

**CRITICAL ENABLING CONDITIONS (CECS) FOR SUSTAINABILITY IN
COMMUNITY-BASED FISHERY MANAGEMENT (CBFM): ANALYSIS FROM
NOMAIKE FCA, JAPAN.**

Luis Francisco Oliva, Hiroshima University, Graduate School of Biosphere Sciences,
luchooli@hiroshima-u.ac.jp.

Masahiro Yamao, Hiroshima University, Graduate School of Biosphere Sciences,
yamao@hiroshima-u.ac.jp.

ABSTRACT

Community-Based Fishery Management (CBFM) appears as a successful approach to avoid on tragedy of the commons in coastal fishery resources. Conditions necessary for that success are difficult to assess. Critical Enabling Conditions (CECs) are the necessary conditions to obtain institutional sustainability as the base of successful Common-Pool Resources (CPR) management in agriculture and forestry. This paper evaluates the behavior of CECs in CBFM approach and its applicability in fisheries. The study was conducted in a Japanese village named Nomaïke, the southern part of Kyushu Island. Evaluation on CBFM was done through collecting data both from secondary and primary sources. Most of the results seem to fulfill the requirement of CECs. Findings regarded on characteristics of stakeholder's and institutional arrangements in Nomaïke FCA match with definitions of CECs. However, some findings are not clear coincident with the definitions of CECs. The condition "low articulation with markets" is the clearest factor that in case of Nomaïke FCA does not conform to the CECs. Such observation may suggest that economic efficiency concept is missing in CECs.

Keywords: Common-pool resources; Community-Based Fishery Management (CBFM); Critical Enabling Conditions (CECs), Institutional Sustainability.

INTRODUCTION

Community-Based Management is the approach in which the stakeholders or local community participate in the decision-making process as the main promoter of the regulations over common-pool resources (CPR). Its advantages have been well documented by many researchers [1, 2 - 6]. In fisheries, we refer as Community-Based Fishery Management (CBFM).

From the literature of study cases, we have found numerous factors or conditions that influence "success" in the experience of CBFM. Many of these factors are frequently recognized in several studies; however, it is difficult to evaluate their direct impact to CPR success management in general way. Nevertheless, some authors have been attempting to identify and generalize the conditions that influence successful experiences. Identification of these general factors has important policy implications, especially for developing countries that have recently embraced the concept of participatory approach in their policies.

In this context, there are some important contributions from Game Theorist's researchers that have attempted to avoid the "relativeness" of the evaluation of common-pool resources management [6]. One example is Agrawal who mentions a large number of factors or conditions

considered to be important in common-pool resources management [6, 7 – 10]. Agrawal suggests that the structure, status and motivations for different community management and associated institutional arrangements are particularly important in sustainable common-pool resource use [6]. These factors are summarized under the name: Critical Enabling Conditions (CECs) for sustainability in the commons.

CECs are the conditions required to obtain sustainable collective human institutions (institutional sustainability). CECs are divided into 6 groups of factors: Resource system characteristics, Stakeholders' group characteristics, Resource characteristics vs. Stakeholder's characteristics, Institutional arrangements, Resources characteristics vs. Institutional arrangements and External environment. This paper will attempt to observe the behavior of the factors using an empirical case and how they apply to CBFM experiences.

COMMUNITY-BASED FISHERY MANAGEMENT (CBFM) IN JAPAN

Japanese coastal fisheries management is considered unique and successful example of management in fishery [11, 12 and 13]. Japanese system is in base on participatory and decentralized approach, usually called Co-Management or CBFM. Fishers are involved in the planning, implementation and evaluation of management measures ("bottom – up" approach). Government plays supportive role in promoting research and extension for strengthening fisheries management planning and implementation [11].

CBFM in Japan has a long history, strongly inserted in its culture, clearly represented by their traditional management practices in which endogenous institutional arrangements are designed by the users.

Fisheries Cooperatives Associations (FCAs) are the main representative bodies of the coastal management, belonging to the entire fishing community that links them with the central and prefectural governments.

More than 20 persons qualified to have regular membership of FCA are the minimum of persons required establishing a FCA. In case of a specific FCA in which membership is limited to those fishers engaged in specific type of fishing, more than 15 qualified persons are the minimum numbers of persons.

