FISHERY RESOURCE MANAGEMENT IN JAPANESE COASTAL AREAS:

A HISTORICAL AND INSTITUTIONAL OVERVIEW

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ABSTRACT

For more than 1300 years, local resource users have been the principal decision makers of fishery resource management in the Japanese institutional framework. After the 2nd W.W., in order to democratize the fishery industry, dramatic institutional reform was carried out under Allied Occupation, and the Current Fishery Law was enacted in 1949. Viewing the Current Fishery Law from an institutional perspective, resource conservation is an integral part of resource use. In other words, resource conservation is the inherent restraint to exercise fishery rights and licenses. Also, Fishery Coordination Committees, which are composed of elected fishermen and local government officials etc., Fishery Cooperative Associations by local fishermen, and Voluntary Agreement Organizations play a main role in fishery adjustments such as rights/licenses allotments, conflict resolutions, local rulemaking, etc. Local governments or research institutes are supporting them through planning, scientific advice or guidelines amongst other things. An example in Kanagawa prefecture, including its administrative costs, is briefly shown as a case study.Recent resource related legislations such as the Resource Management Agreement System, or the Agreement System provided in the TAC Law, are also based upon voluntary agreements by fishermen, and are worth promoting in terms of their administrative cost effectiveness and adaptive capacity. This Japanese institutional system can be seen as a resource Co-Management system. Its system and experiences have the potential to contribute to countries with small scale fisheries, or countries that are going to democratize their fisheries.

Keywords: Institution; History; Co-Management; Resource Management; Coastal Areas; Japan

INTRODUCTION

Japan has one of the world's oldest and most successful marine fishery co-management regimes [1,2]. In this paper I present a historical overview of Japanese fishery management and resource management, with special emphasis on changes in the formal institutions after modernization[a]. Then, I introduce a brief analysis of fisheries transaction costs in Kanagawa Prefecture, involving payments by both the local government and fishermen, as a case study. Finally, some of the emerging issues in modern Japanese fishery management are discussed.

INSTITUTIONAL ARRANGEMENT UNTIL FEUDAL ERA

The Japanese people have exploited marine resources for thousands of years [3]. The first legal provision relating to fishery operation is found in the *Taiho Code* (A.D. 701-), promulgated in

order to build a centralized government following the administrative framework of the *Tang* dynasty (A.D. 618-907) of China. In this provision, resource use of mountains, rivers, bushes, bogs, and coasts were basically open to all, and free from levies (in contrast to the terrestrial situation, in which specific land users were identified and levies were imposed by the central government). In other words, these areas were for common use, and managed by local users themselves. This basic policy was passed down to and adopted by successive rulers (Table I).

Table I: Changes in Japanese fisheries institutions

Early Feudal Era (1603 – about 1700)	Adjacent Coastal Areas	Communities controlled adjacent coastal areas, and were responsible for establishing appropriate rules governing use of these areas.
	Offshore Area	Bascially open access. Anyone could operate here, regardless of the location of the home community.
Later Feudal Era (about 1700-1868)	Adjacent Coastal Area	Development of labor-intensive and capitalized fisheries. A few wealthy fishermen monopolized fishing operations.
	Offshore Area	Large-scale fisheries operators established their own guild and made rules, protected by feudal lords.
Modernization Period (1868-1901)	The government tried to introduce a top-down fishery management system, but the scheme failed. There was a return to the customary arrangement in which local fishermen controlled and managed local fishing operations.	
Meiji Fishery Law (1901-1945)	Coastal Area	Fishing rights, as exclusive real rights, were granted to both Fisheries Societies (i.e., local fishermen's organizations) and individuals.
	Offshore and Distant water	Fishing licenses were issued to individuals or juridical persons.
Present Fishery Law (1945-)	Coastal Area	Fishing rights, as limited real rights, were granted to both Fisheries Cooperative Assosiations (i.e., local fishermen's organizations) and individuals.
	Offshore and Distant water	Fishing licenses were issued to individuals or juridical persons.

