarctic minke whales to elucidate the location of their breeding grounds and using data-loggers for research on feeding behavior (3) Krill abundance survey Simple surveys for estimating krill abundance using an echosounder will be conducted.
Implementing organization and research vessels to be used	Institute of Cetacean Research (ICR); one research base vessel and a few sighting and sampling vessels
Backup plan for contingency	To minimize any negative influences of disruptions including sabotage activities by an anti-whaling NGO and bad weather conditions and to secure the scientific value of data, this research plan establishes a contingency backup plan including (a) adjustments of research protocols at the scene of disruption, (b) adjustment of the research plan and (c) consideration of alternative analytical methods.
Participation of foreign scientists and collaboration with other researches/organizations	Participation of foreign scientists will be welcomed and collaboration with other relevant research programs and institutions such as CCAMLR (Commission for the Conservation of Antarctic Marine Living Resources), the National Research Institute of Far Seas Fisheries and the National Institute of Polar Research will be strengthened.

* This proposed plan takes account of the reasoning and conclusions contained in the Judgment by the International Court of Justice (ICJ) in the case concerning "Whaling in the Antarctic" (Australia v. Japan: New Zealand intervening). Japan welcomes outside scientific comments. It will give due regard to such scientific comments and this proposed plan is thus subject to further elaborating and amendment if necessary.

(5) Japan's relations in international fisheries

A. Bilateral fishery relations

○The Japan-Russia Agreement on Measures against Illegal Fishing and Illegal Export in Marine Products, which aims to achieve conservation, rational use and management of crab resources, entered into effect on December 10, 2014.
○Negotiations with South Korea in 2014 on conditions for mutual permission to fish within each other's waters faced difficulties, and Japanese and South Korean fishing vessels were prohibited from operating within the other country's waters from July 2014. In January 2015, the two countries agreed on matters including a reduction of the number of South Korean longline fishing vessels permitted to operate within Japan's waters by 20% over the next five years and the strengthening of measures to eradicate illegal operations by South Korean fishing vessels, and resumed mutual permission to fish within each other's waters on January 20, 2015.
○In relation to China, Chinese vessels' operations in waters surrounding Japan to harvest precious coral, and an increase in the number of tiger net fishing vessels in the East China Sea became a problem. In December 2014, Japan and China agreed on matters including the following: (i) with regard to the problem of precious coral, the two countries will continue to implement firm control, and strengthen all sorts of measures including punishment of violators, as well as building a framework for communication between the Japanese and Chinese authorities, etc. in coordination and cooperation with each other; and (ii) with regard to tiger net fishing vessels, etc., the number of vessels will be frozen and will be reduced in the future, and guidance on fishers to observe operation rules will be reinforced, etc.
○In January 2014, the Japan-Taiwan Fishery Committee decided on the operation rules to be observed by both Japanese and Taiwanese fishing vessels. The operation rules include rules for avoiding trouble and rules for achieving smooth resolution in the case of trouble occurring. It is necessary to continue ensuring appropriate implementation of the operation rules, and work toward enabling Japanese fishing vessels to operate securely without any trouble with Taiwanese fishing vessels.
○The fishing fee charged for foreign purse seine fishing vessels conducting fishing operations in the exclusive economic zone of Pacific island countries has been raised every year.

B. Multilateral fishery relations

○The Convention on the Conservation and Management of High Seas Fisheries Resources in the North Pacific Ocean (the NPFC Convention) aimed at resource management of armorhead, saury, neon flying squid, etc. in North Pacific high seas will enter into effect in July 2015.
○In June 2014, Japan joined the South Indian Ocean Fisheries Agreement (SIOFA), aimed at resource management of alfonsino, toothfish, orange roughy, etc. in the South Indian Ocean.
○The Western and Central Pacific Fisheries Commission (WCPFC) has adopted Conservation and Management Measures which include taking measures necessary to ensure that all catches of Pacific bluefin tuna less than 30 kg will be reduced to 50% of the 2002–2004 annual average levels and taking every possible measure not to increase catches of Pacific bluefin tuna 30 kg or larger from the 2002–2004 annual average levels.
○The International Commission for the Conservation of Atlantic Tunas (ICCAT) assessed that the stock size of Atlantic bluefin tuna has been on recovery in recent years due to strict resource management measures. The 2015 catch quotas for the eastern and western Atlantic stocks were expanded. The quotas granted to Japan are 1,345.44 tons for the eastern stock, a 205.89 ton increase over the previous year, and 345.74 tons for the western stock, a 44.1 ton increase over the previous year.
○The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) assessed that the stock size of southern bluefin tuna is on recovery. The annual catch quota granted to Japan for 2015 to 2017 is 4,737 tons, a 39% increase over 2014.

C. Economic agreements concerning fisheries

○Japan joined the negotiations on the Trans-Pacific Partnership (TPP) in July 2013. Japan has been negotiating vigorously in the area of fisheries as well, on matters including the handling of fisheries subsidies, so that the TPP will not undermine the sustainable development of Japan' fisheries or the demonstration of the multiple functions of the fishing industry and fishing communities.

Section 4 Development of safe and vigorous fishing communities

(1) Seashore revitalization plan

○Since FY2013, the national government has encouraged the efforts of local fishery cooperatives and fishers' organizations to study the challenges facing local fisheries together with municipalities and compile the overcoming measures into seashore revitalization plans. Aiming to have such plans formulated at 600 areas nationwide, the national government has provided support for research on areas making advanced efforts and expert guidance, etc. In addition, it has implemented intensive support measures for efforts made under government-authorized plans.
○By the end of March 2015, 427 plans have been authorized by the national government. Varied efforts are made depending on the area. In some areas, efforts are not only made in relation to production, such as quality improvement and resource recovery/increase efforts, but also in relation to consumption and distribution.

[Examples of efforts under seashore revitalization plans]

Measures		Examples of specific efforts	
Efforts to increase income	Increasing the production volume while managing resources	○Catch volume increase	Seed release, predator control, seaweed control, sea-bottom cultivation, fertilization (adding compost blocks), reinforced resource management, etc.
		○Development of new fisheries	Aquaculture, set nets, introduction of new aquaculture species, etc.
	Improving fish prices or adding high values	○Quality improvement	Unification of post-fishing management such as killing, nerve extraction and blood extraction, unification of temperature management such as using sherbet ice, quick freezing, improvement of the processing method or aquaculture method, creation of a manual, unification of the fish meat quality, shortening of the transit time by reviewing operations, etc.
		○Hygiene control	Use of sterilized seawater, thorough measures against food poisoning, etc.
	Actively placing products on the market	○Product development	Development of processed products using underexploited/unexploited species, etc.
		○Shipping expansion	Review of the sales destinations, market integration, etc.
		○Consumption expansion	Direct selling, use in school meals, cooperation with Co-op, etc., holding events, efforts to export products, etc.
Efforts to reduce costs	Fuel-saving activities, introduction of energy-saving equipment	Reinforcement of bilge cleaning and fishing vessel maintenance	
		Introduction of energy-saving engines, fishing gear, and processing equipment	
		Weight saving for fishing vessels through reduction of loads	
	Rationalization of business management through collaborative operations	Shortening of operation hours and reduction of the number of operating fishing vessels through review of operations, etc.	
		Reduction of personnel costs through collaborative operations, reduction of fishing gear repair/mending costs, etc.	

