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Responsible Fisheries in Relation to the Challenge of Guaranteeing Safe Food

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Introduction

Responsible fisheries is the concept which was developed by UN FAO. This concept encompasses not only fisheries management but also environmental protection, supplying of safe food to the people and so forth.

Fisheries cooperative sector in Japan have been promoting environmental conservation movement headed by ZENGYOREN (National Federation of Fisheries Co-operative Associations).

First objective of environmental protection was to protect spawning ground and nursery ground of aquatic species.

As various environmental problems appeared, FCA fishers' awareness on the need to protect the environment became stronger. Some of the FCAs' environmental protection movement history are introduced.

With these process as backdrop, activities and/or efforts of ZENGYOREN and other FCA organizations for safe food supply are briefly introduced

RESPONSIBLE FISHERIES IN RELATION TO THE CHALLENGE OF GUARANTEEING SAFE FOOD

1. What is the Responsible Fisheries ?
- responsible fisheries in relation to food safety -

The concept of responsible fisheries comes from the "Code of Conduct for Responsible Fisheries" which was adopted by the twenty-eighth Session of the FAO Conference on 31 October, 1995.

It provides a necessary framework for national and international efforts to ensure sustainable exploitation of aquatic living resources in harmony with the environment.

Aside from the provisions on fisheries management aspects etc., one of the objectives of the Code includes the promotion of and the contribution of fisheries to, ensuring food security as well as food safety.

Some of the important provisions of the Code under the heading of Responsible Fish Utilization include the following:

1. States should adopt appropriate measures to ensure the right of consumers to safe, wholesome and unadulterated fish and fishery products.
2. States should establish and maintain effective national safety and quality assurance systems to protect consumer health and prevent commercial fraud.
3. States should set minimum standards for safety and quality assurance and make sure that these standards are effectively applied throughout the industry. They should promote the implementation of quality standards agreed within the context of the FAO/WHO Codex Alimentarius Commission and other relevant organizations or arrangements.

The government of Japan has established necessary legal instruments as well as guidelines in order to satisfy these requirements based on the Code of Conduct for Responsible Fisheries.

2. Fisheries Cooperative Associations and Responsible Fisheries in Japan

Fisheries cooperatives in Japan have maintained close contact with the Fishery Agency, and followed government policies as much as possible. In terms of implementation of

government policies, existence of fisheries cooperatives like in Japan has been very instrumental. (see an introduction to ZENGYOREN attached at the end of this paper.)

Nearly 100 % fishers belong to fisheries cooperative associations (FCAs) as member in Japan.

One of the reasons for this high percentage is the existence of the fishing right system in coastal sea areas.

Simply put it, fishing right is one of the fisheries management systems in coastal sea areas of Japan. Offshore and Far Seas fisheries are under the licensing system. Angling such as by recreational fishers can be done by anybody without having these rights or licenses, and therefore it is known as right-free, license-free fisheries.

The fishing right is granted by prefectural governor to FCAs within the prefecture. A FCA, once it is granted to member fishers, has the responsibility to manage that area: allocation of fishing ground by type of fishing right (such as common fishing right, set net right, aquaculture right) is done by the FCA concerned. The FCA has to also take responsibility to ensure proper resource conservation and management measures for the benefit of member fishers.

The fishing right helps FCA member fishers to have a sense of ownership with regard to the use of the fishing ground so allocated, though it is a renewable system for every ten years.

It is dealt with something like land property in Japan: if coastal fishing ground of a given fishing right area is reclaimed for coastal zone development project such as, for example, for establishing a chemical factory, manufacturing plants and so and so forth, it is usual that such development companies will have to compensate for the reclamation to the FCAs concerned for the loss of the fishing right area.

Quality (freshness, fat content, safety and so forth) of the products is one of the most important key factors from the marketing point of view. Fishers are well aware of this. Accordingly, it is quite natural for the fishers to try to increase their income by catching good quality fishes.

Resource management and maintenance of product quality are the lifeline for both FCAs and their member fishers.