Fishery rights

Another important component of CBFM in Japan is fishery right sytem. There are three kinds of fishery rights: Set-net fishery rights (*teichi gyogyoken*), Demarcated fishery rights (*kukaku gyogyoken*) and Joint or Common fishery rights (*kyodo gyogyoken*) [14].

Among fishery rights, Common Fishery Right (CFR) is the tool that represents the concept of CBFM. CFR is granted to a FCA or a federation of FCAs for exclusive use of fishing grounds and aquatic resources by its membership. This also ensures that local fishers have equal access to commonly owned fishing grounds. These rights are then distributed to members of FCA, all of whom are entitled to fish in the association's common fishery right areas. There are 5 types of CFR ;

- a) Type 1: to gather or take seaweed, shellfish or stationery aquatic animals are designated by the minister of Agriculture, Forestry and Fisheries.
- b) Type 2: to operate submerging net gear including pond weir not to be moved and which is other than set net fishery
- c) Type 3: for beach seine fishery with scare fishes, hand operated trawl fishery by boat, angling by aid of baiting
- d) Type 4: for wintering mullet fishery or red sea bream fishery with sand lance by boat
- e) Type 5: in inland waters or in waters of likely like lakes as designated by the Minister of Agriculture, Forestry and Fisheries.

Detailed regulations of controlling fishery operations and ensuring the conservation and rational exploitation of living aquatic resources into CFR areas are established, by the Prefectural Fisheries Agency. Essentially, such regulations define closed seasons and other limitations such as control the kinds of gear and methods that may be employed by professional fisher as well as those specifically for recreational fishing. The Prefectural Fishery Agency also establishes the minimum exploitable sizes of particular marine animals; and specifies closed areas for the purpose of resource conservation. The prefecture can restrict the number of boats operating in the fishing ground.

Role of FCA

The basic function of a FCA is administering local coast fisheries following the Fishery Law, especially being fully responsible for CFR. A FCA sets up new local rules according to the necessity of the fisher's community and local characteristics within the framework of the Fishery Law. FCA determines the division of access rights among individual FCA members to ensure equitable distribution of the benefits. Moreover, it enables resolution of conflicts based on local customary law. [11].

Local regulations consist of prohibitions of fish, size limitations, closed areas, closed seasons, limitation of fishing gear, etc.

STUDY AREA: CASE OF NOMAIKE FCA, KAGOSHIMA

Nomaike is a fishing village that belongs to Kasasa town, located at southwest of Satsuma peninsula in Kagoshima prefecture, 70 km from Kagoshima city (Figure 1).

According to Fishing Industries Areas Census of December 2000, in Nomaike the total number of population is 819, accounting for 21% of the total population of Kasasa town and showing a steadily declining from 1,279 people in 1981.