Source: Fisheries Agency survey.
Note: As of December 2014.

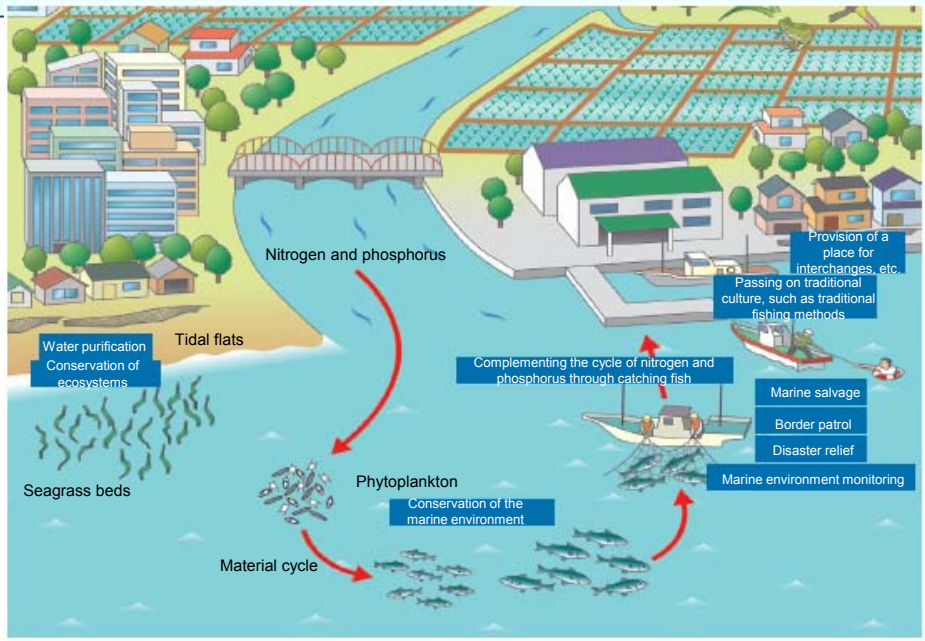
(2) Use of local resources in the fishing industry and fishing communities

○The national government has promoted smooth collaboration between fishers and management bodies of other types of businesses by launching “Project! Fisheries Production Supporters.” Under this project, the government invites fishery production supporters from among people who have various knowledge and technology on the fishery industry or any other fields and who are willing to back up the revival of Japan as a fishery nation, and the Fisheries Agency serves as a bridge to match the supporters with fishery producers.

(3) Multiple functions of the fishing industry and fishing communities

○Fishing ports are essential for fisheries as bases for landing catches, mooring fishing vessels, supplying fuel, food, etc., and repairing fishing vessels.
○The fishing industry and fishing communities demonstrate multiple functions including (i) conserving the natural environment, (ii) ensuring security of the lives and properties of citizens through search and rescue, border patrol, etc., (iii) providing places for residence and for interaction between locals and city residents, and (iv) forming and maintaining local societies. As for their assessment value, even quantitatively assessed functions alone can be estimated at a total of 9.2052 trillion yen per year. Since FY2013, the national government has supported the activities of local fishers, etc. that contribute to the demonstration of multiple functions by the fishing industry and fishing communities.

[Multiple functions of the fishing industry and fishing communities]



Source: Compiled by MAFF based on a report by the Science Council of Japan (the part concerning the fishing industry and fishing communities)

(4) Strengthening disaster prevention and promoting disaster mitigation in fishing community areas

○Since about 50% of fishing port facilities and about 70% of coast facilities are expected to end their service life of 50 years in approximately the next 20 years, it is an urgent task to appropriately maintain and manage the aged facilities and their functions. Based on the government’s Basic Plan to Prolong the Life of Our Infrastructure (November 2013), the Fisheries Agency formulated the Action Plan to Prolong the Life of Our Infrastructure in August 2014, and has promoted efforts to prolong the life of infrastructure under the jurisdiction of the Fisheries Agency.

Section 5 Developments toward reconstruction from the Great East Japan Earthquake

(1) Status of reconstruction of the fishing industry and fishing communities

(Overview of recovery/reconstruction of fishery-related facilities, etc.)

<<Landings>>

○In line with the reconstruction of fishing vessels, aquaculture facilities, fishing port facilities, and processing and distribution facilities, landings in the affected prefectures are on a recovery trend.
○The landings at wholesale fishery markets in major production areas in Iwate, Miyagi, and Fukushima Prefectures from February 2014 to January 2015 marked 79% of the level before the earthquake (March 2010 to February 2011) in terms of landing volume, and 87% in terms of landing value.

<<Fishing port facilities>>

○As of the end of February 2015, landing was possible at 305 fishing ports out of the 319 affected fishing ports (including cases where landing is partially possible).

<<Fishing vessels>>

○The total number of fishing vessels for which repair or new vessel building has been completed was 17,875 as of the end of January 2015, including recovery through fishers' own efforts based on the fishing vessel insurance they were covered under. As a result, recovery has been made up to 89% of the target number of vessels (20,000 vessels).