In June, 2001, the Basic Law on Fishery was enacted in Japan. This was a culmination of FCAs' movement headed by ZENGYOREN (National Federation of Fisheries Co-operative Associations).

The purpose of this law is to ensure:

- stable supply of safe and healthy fish and fishery products to the people primarily based on domestic supply, and secondarily on import as appropriate;
- sustainable use of fisheries resources based on proper management of fisheries and aquaculture;
- sound development of fisheries including aquaculture by establishing, every five years, a Basic Fishery Development Plan, setting out a target figure for self-sufficiency rate of fish and fishery products and required government policies and measures to achieve such target.

Thus, legal framework has been developed to prepare for responsible fisheries.

3. Food Safety Promotion Activities Promoted by ZENGYOREN

ZENGYOREN has long been engaged in promoting fisheries management, or, community-based fisheries management, as one of the important activities of FCA movement from even before the Code of Conduct for Responsible Fisheries of FAO was adopted in 1995.

One of the other important activities that ZENGYOREN has actively promoted is anti-pollution, or environmental conservation activities.

Food safety promotion activities has been promoted within the framework of this category, linking it with various other FCA activities such as marketing, fish consumption promotion, and fishery policy and/or lobbying activities etc..

Since aquatic products are easily perishable unless appropriate freshness maintenance measures are applied, utmost care must be taken in handling the fish to ensure quality product right up to the dining table of consumers. Contamination of fresh water, brackish water and sea water areas has invariably affected fisheries and aquaculture.

It may be worthwhile herewith to introduce some of the past activities of FCA sector including ZENGYOREN concerning anti-pollution and environmental protection movement vis-à-vis achievements reached.

- June, 1958 “All Japan FCA Fishermen’s Rally on anti-pulp mill effluent and foul water”
- Honshu Pulp Mill Co. at Edogawa plant started discharging untreated dark colored effluent from the plant in March, 1958, killing many tons of fish, shellfish etc. of many species
 - Enraged by this, fishers from all over the country (4,000 fishers, all FCA members) took part in this rally which ZENGYOREN organized.
 - This led to the enactment of Public Water Area Water Quality Conservation Act and Plant Effluent Control Act.
 - These two laws were unprecedented in Japan’s history. However, the restrictions on chemical materials contained in the effluent were only defined by ppm terms, or concentration, and not in terms of total quantity of effluent water. Thus, these laws were innovative in those days but still defective.
 - This led to the Water Prevention Act of 1970.
 - Affected FCAs received financial compensation from the company.
- Sept., 1965 Established Japan Fishermen’s Council against Foul Waters
- Secretariat: ZENGYOREN (to date)
- Oct., 1970 All Japan Down-With-Pollution Fishermen’s Rally held
- This resulted in enactment of unprecedented 14 laws related to anti-marine pollution and anti-water contamination laws in December, 1970. The year’s national Diet session at this time was known as “Anti-pollution Diet having discussed and enacted so many environmental laws.
- April, 1975 Relief Fund for Oil-Polluted Fishing Ground Established
- This is also a result of ZENGYOREN’s campaign to relieve financial burdens of fishers who suffer from oil polluted waters such as by oil/bilge leakage from unidentified sources resulting in poor income due to poor catch, oil odor in the fish and so forth. The fund is also used for cleaning the polluted environment.
- June, 1975 ZENGYOFUREN (National Association of Women’s Groups of FCAs) adopted resolution to start anti-synthetic detergent

	movement
May, 1988	HOKKAIDO GYOFUREN (Hokkaido Association of Women's Groups of FCAs) adopts a resolution, "Let's Plant Trees in the Mountain". Actual planting of trees started from 1989. This environmental movement spread to many other member organizations of ZENGYOFUREN all over Japan as forests function to create clean water, and help provide good nursery ground in rivers, lakes and estuary waters, contributing to resource conservation.
Nov., 1983	The first Japan FCA Fishermen's Congress
-	Environmental conservation activities were included as one of the major FCA movement tasks in the resolution adopted.
-	The Congress has been held every three years after this until 1998 (the sixth Congress).
July, 1995	ZENKOKU GYOSEIREN (National Association of Youth Groups of FCAs) starts beach cleaning activities all over Japan. This is done on 20 July every year after 1995 when this day was designated as the "Marine Day", a national holiday by the government. In some prefectures, school children, local citizens etc. all take part in this event.