In general, communities controlled adjacent coastal areas, and were responsible for establishing appropriate rules for use of the area. Under such rules, qualified individuals living in the community were entitled to engage in fisheries activity. The role of the community, effectively an autonomous management body of fishermen, constituted the basis for subsequent Fisheries Societies under Meiji Fishery Law, as well as for present day Fisheries Cooperative Associations (FCAs). Offshore fisheries, however, were basically open access; anyone could fish there, regardless of the location of the fisherman's home community [b].

Around the middle of the Edo era, population increases and technological developments enabled the development of labor-intensive, capitalized fisheries such as beach seine fisheries or large set-net fisheries. A few wealthy fishermen monopolized coastal fishing operations. Large-

scale offshore fisheries operators established their own guild, and made their own rules. These regimes were appreciated and protected by feudal lords in exchange for contributions (gelds), and they functioned, to some degree, as formal institutions[c].

MEIJI RESTORATION AND MODERNIZATON OF JAPAN

The arrival of Commodore Perry from the United States in 1853 brought an end to the national seclusion policy that had lasted for more than 200 years. The Tokugawa Dynasty was overthrown in 1868, and the new Japanese Meiji government carried out a radical modernization of the whole national institutional framework. Many laws and systems were replaced by European-style ones. The Tokugawa Dynasty was overthrown in 1868. Then, the new Japanese government, the *Meiji* government, carried out a radical modernization of the whole national institutional framework by adopting laws from European countries. In that process, many missions in different fields were dispatched to European countries. It is said, for example, the basis of current Japanese civil law and criminal law were build with such a process.

Fishery was no exception. The first inquiry mission on fisheries institution was dispatched to Europe, but there was no good example for Japanese fisheries. It is said that the mission was dispatched twice, but there was no effect due most probably to the fact that the regime of an open access had been prevailed throughout all European countries at that time.

THE MEIJI FISHERY LAW

The Meiji Fishery Law, which was enacted in 1901, is the only law, which was worked out by Japan herself as a mixture of fishing rights granted during the feudal era and fishing rights newly granted to fisheries, which appeared with the progress of mechanization of fishing boats. This law put fishing rights and licenses, for the first time, in a statutory form.

Fishing rights were granted to both Fisheries Societies (i.e., local fishermen's organizations) and individuals, and classified into four categories as follows:

1) set-net fishing rights;
2) specific fishing rights for beach seines, boat seines, etc.;
3) aquaculture rights for oyster, seaweed (Nori), pearl, etc.; and
4) exclusive fishing rights for capture fisheries in coastal water.

Exclusive fishing rights were further classified into

a) Traditional exclusive fishing rights (which could be granted to some times an individual, based on customary use in the feudal era), and
b) New exclusive fishing rights (newly granted by central government).

These exclusive fishing rights were area-based rights and valid to both sedentary and migrating resources occurring in the coastal sea area designated in the fishing right.

Fishing licenses, which were a sort of new fishing right, were issued to individuals or juridical persons for offshore and distant water fisheries.

The nature of these fishing rights was, in effect, that of property rights. Although the expiration period was fixed in the law, rights were virtually unconditional. Especially after the 1910 amendment, fishing rights became exclusive, real rights that could be sold, leased, transferred, and collateralized. During this period the rate of technological innovation in fishing gear (e.g., cotton nets) and fishing boat mobilization had become increasing rapid.

THE CURRENT INSTITUTIONAL FRAMEWORK

Fishery Reform after the WWII

The end of WWII and the Allied Occupation, following August 1945, brought dramatic and sweeping institutional changes to Japan, including the adoption of the current constitution.

Following agrarian land reform, GHQ (General Headquarters of the Supreme Commander for the Allied Powers) requested that the Japanese government reform fishery institutions in a democratic manner, and the current Fishery Law was enacted in 1949.

Japanese fisheries are composed of a variety of fisheries in terms of the type of gears in use, the location of fishing area and so forth. The revision of fisheries law had to be done under the supervision of the occupied forces. For these two reasons, there were a lot of twists and turns until the Showa Fishery was enacted. The detail story is summarized in Fig. 4.1.

Under this law, marine fisheries were classified into three categories:

1) fishing rights for coastal fisheries;
2) fishing licenses for offshore and distant water fisheries; and
3) free fisheries.