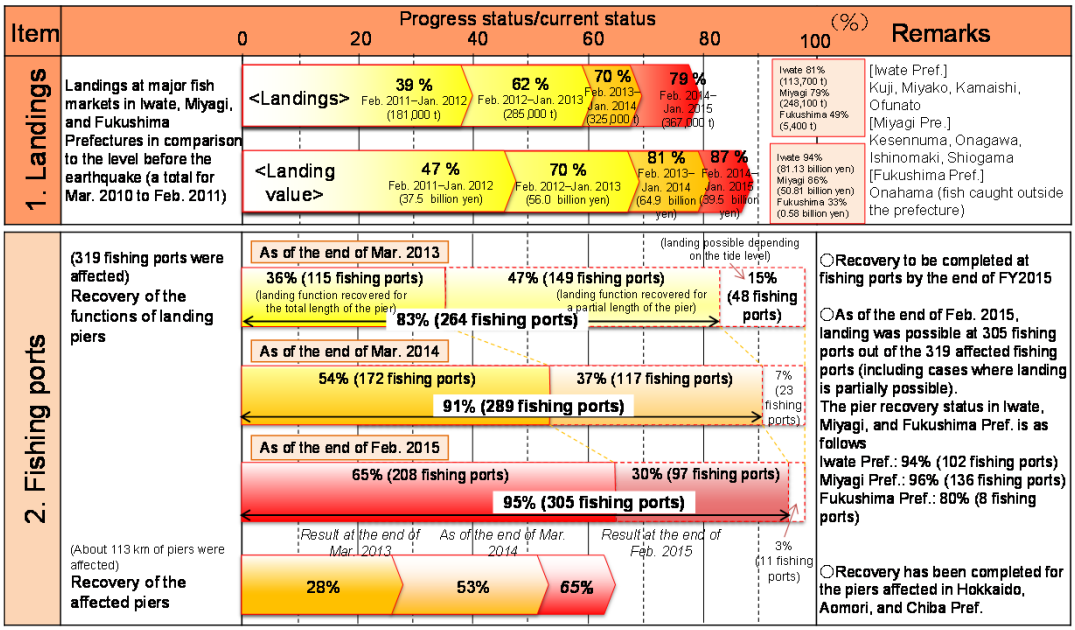
<< Aquaculture facilities>>

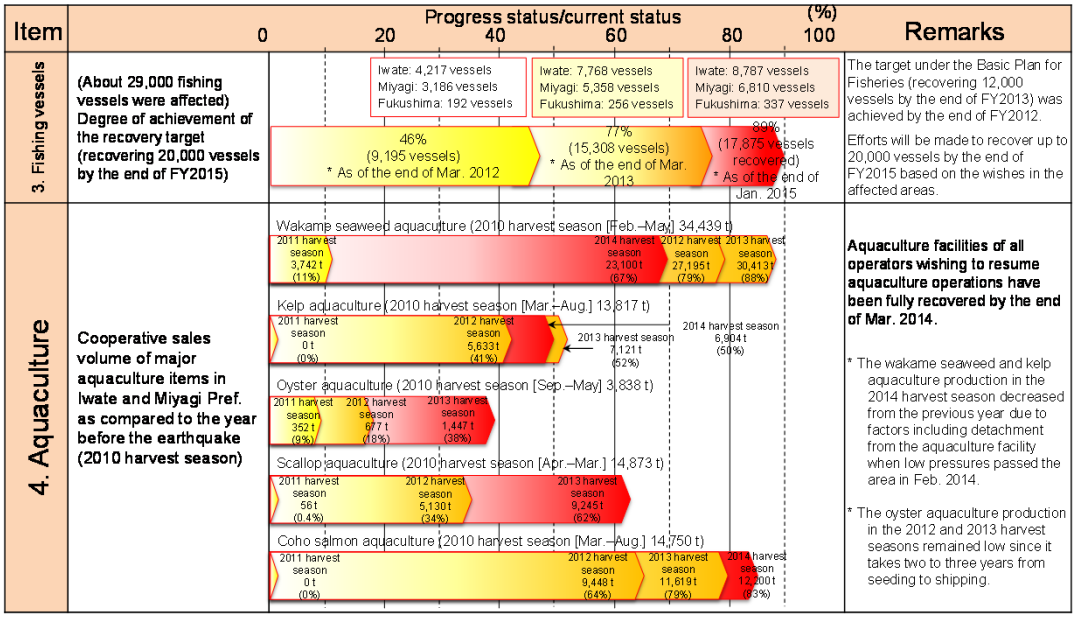
○In the 2014 fishing season, the volume of aquaculture harvest recovered to 67% of the level before the earthquake for wakame seaweed and to 50% for kelp.
○There is a delay in the harvesting of oysters and lavers because cultured oysters normally require two to three years until harvest, and laver aquaculture needs a large amount of capital investment in a fully automatic dry laver manufacturing machine, etc., and in production areas of both oysters and lavers, there was a need to raise the land for the facilities that had seriously sank due to the earthquake disaster.

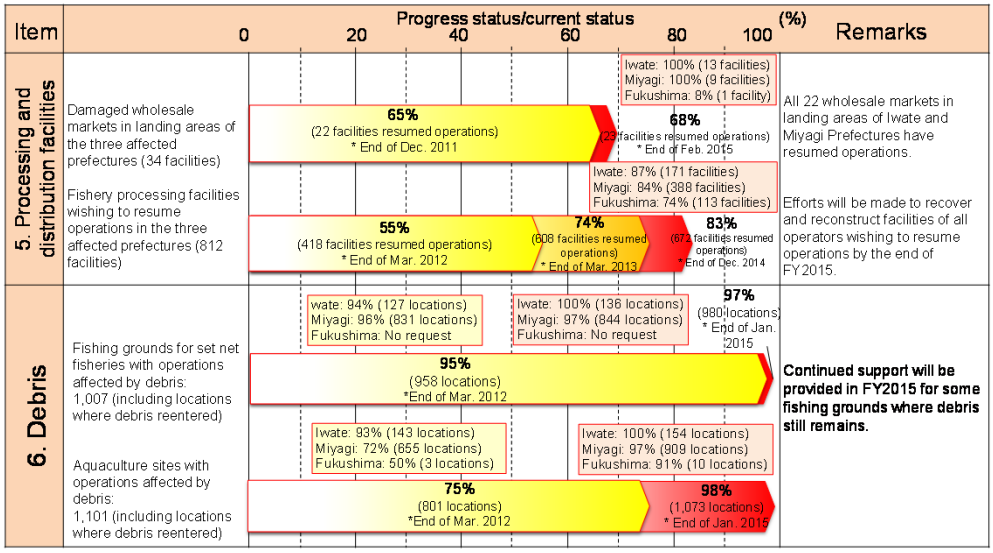
<<Processing and distribution facilities>>

○All 34 wholesale fishery markets in the production areas of Iwate, Miyagi, and Fukushima Prefectures were affected by the earthquake disaster. Among them, all 22 facilities in Iwate and Miyagi Prefectures resumed operations by September 2012. Of the 12 wholesale fishery markets in production areas in Fukushima Prefecture that have been strongly affected by the accident of TEPCO's Fukushima Daiichi Nuclear Power Plant, only one facility (Onahama) has resumed operations as of the end of February 2015.
○According to a survey by the National Federation of Fishery Processor's Co-operative Associations , of the 812 facilities in Iwate, Miyagi, and Fukushima Prefectures that have wished to reopen, operations have been resumed at 672 facilities (as of the end of December 2014).