There are many potential safety hazards to fish and fishery products.

Such hazards are divided into biological hazards (such as by microbes, viruses and parasites), chemical hazards (such as by natural toxins, heavy metals, food additives, chemical contaminants, and agricultural chemicals), physical hazards and other hazards. (see Table 1)

It is not possible for fisheries sector alone to prevent these potential safety hazards from happening without having cooperation from parties related to these hazard causative agents. Environmental conservation should be, in this sense, promoted by all sectors concerned. In this sense, cooperatives are one of the most fit organizations.

Since 1995, ZENGYOREN has organized seminars 20 times per year, on average, every year on food hygiene and sanitary control, food labeling, and other related subjects concerning food safety. HACCP (Hazard Analysis Critical Control Point) has been actively promoted through such seminars.

For example, in the case of 2000, 18 seminars and/or workshops were held in fish landing places (usually at fish markets operated by FCAs) by inviting experts as lecturers/advisers in which approximately 1,000 participants took part. The participants were FCA fisher members, FCA staff employees and board members.

In Japan, 80 % of fish markets in landing areas are managed by FCAs. Therefore, FCA staff employees responsible for marketing business at the fish market are required to know practical knowledge concerning quality control. For this purpose, ZENGYOREN has prepared fish and fishery products quality control manuals and teaching materials such as on HACCP (Hazard Analysis Critical Control Point) and distributed them to all the FCAs in Japan.

In 2001, ZENGYOREN is scheduled to publish a manual on "Quality Control of Catches on board Small Fishing Boats", and plan to distribute this to all the coastal fishers.

Further, in collaboration with a machinery manufacturing company, ZENGYOREN developed a ultra-violet radiation disinfectant device for use at FCA fish market. This device has been quite popular and has been selling well.

One of the recent topics at ZENGYOREN in relation to safe food from the sea is the “micro-bubble device” developed by Professor Hirofumi Onari of Tokuyama Engineering College. Micro-bubble is defined as oxygen contained air bubble of which diameter is less than 0.01 mm, or ten micron. The micro-bubbles have negative potential under high pressure and therefore possess the following functions:

- Absorption of cadmium etc.;
- Absorption of microbes (such as bacteria) and other pollutants; and
- Accelerate the growth rate of the aquacultured animal due to the physiological activation effect of the micro-bubble.

Thus, disinfectant and physiological activation functions are the significant functions of the micro-bubbles observed so far.

Prices of micro-bubble treated oysters have been quite favourable, and both producers and consumers are satisfied. Consumers are satisfied because of the quality of the product and taste.

Due to microbes removing ability (in this case of Coliform bacteria such as *Bacillus* sp.), shipment time required for oyster farmers became 48 hours cut: *Bacillus* count is below the standard and there is no need for the oysters to be put under ozone (ultra-violet) for 48 hours, which was a requirement in the case of shipping young (one year old) oysters in Hiroshima prefecture. Hiroshima prefecture is one of the most famous oyster culture areas in Japan.

This device and the technology involved are now being applied for patent in the USA. ZENGYOREN has been encouraging this kind of innovative ideas and experiments by seconding a staff to the Japan Mariculture Association Tokyo office (which is housed in ZENGYOREN’s office).

Further, in the case of 2000, various government instructions for prevention of enteritis vibrio were channeled through FCA network to all FCA member organizations.

In addition, in almost all FCAs, prefectural federations of FCAs, and of course at ZENGYOREN, fish consumption campaign, various fish promotion events etc. are implemented. In those occasions, PR activities of safe and good to eat fish and fishery products are actively carried out in cooperation with marketing business departments.

These are but a few examples of ZENGYOREN’s activities in relation to food safety promotion activities.

4. What kind of activities are being done to ensure supply of safe food from the sea at primary and prefectural levels of FCAs

There are various examples wherein FCAs and their federations at the prefectural levels are making efforts for supplying of safe food from the sea.