Coastal fishing rights were classified, in turn, as

1a) common fishing right: granted to FCA only

This right is valid to the following three fisheries operating in coastal sea area, which is defined in each fishing right. This fishing right is granted to a FCA.

ⅰ. To fish sedentary resources such as abalone, spiny lobster, etc.
ⅱ. To operate small scale set net.
ⅲ. To operate set gill net.

1b) large scale set-net fishing right, mostly granted to FCA.
1c) aquaculture (demarcated) fishing right: granted to FCA[d].

Fishery Management under the Current Law

In the immediate aftermath of the war, all movements of vessels, including fishing operations, were forbidden. Gradually, fishing operations were permitted, but fishing gears and vessels were in critically short supply. Food shortages were the most important national issue. According to government documents made available in 1963 (Fisheries Agency 1963), the principal aim of fishery reform at this time was to develop fisheries productivity in order to cope with the domestic food shortage, and to improve the economic status of fishermen actually engaged in

fishing operations. To achieve this goal, the over-all objective of the government at that time was the efficient and extensive development of fishery resources without overexploitation. The government recognized a strong need for the "enhancement and conservation of fishery animals and plants" as a prerequisite of the reform.

How could this goal be achieved? How could resources be utilized more efficiently, extensively and sustainably? The methodology was "the holistic utilization of sea surfaces", provided in Section 1 of the current Fishery Law. This is the most fundamental feature of the current Japanese institutional framework, and is explained below.

In contrast to the terrestrial situation, sea areas can be utilized in three-dimensions. At a fishing ground, a wide range of target species can be harvested using various kinds of gear. In addition, a fishing operation conducted by one person can, by its nature, influence others' operations, either actually (physically) or potentially. Most fisheries, especially finfish fisheries, cannot be conducted without using a certain minimum amount of sea area. Therefore, it is necessary to arrange and coordinate various fishing operations within a certain area from an overall point of view, and not simply from the viewpoint of each economic unit. This is termed "holistic fisheries coordination". Various levels and scales of coordinating organization have been instituted to facilitate holistic fisheries coordination (Table II).

Table II: Coordinating organizations in Japan

Level	Organization	Function
National Level	**Fishery Policy Council**	The advisory body to the government for national level fishery coordination, design of national fishery policy, etc.
Multijurisdictional Level	**Wide-Area Fisheries Coordinating Committees (WFCCs)**	Coordination of resource use and management of highly migratory species. Also addresses Resource Restoration Plans.
Prefectural Level	**Area Fishery Coordinating Committees (AFCCs)**	Mainly composed of democratically elected fishermen. Coordination through the Fishery Ground Plan, Prefectural Fishery Coordinating Regulations, and Committee Directions.
Local Level	**Local Fisheries Cooperative Associations (local FCAs)**	Composed of local fishermen. They establish operational regulations (FCA regulations) that stipulate gear restrictions, seasonal/area closures of fishing grounds, etc.
More Specialized Purpose	**Fishery Management Organizations (FMOs)**	Autonomous body of fishermen. FMO rules are more detailed and more strict than the FCA regulations.

The smallest-scale coordinating organizations are local Fisheries Cooperative Associations (local FCAs). They are composed of local fishermen, and are basically established in each fishing community. In order to achieve holistic fisheries coordination for local fishing grounds,

local FCAs have to establish operational regulations (FCA regulations) that stipulate gear restrictions, as well as closures of the fishing ground (on a seasonal or areal basis), etc[e].

Area Fishery Coordinating Committees (AFCCs) have been established in each prefecture[f]. Each AFCC consists of 9 elected fishermen, 4 academic experts, and 2 representatives of public interests (usually local government officials). The AFCC's considerable power and authority is explicit in the Fishery Law. All rights (based on the Fishery Ground Plan) and licenses (based on the Prefectural Fishery Coordinating Regulations) are granted by prefectural governors, following recommendations or advice from the AFCC. In effect, the AFCC decides the allocation of fishing rights and licenses in areas within their jurisdiction. Also, the AFCC can restrict the attributions of fishing rights and licenses, and can issue Committee Directions as appropriate. The objective of Committee Directions must be to promote the "enhancement and conservation of fishery animals and plants" in order to achieve efficient and extensive fishery production, without violating sustainability. The AFCC can request a Prefectural Governor's Order to enforce compliance, on the part of fishermen, with directions.