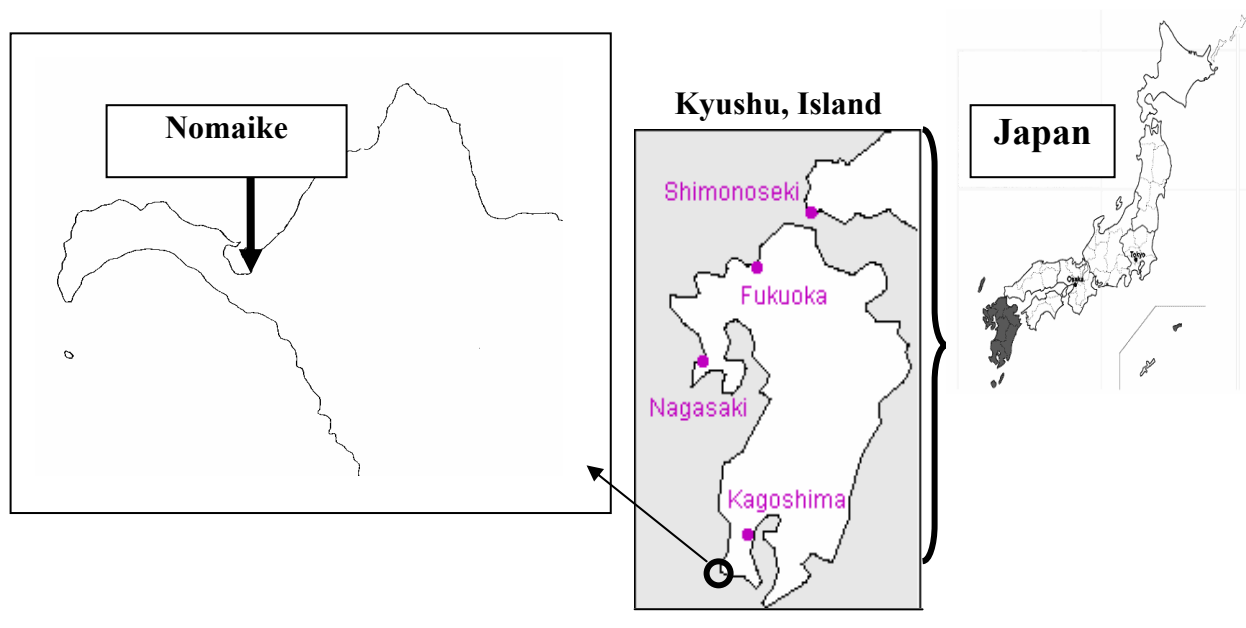


Figure 1. Location of Nomaike village.

The fishery production in Nomaike, reached 590,810 tons corresponding to 321.9 million yens in 2002 (Figure 2). Main fishery in value were set net (38%), shrimp trawl (15%), aquaculture (15%).

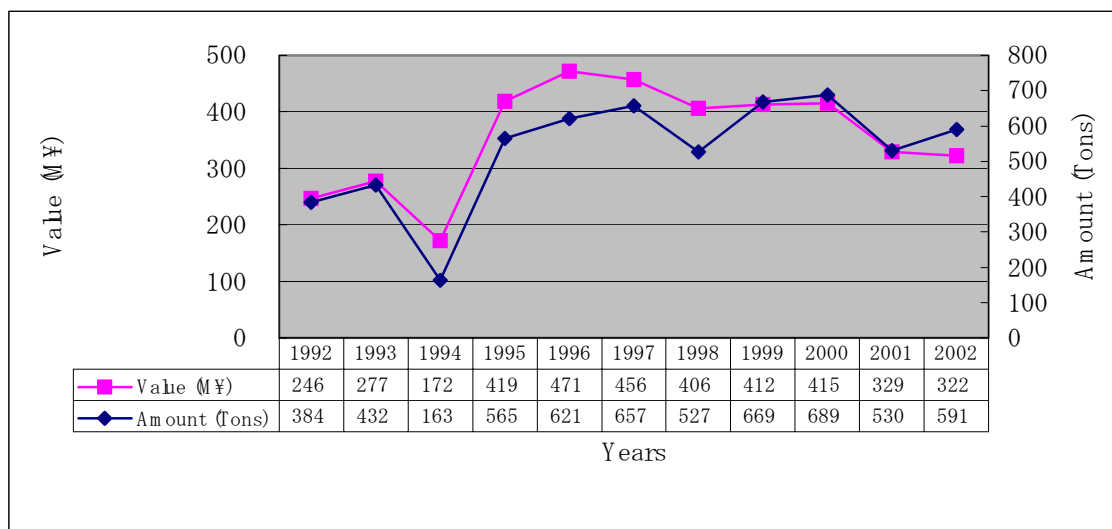


Figure 2. Fishery production in amount and value during in Nomaike, period 1992 – 2002.

The trend indicates that amount of catch have kept around to 500 and 700 tons since 1995, but the value of catch have been declining since 1996 in a 32% at 2002.

CRITICAL ENABLING CONDITIONS (CECs) FOR SUSTAINABILITY OF THE COMMONS

Table I resumes the group of conditions and situation of CECs observed in the case of Nomaike, FCA.