Table 2 shows some of the examples being carried out for this purpose. (Table 2)

5. Conclusion

Code of Conduct for Responsible Fisheries does not have any meaning unless it is implemented at local, prefectural, national, regional and at international levels. From this standpoint, it is high time that we in the cooperative sector cooperated together to ensure supply of safe food to the people. This should be the way to pay tribute to the late Dr. Laidraw who commented in Moscow that the role of cooperatives in the year 2000 would be in supply of food.

Table 1 Potential Safety Hazards to Fish and Fishery Products by category

Category of hazard	Kind	
	Spp. etc	Remarks
Biological Hazards Pathogenic bacteria (microbes)	Clostridium type A and B	in canned foods, retort pouch, smoked products
	C. botulinum type E	in chilled foods, ready-to-eat foods packed in hermitically sealed containers
	C. perfringens	
	Bacillus cereus	
	Escherichia coli O 157:H7	
	Vibrio spp. -V. cholerae, -V. parahaemolyticus, -V. vulnificus	
	Staphylococcus aureus	
	Salmonella spp. -S. typhimurium -S. enteritidis	
	Yersinia enterocolitica	
	Listeria monocytogenes	
	Campylobacter spp.	
Viruses	Hepatitis A and B	
	Norwalk virus group	
Parasites	Anasakis simplex	
	Diphyllobothrium latum	
	Trichinella spiralis	
Others	BMP (Bone & Meat Powder)	From BSE cows
	GMO organisms	Carcinogenic ?
Category of hazard	Kind	
	Spp. etc	Remarks
Chemical Hazards Natural toxins	<i>Scombrotoxin/histamine</i>	
	Shellfish toxins such as -Paralytic Shellfish Poisoning (PSP) -Diarreic Shellfish Poisoning (DSP) -Neurotoxic Shellfish Poisoning (NSP) -Amnestic Shellfish Poisoning (ASP)	These shellfishes are phytoplankton feeders. Toxins often accumulate in mid-gut gland, liver, and sex organs etc..
	Ciguatoxin	
	Mycotoxins (Aflatoxin)	
Heavy metals	Mercury	
	Lead	
	Cadmium	
	Arsenic	
Food additives	Antibiotics	

	Hormones	
	Preservatives such as -SO ₂ -Nitrite -Sorbic acid	
	Color additives	
Chemical contaminants	PCB & Dioxin etc.	Known also as “endocrine disruptor”
	Cleaning & sanitizing agents	As contained in synthetic detergents ABS etc
	Crude oil & bilge water	Oil leak accidents and others
	Untreated sewage	Cause of bad odor
Agricultural Chemicals	Disinfectants	
	Pesticides	
	Fungicides	
	Herbicides	
Category of hazard	Kind	
	Spp. etc	Remarks
Agricultural Chemicals	Growth hormones	
	Anti-oxidants such as -phenol -min -hydroxilamin	
	Antibiotics	Used also in aquaculture in some of the Asian countries. Recently, in 2001, the Consumer Council of Bremen, Germany announced that the aquacultured shrimps imported from Southeast Asia and China contained chloramphenicol, or chloromycetin, and warned consumers not to eat them.
Physical Hazards Hazardous foreign matters	Metal fragment	
	Glass fragment	
	Stones and pebbles	
	Wood & plastics fragments	
Other Hazards	Nuclear materials -uranium -plutonium etc	

Table 2 Examples of Activities by FCAs and their Prefectural Federations of FCAs for Ensuring Supply of Safe Food