[Progress status of reconstruction of the fishing industry (as of March 5, 2015)]







[Column: Establishment of the Group of Advisors on Fishery Marketing for Reconstruction]

○In the fishery processing industry in areas affected by the Great East Japan Earthquake, the recovery of facilities has seen progress, but the recovery of sales channels has been delayed. In order to recover the sales channels to the level they were at before the earthquake, experts need to provide advice such as about product development.

○In June 2014, the Fisheries Agency appointed 12 advisors to actively discover highly potential fishery processors and to support such processors in achieving product development and sales.

(Increased actions toward and understanding of the rationality of collaborative operations due to the earthquake disaster)

○In affected areas, efforts for collaborative operations have been made in fishing and aquaculture, aiming to resume fisheries as early as possible by jointly using the fishing vessels and gear that remained unaffected or preparing new fishing vessels and fishing gear for joint use. Fishery operators' understanding on the rationality of collaborative operations have been increasing.

(Changes in the fishery production structure in the affected prefectures)

○The number of fishery operators in Iwate, Miyagi, and Fukushima Prefectures in 2013 was 5,690, a 43% decrease from 10,062 in 2008. Of these, 2,213 fishery operators have discontinued their business, and 2,878 have suspended their business.

○The number of fishery workers in Iwate, Miyagi, and Fukushima Prefectures in 2013 was 13,827, a 36% decline from 21,598 in 2008.

○Fishery operators that have resumed operations in Fukushima Prefecture are limited to 14 engaged in far-seas and offshore fisheries, and the number of fishery workers is only 409.

(2) Dealing with the nuclear power plant accident

(Status of TEPCO's Fukushima Daiichi Nuclear Power Plant)

○The government is taking the initiative to implement a project for decommissioning TEPCO's Fukushima Daiichi Nuclear Power Plant, toward containing the accident at the plant.

(Status of trial fishing operations off the coast of Fukushima Prefecture)

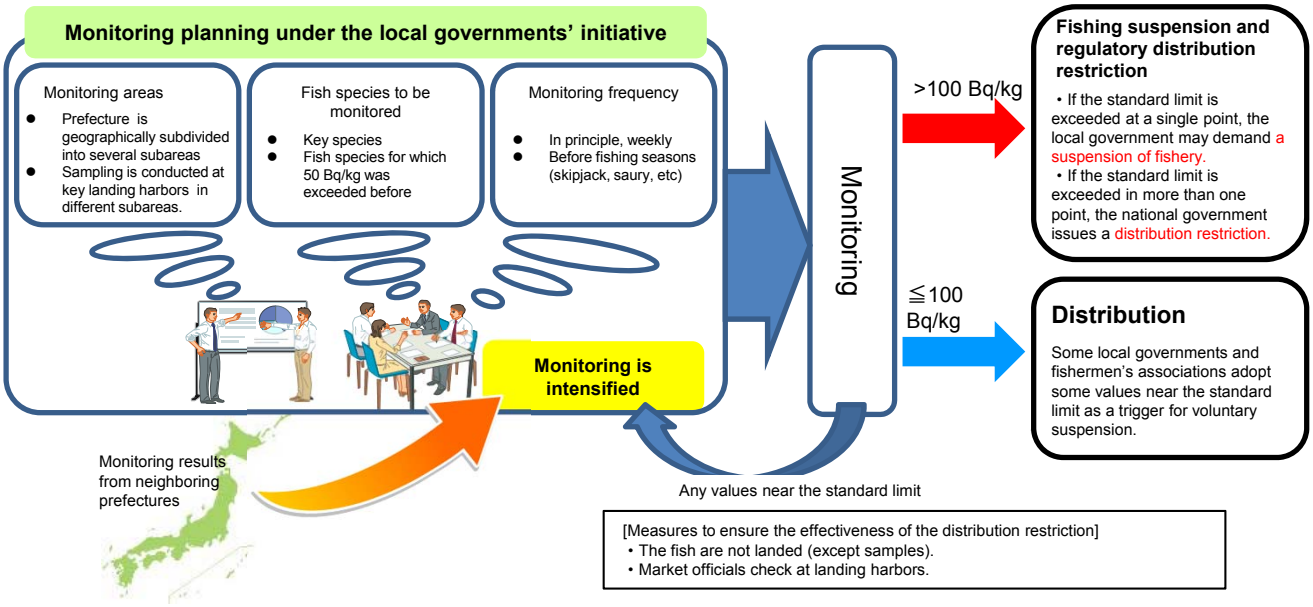
○As of February 2014, the target area of trial fishing operations has spread to all areas off the coast of Fukushima Prefecture excluding the area within a 20 km radius from TEPCO's Fukushima Daiichi Nuclear Power Plant, and the target species have also increased to 58 species. Efforts are being made step by step toward resuming full-fledged fishing operations off the coast of Fukushima Prefecture.

(Monitoring of radioactive materials in fish and fishery products of Fukushima Prefecture and neighboring prefectures)

○In fisheries other than the trial fishing operations, the national government, prefectural governments concerned, and related industry groups have collaboratively implemented sampling monitoring of fish and fishery products about once a week in Fukushima Prefecture and neighboring prefectures, in order to secure the safety of fish and fishery products that are delivered to consumers. If the level of radioactive materials exceeds the standard limit at only one location as a result of the monitoring, the local government requests voluntary suspension of distribution, and if the level exceeds the standard limit at several locations, the national government implements shipping restriction.

○According to the radioactive materials monitoring of fish and fishery products, the percentage of fish and fishery products from which radioactive materials exceed the standard limit has been steadily declining. In addition, the International Atomic Energy Agency (IAEA) has made the following assessment: "the Joint IAEA /FAO Division understands that the measures taken to monitor and respond to issues regarding radionuclide contamination of food are appropriate, and that the food supply chain is under control" (February 2015).