Wide-Area Fisheries Coordinating Committees (WFCCs) were established by an amendment of the Fishery Law in 2001; these committees act at levels higher than that of prefectural jurisdiction. WFCCs coordinate resource use and management of highly migratory species, and address Resource Restoration Plans (drawn up by the Minister of Agriculture, Forestry and Fisheries) in order to restore overexploited resources.

The highest-level coordinating organization is that of the Fishery Policy Council; this council constitutes the advisory body to the government with respect to national-level fisheries coordination, design of national fishery policy, etc.

In addition to these formal coordinating organizations, a number of new operational ideas have been developed since the late 1970s, largely on the initiative of the fishermen. These developments include what is known as "Shigen Kanri-gata Gyogyo" or Resource Management-type Fishery. In order to maintain and improve incomes, as well as sustain resources, various management measures have been initiated by autonomous bodies of fishermen, called Fishery Management Organizations. FMOs are often formed by a group of fishermen within a FCA. Sometimes, FMOs are organized by members from several neighboring FCAs or even from FCAs of several prefectures.

RECENT LEGISLATION AND AMENDMENTS

There have been several recent amendments and further legislation relating to fishery management and resource management. The "Marine Fisheries Resource Development Promotion Law of 1971" was amended in 1990, and the "Resource Management Agreement System" was established. This system encouraged autonomous agreements among fishermen for the purpose of conducting resource management. When agreement prevails at a certain level within the area, the government can affirm the agreement, and it becomes an official rule. It constitutes an official support system for autonomous resource management by fishermen.

In 1996, the "Law Regarding Preservation and Management of Living Marine Resources" was enacted under the United Nations Convention on the Law of Sea. With this law, a total allowable catch (TAC) system was introduced for seven species. A Total Allowable Effort (TAE) system was also introduced, following an amendment in 2001. The central government sets TAC and

TAE for each species, and supervises and controls total fishing levies, while the allocation of quotas and the determination of access rules are the responsibility of fishermen's organizations[g].

In 2001, the "Basic Law on Fisheries Policy" was enacted in order to deal with the changes in the circumstances surrounding Japanese fisheries, such as the establishment of the 200 nautical-mile exclusive economic zone, the decreasing self-sufficiency, or advancing age of fishery workers. This law aims to achieve a symbiosis between producers and consumers, and between cities and fishing communities, by establishing a new policy framework for the 21st century. There are two basic principles in this law: 1) Securing a stable supply of fishery products, and 2) Healthy development of fisheries. The government is to formulate a Basic Plan for the Fisheries Policy to set out the basic principles, where the targets for self-sufficiency in fishery products are included. The plan will be reviewed, basically, every 5years.

TRANSACTION COSTS OF FISHERY MANAGEMENT: CASE OF KANAGAWA PREFECTURE

As reviewed above, local fishermen have been the principal decision-makers, but the government also plays a vital role in fishery resource management. Co-management literature makes it clear that local fishermen or fishermen's organizations cannot function efficiently without government co-operation or intervention[h]. It is much the same for the current Japanese institutional framework. For example, the prefectural fisheries division is responsible for the issue and renewal of fishing rights and prefectural licenses, based on advice from the AFCC. Furthermore, in many cases, scientific information or administrative guidelines presented by the prefecture forms a basis for regulations and rules devised by local fishermen. However, local fishermen also bear the transaction costs for fisheries management. In this section, I present a case study examining fisheries transaction costs in Kanagawa Prefecture, costs that are paid by both the local government and by fishermen.