Example	Contents	Implemented by
Introduction of facilities to	Disinfection of oysters by ozone/ultra-violet rays	Akkeshi FCA, Hokkaido
	Disinfection of sea urchins	Kamaishi-Tobu FCA, <i>Iwate Prefecture</i>

disinfect sea waters	Sea water disinfection facilities are widely used by many FCAs in Japan not only for treating sea water for cultured oysters and other shellfishes but also for other species as well.	
Preparation and distribution of chum salmon quality control manual	Items of required quality control from the point of catching till shipping out to processing plant are described.	Hokkaido Federation of FCAs Distributed to all the FCAs in Hokkaido.
Example	Contents	Implemented by
HACCP	9 products such as salmon eggs were certified as HACCP-certified products.	Shibetsu-Cho FCA, Hokkaido
Example	Contents	Implemented by
Fresh and raw oyster quality voluntary inspection	Voluntary inspection scheme was strengthened concerning fresh and raw oyster quality control by increasing its frequency from once a month to once a week to check SRSV (small round shape virus) before shipment of the product.	Miyagi Prefectural Federation of FCAs
Example	Contents	Implemented by
Hygienic/sanitary control seminar and workshops	Not only ZENGYOREN but also prefectural federations of FCAs are organizing seminars and workshops by inviting experts at fish market places in landing areas.	ZENGYOREN, Prefectural Federations of FCAs, and FCAs
Posters, manuals and pamphlets	Awareness-building and technical knowhow	FCAs in cooperation with prefectural federations of FCAs as well as ZENGYOREN

A brief introduction to ZENGYOREN

ZENGYOREN is a national level organization of coastal fishery cooperative associations. The coastal fisheries cooperative associations are generally abbreviated as simply “CFAs”.

ZENGYOREN was established on 25 October, 1952 based on the Fishery Co-operative Association Law (FCAL) of 1948, following the principle of cooperatives.

ZENGYOREN is supported by its 79 member organizations as follows:

- 78 regular members (= voting right holders) comprising:
 - a. 43 Prefectural Federations of FCAs;
 - b. 34 Prefectural Credit Federations of FCAs; and
 - c. 1 Gear specific (squid jigging) national level fishing vessel owners association.
- 1 associate member (= non-voting right holder) which is:
 - National Insurance Federation of Fishery Cooperatives (“Kyo-suiren”).

The coastal fishery co-operative structure of Japan is a three tier system:

- National level : ZENGYOREN;
- Prefectural level : 43 prefectural (or if you may, state level) level federations of FCAs

[in addition, there are 34 prefectural CREDIT federations of FCAs: FCAL does not allow any FCA federations to engage both in business activities and credit (banking) activities at the same time.]

- Local level : 1,724 local FCAs to which approximately 450,000 fishers belong as member as of 1 October, 2001. Of these fishers, 270,000 are full time fishers and 180,000 are part time fishers.

The major roles and functions (objectives) of ZENGYOREN is to provide various services to its member organizations and, through their collaboration, to the local (primary level) FCAs and their fisher members.

ZENGYOREN is engaged in a wide variety of business as well as non-business (lobbying and educational) activities.

The business activities include:

- Supply business (such as of fuel oil, fishing materials including fishing net, engines and so forth);
- Marketing business; and
- Fish processing and cold storage business etc.

The non-business activities include:

- Lobbying (political) activities to represent and safeguard the interest of FCA sector; and
- Educational activities, and so forth.

ZENGYOREN's most recent annual turnover is 123,910 million Yen (1,015 million US \$) (April 1, 2000 – 31 March, 2001). Approximately 60 % of this amount is accounted for by the supply business (mainly fuel oil).

ZENGYOREN became a member of ICA in August, 1957.

The address of ZENGYOREN is as follows:

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URL : <http://www.zengyoren.or.jp> (only in Japanese)

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- Related information -

The total fisheries production of Japan in 1999 was 6,626, 000 MT worth 1,986,800 million Yen. Of this value, FCAs accounted for 67 % (1,325,132 million Yen).

Thus, FCAs have a dominant marketing power. Despite this, the total fisheries production in 1989, for example, was 11,913,000 MT worth 2,701,600 million Yen.

Apparently, not only the quantity of production but also the value has sharply decreased during the past 10 years.

Note: In Japan, there are 47 prefectures.

However, some of them are land-locked prefectures and thus do not have COASTAL local (primary level) FCA organizations, which is the reason why ZENGYOREN does not cover all the prefectures in Japan.

Further, it should be noted that, separate from ZENGYOREN, there is National Federation of Fresh Water Fisheries Co-operative Associations.