[Framework of radioactive materials monitoring for fish and fishery products]



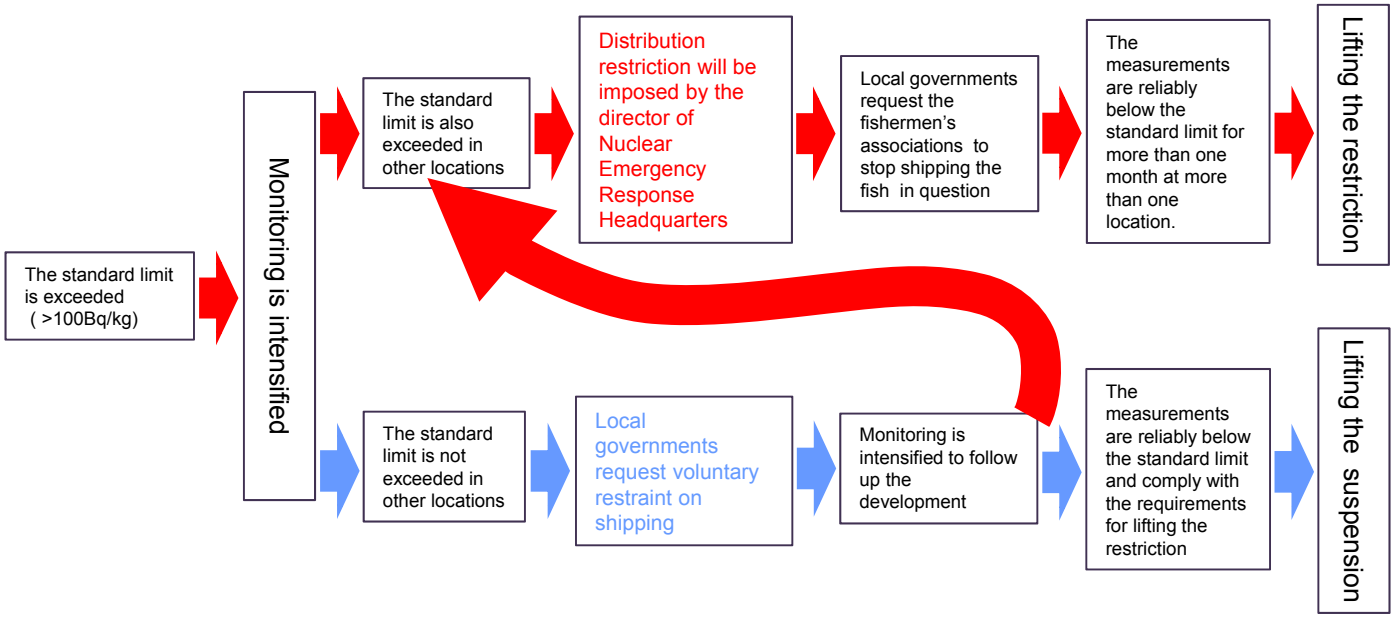
(Provision of safe fish and fishery products and enhancing provision of information in and outside Japan)

○Through collaboration among the national government, prefectural governments concerned, and related organizations, measures have been taken to prevent fish and fishery products containing radioactive cesium that exceeds the standard limit from being placed on the market. In this manner, there is a framework to ensure that only safe fish and fishery products are delivered to consumers.

○In order to address misinformation resulting in unfounded reputational damages, the government has continued to implement the monitoring of radioactive materials in fish and fishery products and publish the results to consumers in an easy-to-understand manner. At the same time, it has recommended that the section of the sea areas where particular products were harvested and the name of the areas are to be clearly stated in the indication of the origin mainly for fresh fish and fishery products harvested in the East Japan Pacific.

○As publicity activities for overseas consumers and related organizations, etc., the government has published the results of monitoring of radioactive materials in fish and fishery products through its website in English, Chinese, and Korean languages. In addition, it has explained to the governments and news agencies in other countries about the results of radioactive materials monitoring and measures taken by Japan to ensure the safety of products, as well as working toward relaxation or lifting of import restrictions on Japanese foods including agricultural, forestry, and fishery products and foods.

[Workflow for distribution suspension or regulatory distribution restriction for fish and fishery products (marine fish)]



Note: Local governments and fishermen's associations have their own criteria and requirements in place for voluntary distribution suspension. The chart only shows a typical example.

Working to revitalize the fishing industry and fishing communities —Prize winners at the 2014 Agriculture, Forestry, and Fisheries Festival—

Emperor's Cup Award
Shimozono Satsuo Syouten Co., Ltd. (Representative: Michiru Shimozono) (Akune City, Kagoshima Prefecture)

Shimozono Satsuo Syouten developed a new product bottling whole dried round herrings in oil seasoned with western condiments, by clearly defining the product concept and targets, and hearing the opinions of various people in and outside the company, including such experts as designers and food coordinators.

Prime Minister's Award
Maruto Suisan Co., Ltd. (Representative: Satoru Urabe) (Aioi City, Hyogo Prefecture)

Maruto Suisan achieved a sales increase by manufacturing and selling frozen, steamed oysters made by its original, low-pressure steaming method. Among Japanese oysters harvested in Harima-nada, which are known for their large size and high quality, this product uses such oysters harvested in the best season, which begins in February.

Agriculture, Forestry, and Fisheries of Japan Promotion Association Chairperson's Award
Youth Group, Hiroe Branch, Saga Prefecture Fishery Cooperative Federation (Representative: Yusuke Nakajima) (Saga City, Saga Prefecture)

The youth group studied efficient methods of using laver aquaculture sites, and made it easier for seawater to pass through the laver nets by reducing the number of nets by 20% as a disease control measure, and improved the operation efficiency by introducing a netting method called *chocho bari* (butterfly netting).

Fishery Policy for FY2015

Based on the Basic Plan for Fisheries formulated in March 2012, the national government will promote the recovery and management of fish resources, and will strive to establish a robust fishing industry that remains sustainable in the future. To this end, the government will implement such measures as ensuring the stability of fishery business management through fishery business management stability measures, securing and training fishery management bodies, and supporting the activities of fishers, etc. for demonstrating the multiple functions of the fishing industry and fishing communities.

I Achieving reconstruction from the Great East Japan Earthquake

1 Steadily implementing measures oriented toward achieving reconstruction
2 Overcoming the impact of the accident at TEPCO's Fukushima Daiichi Nuclear Power Plant