The total annual production of marine fisheries in Kanagawa Prefecture was $179,000,000 in 2001. Coastal and offshore fisheries production came to $84,600,000 (47% of the total), while distant water fishing came to about $94,400,000 (53% of the total). Distant water fishing is managed, in the main, by the central government, so it is excluded from this analysis. The Prefectural fisheries division has 132 staff (42 are administrators, 85 work at the Prefectural research station, and 5 run the policing boat), and in 2003 its annual budget was $49,000,000 ($58,100,000, including personnel expenses). This corresponds to 58% (68%) of coastal and offshore fisheries production (distant water fishing is excluded). More than 90% of the 3755 vessels registered in Kanagawa Prefecture were operating in coastal or offshore areas in 2001. The prefectural fisheries division has only one policing boat. It is 34 t, 22 m long, and crewed by five personnel.

Figure 1 shows the structure of Prefectural expenses. The categorization is based on [4]. Information Costs (TC-1) totaled $8,334,000 (including 85 personnel expenses), which corresponds to about 10% of the annual production. The Monitoring Enforcement and Compliance Costs (TC-3-1) were 0.6% of the production, including five personnel expenses. Other personnel, including 45 administrative staff, cannot be grouped within these transaction costs. Decision-Making Costs (TC-2) comprised 0.7% of the production (excluding personnel expenses), and were, effectively, the operating costs for AFCC and other meetings. Resource Maintenance Costs (TC-3-2), without personnel expenses, comprised 1.4% of production, 90%

of which was used for resource enhancement[i]. Resource Distribution Costs (TC-3-3), without personnel expenses, came to 0.1% of production, but most of the administrative staff extensively engaged in this work were also engaged with projects relating to TC-2 and TC-3-2. Therefore, the sum of expenses for 45 administrative staff, for TC-2, TC-3-2, TC-3-3, amounts to $4,835,000, which corresponds to 5.6% of production.

In addition, there were subsidies to the FCAs, effectively Co-management Facilitation Costs, which were paid by the government. These sums amounted to 2.9% of production. The total fisheries transaction cost, funded by local government, was $16,173,000, which corresponds to 19% of production. Most of the prefectural expenses (71% of the annual budget) were used for infrastructure construction, corresponding to 49% of annual production[j].

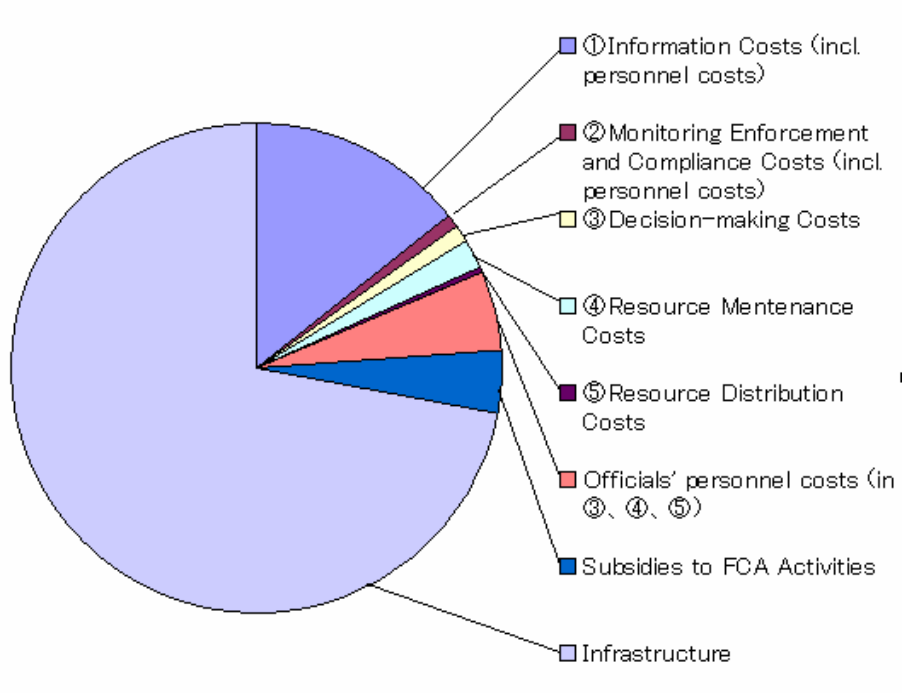

Figure 1. Structure of Prefectural expenses

Local fishermen also assumed responsibility for part of the transaction costs. Fishermen pay a portion of the total production to support FCAs (in the form of membership fees or service charges, etc.). There are 24 FCAs in Kanagawa Prefecture; these FCAs employed 186 personnel in 2003. FCAs play various roles in fisheries co-management, including catch record management (related to TC-1), supporting FCA rules (TC-2), and stock enhancement (TC-3-2), among others[k]. Assuming the total fees paid to FCA are 8% of the production, the fishermen's contributions amount to $6,768,000.