Group of conditions I: Resources system characteristics

The first group of conditions concerns on resources system characteristics. The conditions are:

- a) Resources should be small size
- b) Well defined boundaries delimitate clearly area of the resources
- c) Resources should have low levels of mobility
- d) Resources are possible to storage
- e) Resources are possible to predict

Facing these conditions we found that territorial waters of Nomaike FCA are clearly delimited. Prefectural government, clearly the establishes position and area for exclusively right of exploitation of Nomaike FCA. There are 3 fishing grounds granted to Nomaike FCA, named Kagoshima Common Fishing Right (CFR) No. 21, 540 and 1020 (Figure 3).

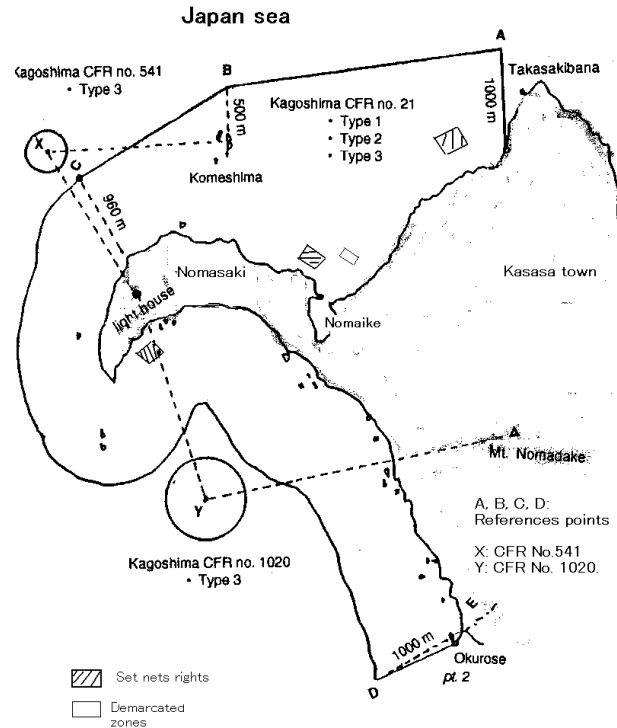


Figure 3. Location of fishing grounds of Nomaie FCA. (Map source: Lim [12]).

Kagoshima CFR No. 21 includes three types of common fishing rights; Type 1, 2 and 3. Type 1 covers sedentary species such as: seaweeds (“Iwanori” and “Tengusa”), abalone, ivory-shell, lobster and sea urchin. Type 2 allows the following kinds of fisheries: Lobster beach seine, Anchovy seine net, Grunt, Mullet, Red frog crab net and small mesh size set net. Kagoshima CFR No. 1020 is a type 3 common fishing right referring the Yellowtail feeding fishery (Figure.3 (Y)).

Group of conditions II: Stakeholder’s group characteristics

The conditions are: a) small size group, b) clearly defined boundaries in the group, c) shared norms, d) past successful experiences and social capital e) appropriate leadership f) interdependence among group member g) heterogeneity of endowments and homogeneity of interest and identity.

Most of the conditions seem to fulfill the requirement of CECs, supported by the long tradition in self- governance of fishery resources. Nomaie FCA was established during the implementation of the Fishery Cooperative Law (1949); however, there are registers of management activities previous to the World War II.

Structure of the organization in which leadership and member’s role are clear defined, is supported by the Fishery Cooperative Law (1949). Nomaie FCA has a total of 266 members: a) regular members are in members 85 including one juridical person; b) associated members amount to 181.

Table I. Level of fulfillment of CECs in Nomaike, Japan.

Group of conditions	Condition	Nomaike
I. Resource's characteristics	Small size	Yes
	Well defined boundaries	Yes
	Low levels mobility	Yes
	Possibilities storage	Yes
	Predictability	Yes
II. Stakeholder's Group characteristics	Small size	Yes
	Shared norms	Yes
	Past experiences and social capital	Yes
	Appropriate leadership	Yes
	Interdependence members	Yes
	Heterogeneity endowments and homogeneity identity	Yes
	Low levels poverty	Yes
III. Resources vs. group	User location/resource location	Yes
	Dependence group on resources	Yes
	Fairness allocation	Yes
	Low user demand	Yes
	Gradual change demand	Yes
IV. Institutional arrangements	Rules simple	Yes
	Locally devised rules	Yes
	Ease enforcement rules	Yes
	Graduated sanctions	Yes
	Availability of low-cost adjudication	Yes
	Accountability of monitors and other officials	Yes
V. Resources vs. institutional arrangements	Resources/institutional arrangements	Yes
VI. External environment	No strong changes in Technology	Yes
	Low articulation markets	No
	Gradual articulation markets	No
	Contribution State	Yes