II Strengthening fish resource management under a new resource management system

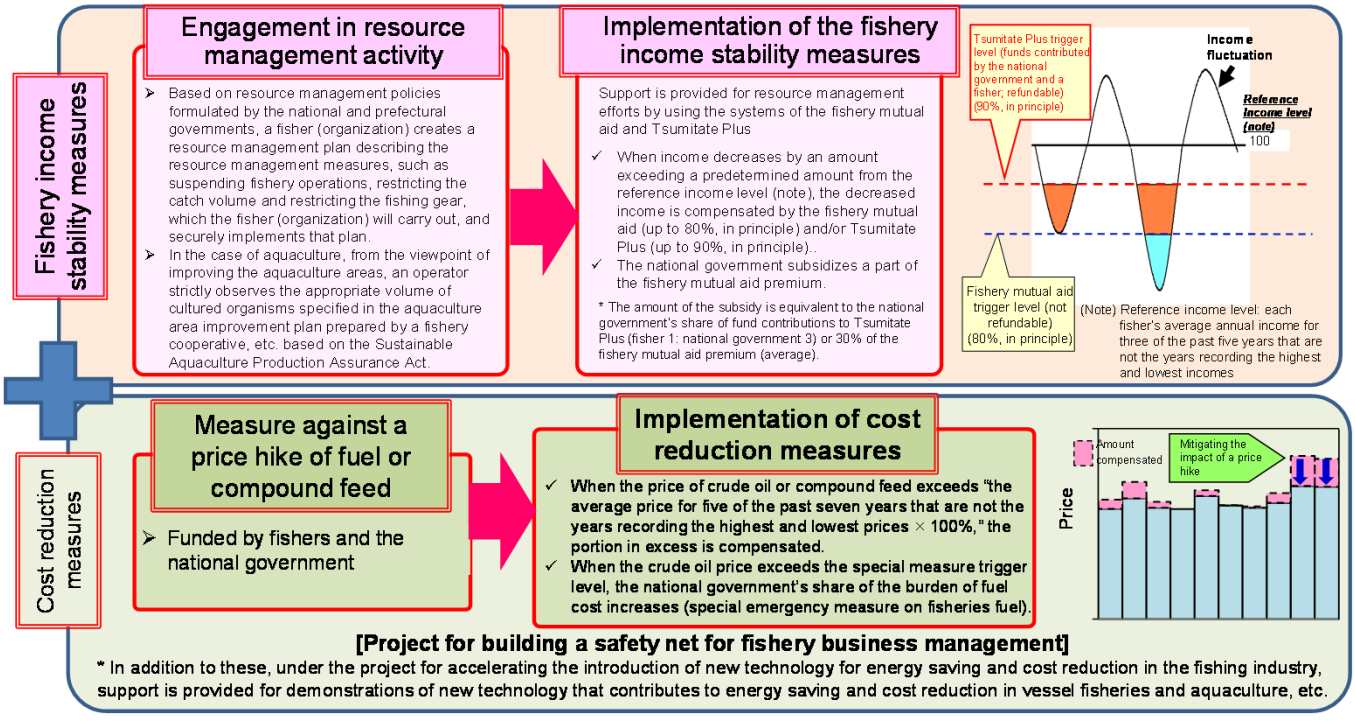
1 Strengthening resource management in Japan's exclusive economic zones
2 Promoting global resource management
3 Enhancing investigative research related to fish resources
4 Establishing sustainable aquaculture with little environmental load
5 Ensuring the development of fisheries based on the coexistence of a variety of marine organisms

III Achieving stability in business management of motivated fishery management bodies

1 Ensuring the stability of fishery business management through fishery business management stability measures

○In order to achieve appropriate resource management and stable fishery business management and to secure a stable supply of fish and fishery products to people, fishery income stability measures will be implemented for fishers who make well-planned resource management efforts by utilizing the system of fishery mutual aid. By combining such measures with the project for building a safety net for fishery business management, which is a cost reduction measure, the government will comprehensively promote the stability of fishery business management.

[Outline of the fishery business management stability measures]



2 Appropriately managing the fisheries insurance system

IV Establishing a vibrant production structure based on the diverse development of fisheries business

1 Strengthening the structure of fisheries business management toward developing fishery management bodies with international competitiveness
2 Making fisheries a highly value-added industry
3 Precisely implementing fishery business support measures, such as finance and credit guarantee
4 Securing and training fishery workers and promoting the participation of women

○Fishery operators that can engage in fishery activities in a sustainable manner will be fostered by training and securing human resources.

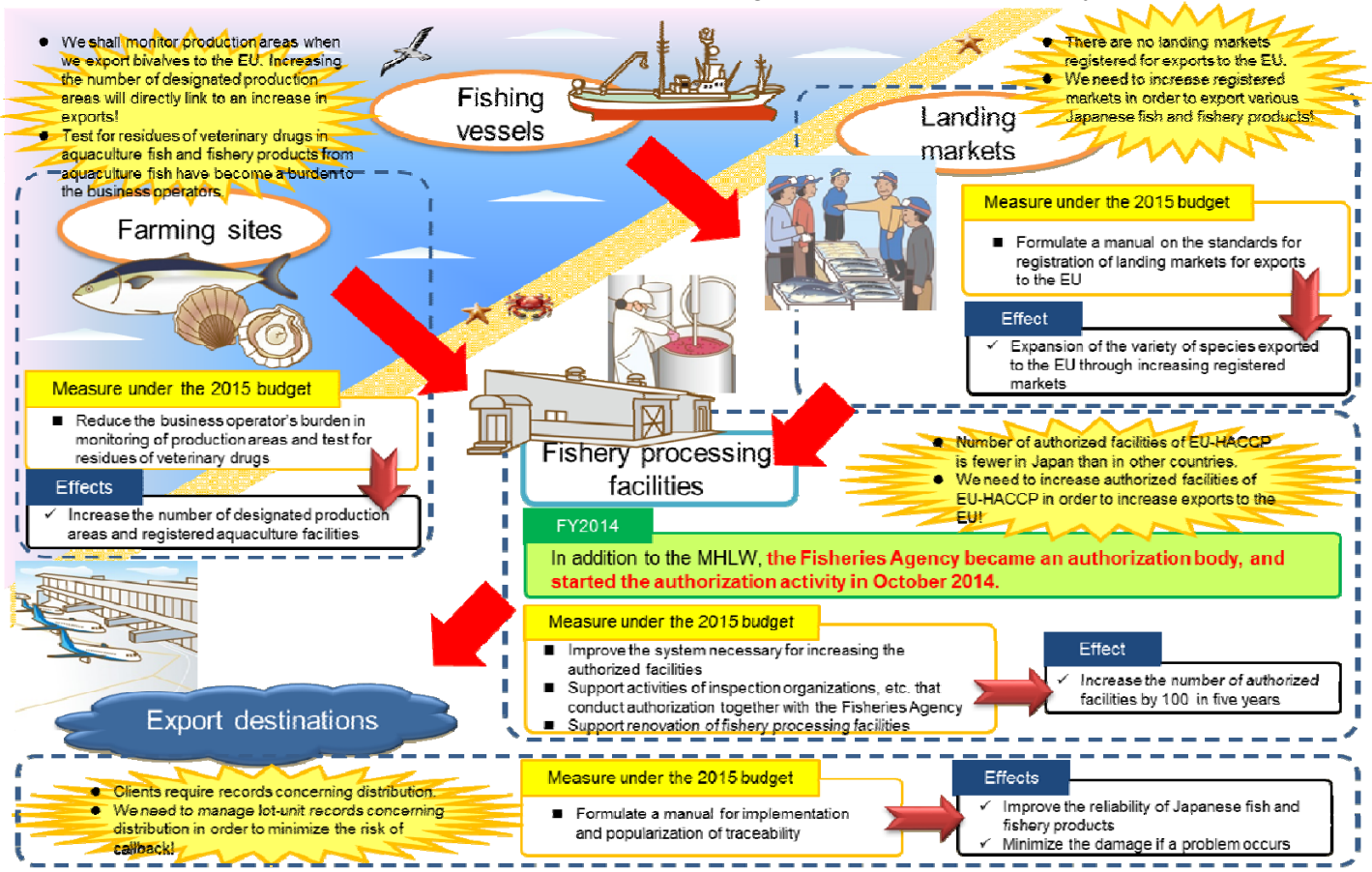
V Strengthening safety measures for fisheries using fishing vessels