Thus, the total value of fisheries transaction costs in Kanagawa Prefecture came to $22,941,000, of which 70% had been paid by the government, and 30% by fishermen (Table III). This corresponds to about 27% of total annual fisheries production.

Table III: Fisheries Transaction Costs in Kanagawa Prefecture ($1000)

A: Total Production [1)]	84,600
B: Total Transaction Costs[2)]	22,941
C: Government Expenses	16,173
D: Fishermen's Expenses	6,768
Ratio of Transaction Cost (B/A)	0.27
Ratio of Cost Distribution (D/C)	0.43
Note: 1) Distant water fishing was excluded	
2) Infrastructure Cost was excluded	

SOME EMERGING ISSUES

Several emerging issues in the Japanese institutional framework merit recognition and discussion. The first of these concerns fishery coordination by fishermen; although such coordination is vital for the current institutional framework, it inevitably becomes very complex and locally specific. Sometimes fishermen cannot play their expected roles as coordinators or as members of AFCCs. In addition, some fishermen or coordinating organizations have proved to be unwilling to introduce new technologies, thereby retarding technical progress. Successfully managed areas may have particularly strong tendencies in this direction. Secondly, while the number of professional fishermen in Japan is continually declining, the number of recreational fishermen or pleasure boat owners is growing. From the viewpoint of integrated coastal management, these recreational users should be included in the decision-making processes. These stakeholders, however, are not officially included in the current Japanese institutional framework, and their position is very weak, as compared to that of the professional fishermen. Thirdly, there is the issue of the justification of fishing rights. Fishermen use marine resources that are the common property of all citizens, but their benefits from fishing are protected by law. In addition, considerable expense accrues to the public purse through support of fishery activities. Part of the foundation for the fishing rights/licenses scheme, and the public expenditure related to fisheries, is provided by the social role of the fishery industry as a food supplier[l]. However, with the increasing importance of imported seafood, and the emergence of environmental issues like biodiversity conservation, it is the author's opinion that fishing operations that lack competition and responsibility cannot be justified in the long run, even if fishery management is effective. Therefore, some measures pertaining to the legal responsibilities of environmental stewardship should be included in any statement of fishing rights.

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ENDNOTES

[a] In this paper, the term "fishery management" includes the resource management because of the concept of the current Japanese Fishery Law as explained in Sec. 3. "Resource management" is occasionally used when the aspects of resource policy shgould be emphasized.
[b] The boundary between the coastal and offshore water was mainly determined by depth. For example, the

length of paddle was used as a standard.

[c] According to the trial records of the time, law courts in feudal domains applied guild's rule, even to non-members of the guild.

[d] The legal basis of the current fishery law has been well documented in preceding papers. See [5 – 10] to list a few.

[e] See [1, 11]for the activities by local FCAs

[f] Integrated Areal Fishery Coordinating Committee (IAFCC) can be established if appropriate, and there are 3 IAFCCs now. Seto Inland Sea IAFCC, one of the three, is introduced in [7].

[g] At present, 7 species are subject to TAC.

[h] For the role of the government in co-management regimes, see [12].

[i] For detailed introduction of resource enhancement in Japan, see [13].

[j] The infrastructure expense may be included in the analysis, but it is not transaction costs, and the infrastructure is shared with distant water fishery. So, this expenses should be examined more detail, including its necessities.

[k] Local FCA has also functioned as a center of local economy. They can operate economic activities such as financing, sales, and so on. See [11] for more detail.

[l] Based on the Fisheries Basic Law of 2001, the target ratio of food self-sufficiency is set by the government.