Both regular and associated members enjoy the same rights and privileges except that associate members have no voting rights in FCA meetings. There exist groups gathered according their common activities or interest. Nomaike FCA has five (5) groups: fishing promotion group, set-net fishing group, sport fishing group, youth group and women group. Every year these groups arrange activities while sharing experience with other FCAs in order to introduce and improve some aspects of the Nomaike FCA. Young and women have space inside of the Nomaike FCA to develop their own activities, although their participation and contribution to FCA has recently been reducing.

Group of conditions III: Resources characteristics vs. Stakeholder’s group characteristics.

Agrawal overlap the resources characteristics with stakeholder’s group characteristics to obtain other important conditions. The conditions are: a) stakeholder location must be the same of the resource location, b) dependence of the group over the resources c) fairness allocation d) low users demand e) gradual change of the demand.

Nomaike FCA fulfills completely with requirement of CECs in this ambit. FCA Law delivers to them a portion of the cost for exclusively exploitation of the fishers of the community in Nomaike village. Fishing ground is surrounding the village. Pressures over the resources are regulated by the internal norms that have main goals to assure the sustainability of the resources.

Group of conditions IV: Institutional arrangements

The conditions are: a) rules are simple; b) rules are locally devised; c) rules are ease to enforce rules; d) graduated sanctions; e) availability of low-cost adjudication; f) accountability of monitor and other officials. The measures for regulating fishery effort are shared by Prefecture and FCAs. The laws and regulations provide the establishment of fisheries adjustment commissions to coordinate the Prefectural and FCAs level. The series of fisheries regulations set both by Prefecture and Nomaike FCA, are summarized in Table II. These regulations correspond to the Fishing Right Management Plan (FRMP). FRMP is a set of fishery management rules and regulations required to obtain the fishery rights. It is submitted to the Kagoshima Prefecture Fishery Agency.

Regulations implementing from initiative of Nomaike FCA are compiled in a document named “Rules for FCA’s Fishing Right Use”. This document considers the kind of member that can participate in different fisheries, specify the role of the Directors in the elaboration of the rules, indicate sanctions and penalties in case of infractions and specify management measures. Management measures are proposed by groups of fishing members that represent specific fishery in Nomaike. Groups propose management measures that are ratified in General Assembly. Management measures specified in this document are:

- a) Anchovy is not allowed to fish between April and October.
- b) Grunts and barracuda are not allowed to fish during January and February.
- c) Red frog crab is prohibited to fish during June and July.

Table II. Resume of CFR presents in Nomaike FCA, kind of fishery and period to able for fishing during 2002

CFR number/ concession	Fishing right type	Name of fishery	Period of use, fixed by Prefecture	Period of use according Internal regulations
21	1	Seaweeds “Iwanori”	1/1-12/31	1/1-12/31
		Seaweeds “Tengusa”	“	1/1-12/31
		Abalone	“	1/1- 10/31
		Abalone “Tokobushi”	“	5/1 – 9/30
		Black snails	“	1/1 – 12/31

		Ivory shell	“	“
		Rock Lobster	“	“
		Sea urchin	“	9/1-2003/4/30
	2	Rock lobster beach seine	1/1 – 12/31	1/1-12/31
		Anchovy seine net	“	11/1-2003/3/31
		Grunt	“	3/1-12/31
		Barracuda	“	1/1-12/31
		Mullet	“	“
		Red frog crab net	“	8/1-2003/5/31
		Small size set net	“	1/1-12/31
540	3	“Tsukiiso” (fishery by fish shelters)	1/1-12/31	“
1,020	3	“Burijiduque”(Yellowtail feeding fishery)	8/1- 2003/3/31	8/1- 2003/3/31
Demarcated Right No. 52	1	Aquaculture	1/1-12/31	1/1-12/31

From Nomaïke FCA’s Statistical book. No. 55 (2003)

The article 9 of the “Rules” specifies two sanctions for infractor member decided by the General Assembly. Sanctions are: suspension of the fishing rights for infractor member and application of a fine.