VI Ensuring the stable supply of safe fish and fishery products based on sustainable development of the processing and distribution industries and expanded consumption

1 Enhancing information provision to consumers
2 Promoting the dissemination of a fish-rich diet
3 Promoting quality and hygiene control measures for the distribution of fish and fishery products

○In order to promote HACCP authorization, the government will implement measures including on-site guidance to fishery processors, etc., support for marine monitoring, etc., and development of the framework for the HACCP authorization for exports to the EU.

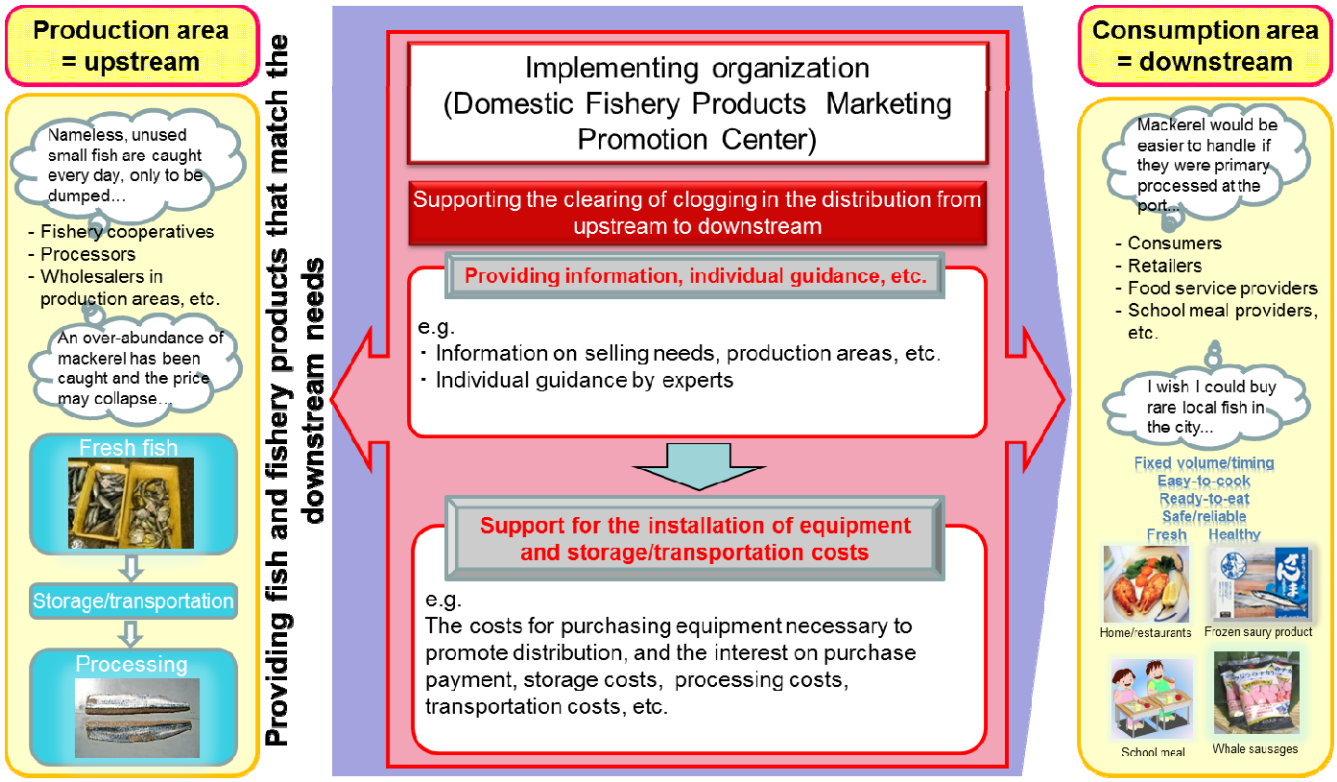
[Measure to develop an environment for doubling exports of fish and fishery products]



4 Constructing diverse distribution routes
5 Increasing added value based on fishery processing and expanding sales channels

○The government will promote distribution and expand the consumption of domestic fish and fishery products from upstream (production area) to downstream (consumption area) and meeting consumer needs.

[Project for promoting the distribution of domestic fish and fishery products]



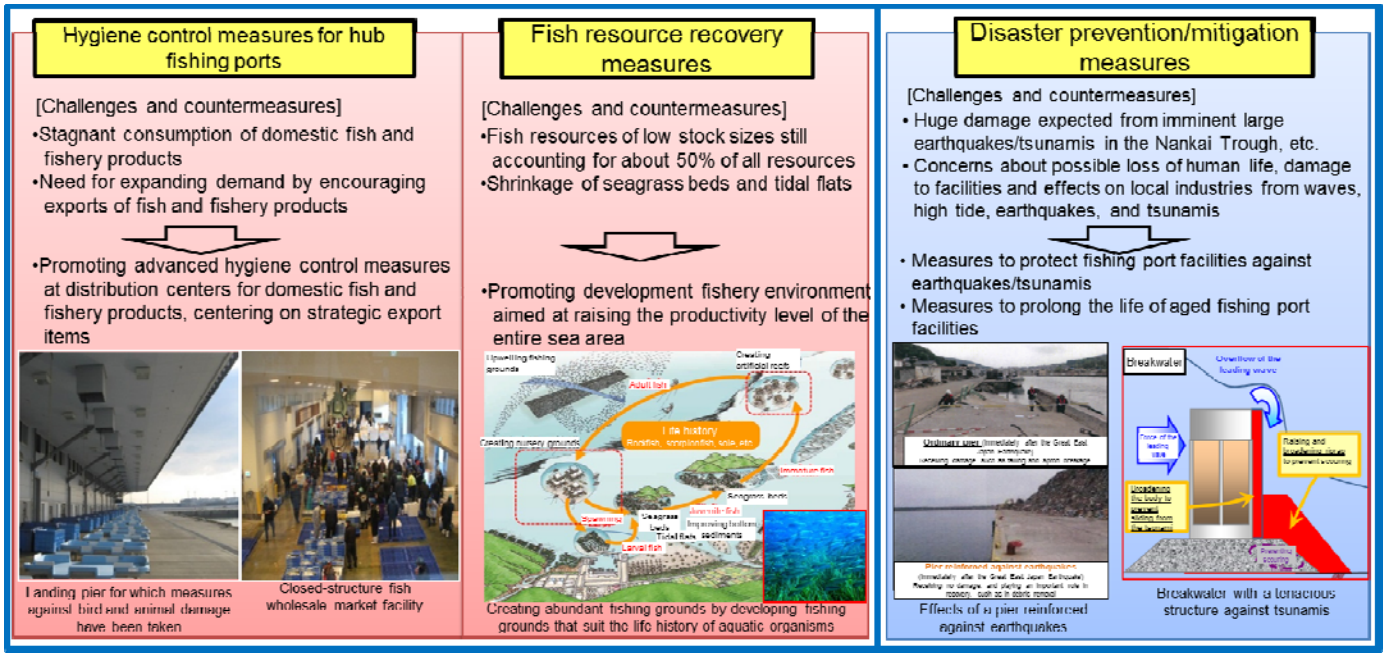
6 Securing processing ingredients for fishery products and ensuring an appropriate supply-and-demand balance
7 Promoting exports of fish and fishery products
8 Securing imports of fish and fishery products