Five (5) directors and two (2) supervisors compose the Director Body of the cooperative. The members of the Board of Directors are elected among the FCA’s members in the General Meeting. The President is elected among directors. Only the President is full timer, the rest are part-timers. In 1993, directors and supervisors represented the different fisheries existing in the area. It was reported 9 directors and 3 supervisors. However, numbers of directors and supervisors was reduced in response to the decreasing number of members. The number of supervisors has been kept in order to strengthen the organization.

Directors are in charge of conducting the FCA and the President is the head of the cooperative. The supervisors audit FCA’s assets and performance of its business. A General Meeting is held once a year, whose function to conduct discussion for all members as regard the balance of main activities of the FCA, particularly in save, credit, business and management of the fishing grounds.

Group of conditions V: Resources characteristics vs. institutional arrangements.

From overlapping resources characteristics and institutional arrangements we obtain another CEC: match restrictions on harvest to regeneration of resources.

Nomaïke FCA fulfills completely with definition of this CEC through implementation of internal rules that have been mentioned. Table II shows clearly the management measures promoted by the Prefectural government and management measures assumed by the FCA. Nomaïke FCA is

stricter in the application of allowed period to catch.

Group of conditions VI: External environment

The conditions present in group are: a) gradual change of technology; b) low levels of articulations with external markets; c) gradual change in articulation with external markets; d) support from the government.

Since the last ten years, have not appeared new technologies that affect significantly the exploitation of the resources. Most of the members have not introduced new investment in vessels or fishing gears. Instead, some members have decided to use their infrastructure to develop tourist business such as for sight-seeing.

The relationship between FCA and markets are stable for long time. Actually, Nomaïke FCA has easy access to main markets in Kagoshima. Kagoshima Prefectural Market receives around 30% of the total of Nomaïke's landings. In the case of Nomaïke FCA's port, however, the number of buyers that bought directly has been decreasing.

Prefectural Government through extension officers has strong relationship with the Nomaïke FCA. External aid is represented by the subsidies in sea ranching, aquaculture and artificial reefs deployment programs conducted by the Prefectural and municipal government.

CONCLUSIONS

Nomaïke FCA seems to fulfill with most of the requirements of CECs. Most of coincidences are seen in characteristics of stakeholder's group and institutional arrangements conditions. However, there are some aspects that are possible to be discussed. For example, in any fishery it is difficult to consider low mobility of the resources. Most of the fisheries, "low mobility of resource" is a condition difficult to find. Even benthonic organisms such as snails or shellfish have larval stages that are transported by the sea currents sometimes outside the fishing grounds. From this context it is not easy ensure predictability and capability of storage. Nomaïke FCA conducts sea ranching and aquaculture programs in order to improve grade of predictability and storage.

Another aspect is related to the access of the markets. Nomaïke FCA shows good level of articulation with the markets in completely opposition to the definition of CEC. CEC's definition indicates that low pressure from the demand could permit to sustain the resources at reasonable level of exploitation; however, it does not consider of stakeholder's necessity to sell their products. It seems that economical efficiency concept is missing among CECs. Obviously, this is not the case of Nomaïke FCA, because all products have easy access to the closest main city, Kagoshima; and other important markets.

Another aspect to be argued is the low incorporation of economical variables in the definitions of some important CECs. Clear examples are: sizes of the resources and stakeholder's group. CECs consider small size of stakeholder's group such groups much smaller that the local community. In fisheries, small size of stakeholder's group could be favorable to manage the resources, but

until what point? It is necessary for stakeholder's group to consider cost for surveillance and monitoring of management area. Besides, it is important to analyze how much profits could generate from the management measures and fulfillment of economical expectation. It is suggested to incorporate the following elements: existence of profits, positive opportunity cost, stable markets and low cost of monitoring.

Groups of conditions coincident with definitions of CECs may be strongly influenced by the Japanese culture and long history in self-management institutions for fishery resources. Further investigations are needed to clarify the influence of these concepts in CBFM.

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