VII Developing safe and vibrant fishing communities

1 Strengthening disaster-prevention functions and disaster-mitigation measures of fishing ports and fishing communities

○The government will increase the disaster-prevention/mitigation capacity of fishing ports and fishing communities by diagnosing the functions of fishing port facilities and promoting measures to make the structure of breakwaters tenacious and make the piers earthquake-resistant, as well as promoting “multiple protection” measures using both breakwaters and seawalls.

[Outline of fisheries infrastructure development projects]



2 Maintaining and strengthening fishing port functions that serve as the foundation for a stable supply of fishery products

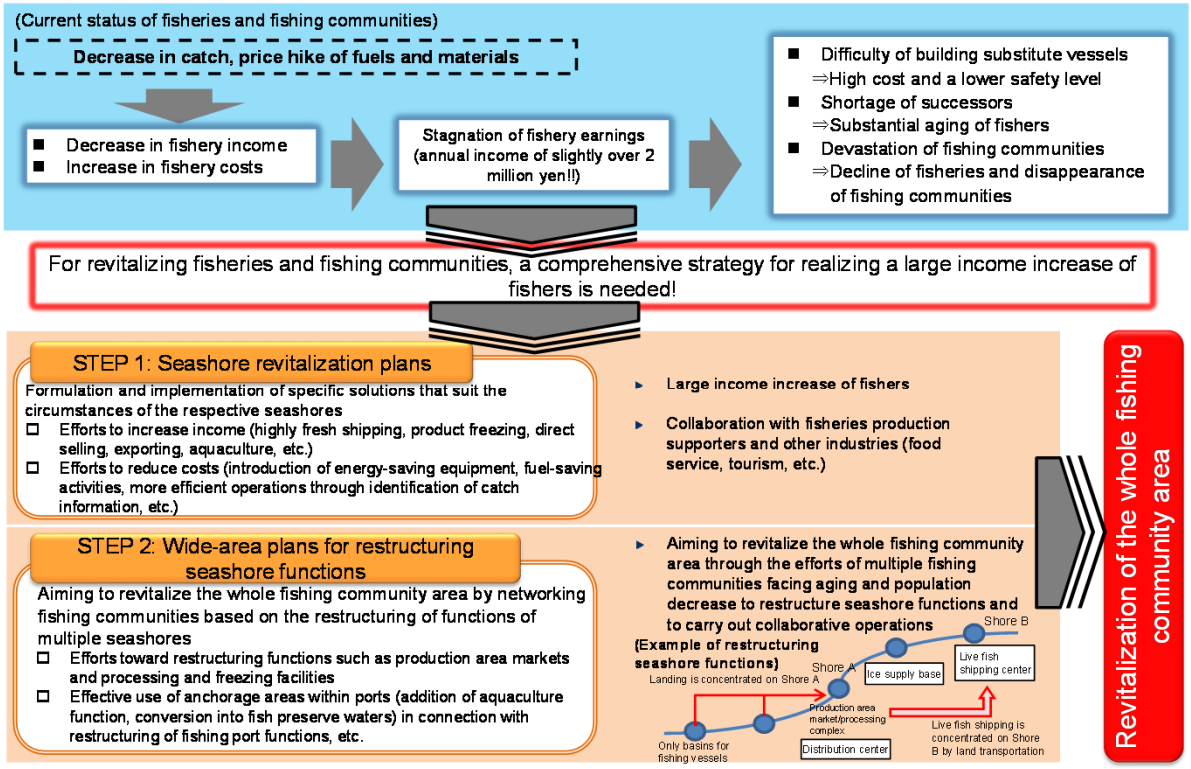
○From the viewpoint of appropriately maintaining fishing port functions to support stable supply of fish and fishery products and effectively using the existing stock of fishing ports, the government will promote well-planned repair and upgrading of fishing port facilities based on the Action Plan to Prolong the Life of Our Infrastructure .

3 Using local resources and demonstrating the multiple functions of the fishing industry and fishing communities

○The government will promote the revitalization of the fishing industry and fishing communities and the revival of the fishing industry by supporting the activities of fishers, etc. to demonstrate the multiple functions of the fishing industry and fishing communities.

○The government will support the creation of seashore revitalization plans under which fishers promote the reform of seashores by themselves in order to revive fishing community areas. It will also support the creation of wide-area plans for restructuring seashore functions for promoting the networking of multiple fishing communities through restructuring of the functions of the respective seashores.

[Reform of the fisheries and fishing communities through “seashore revitalization plans”]



VIII Enhancing technological development and investigative research that supports the fishing industry

1 Developing and disseminating new technology that paves the way for the future of the fishing industry
2 Steadily implementing basic surveys and research, such as marine-environment monitoring

IX Reorganizing and developing fishery-related organizations

1 Reorganizing fishery-cooperative organizations
2 Securing the business infrastructure of fisheries insurance organization

X Other important measures

1 Taking part in trade negotiations on fish and fishery products, etc.
2 Promoting the creation and use of statistics that support policy needs

XI Necessary items for comprehensively and systematically promoting fishery-related measures

1 Implementing measures based on the experience of the Great East Japan Earthquake
2 Efficiently promoting measures through coordination between relevant ministries and agencies
3 Implementing measures from a public interest perspective based on the needs of consumers and the public
4 Promoting demonstrations of independence, originality, and ingenuity by business management bodies and production areas
5 Administrating fiscal measures in an efficient and focused manner