

## AN APPLICATION OF FISHERIES CO-MANAGEMENT APPROACH OF IKAN LARANGAN IN WEST SUMATRA, INDONESIA: *The Features And Attributes*

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### ABSTRACT

"Ikan larangan" is a kind of fisheries management system that applied closing seasons of fishing in a portion of river or canal for certain period. There are three types of ikan larangan's management: (1) traditional; (2) semi-traditional; and (3) modern. The total sample of 99 household respondents were withdrawn from the three sites of ikan larangan, i.e.: (1) ikan larangan Lubuk landur (traditional, n=19); (2) ikan larangan Kayu Tanam (semi-traditional, n=20); (3) ikan larangan Pasir Lawas (modern, n=60). The study emphasizes more on the modern of ikan larangan system. This is in attempt to find out the possibility of implementing this system to other places in Indonesia as an alternative of resource management system and for food security purpose as well as for enhancing the fisheries sector and the regional developments. Furthermore, the co-management application of ikan larangan could encourage the implementation of decentralization policy in Indonesia since the system may able to help in empowering people and the available resources to generate the local income. Moreover, the salient characteristics of co-management system for ikan larangan could be adopted to prescribe the acceptable resource management for the similar circumstances of the resource in some places in Indonesia.

**Keywords:** fisheries, resource, management, traditional, semi-traditional, modern, ikan larangan, features and attributes.

### I. BACKGROUND

There are several traditional Community-based Fisheries Resource Management (CBFRM) systems that are still alive in Indonesia such as *sasi* (in Maluku), *panglima laut* (in Aceh), *lubuk larangan* (in North Sumatra). Some traditional believes or taboos also existed in Java like *Jum'at kliwonan*, *badhan*, *sedekah laut*, *terang bulanan*, and *orang tua* (Susilowati, 1996). Before religion and internal conflicts in Maluku, among those systems, *sasi* is considered as the most successful one. While the other systems seem is weakening due to several reasons such as reduced in practice, like *panglima laut* and *lubuk larangan*. There are tradisional and non-traditional CBFRMs

operated by certain communities in Indonesia. There is a successful CBFRM system called *ikan-larangan* that is practiced by Minangkabau tribe until now. *Ikan* means fish and *larangan* is forbidden to do something. Thereafter *ikan-larangan* is a closed season for taking fish from a portion of a river, pond, or other fisheries resources in certain places in Minangkabau communities.

The closed and opened-seasons for *ikan-larangan* is directed by *tokoh masyarakat* (community's leader). There are three types of *ikan-larangan*, namely: traditional, semi-traditional, and modern. Modern *ikan larangan* is more of a non-traditional system since it was introduced lately in 1990's. Local community using traditional ways to manage the system.

Physically, *ikan larangan*'s nature is similar to *lubuk larangan* in North Sumatra (see Wahyono et. al., 1992). Given available resource constraints and endowments, people were found survival strategy to meet basic family needs in the short-run (Pomeroy, 1991). Since there are many potential fisheries resource (i.e. river and/ or lake) in West Sumatra, then community adopted *ikan larangan* as one of the fish-farming system and as recreational object recently.

Many researchers have explored the *sasi* system. However, there is hardly any research conducted on community-based fisheries resource management for *ikan larangan* in West Sumatra. It is timely to investigate the success of Minangkabau community to manage the *ikan larangan* resource as an indigenous co-management system especially in the fisheries sector. This article is aim to describe the profiles or features and several attributes belong to the Ikan Larangan system practiced in West Sumatra Province, Indonesia.

West Sumatra Province is lied between 0° 54' North Latitude and 3° 30' South Latitude and 98° 36' and 101° 63' East Longitude. The highest elevation is 927 meter above sea level in Bukit Tinggi and the lowest one is in Padang (2 meter above sea level). It is bordered by North Sumatra and Riau Provinces in the North and the East, while in the West is Hindia Ocean. Jambi and Bengkulu Provinces are in the South. The total area of West Sumatra is about 42.2 thousands sq. km. which is almost occupied for 2.17% of Indonesia. The population of West Sumatra in 1997 was about 4.45 million with average annual growth rate of 1.45% (BPS, 1998).

West Sumatra Province comprises 8 regencies (districts), 6 municipalities and 1 urban administrative. The regency with largest area is Pasaman with about 7.8 thousand sq. km. Whilst, Padang Panjang Municipality has the smallest area with 23.0 sq. km. The capital city of West Sumatra Province is Padang.

About 60% of land in this province are composed by tropical rain forest and only 25% of the area is used for farming culture. There are four big lakes of Singkarak (12,011 ha), Diatas (3,150 ha), Dibawah (1,400 ha), and Maninjau (9,950 ha). The topography of West Sumatra is mostly formed by mountainous and hill (about 200 to 3,800 meters a.s.l.). This is due to West Sumatra is crossed by Bukit Barisan plateau which spreads parallely from the North to the South of Sumatera Island. Mentawai islands comprises about 17–35% of total area of West Sumatra also under territory of this province (Fisheries Office, 1999).

## II. MATERIALS AND METHODS

### 2.1. The Study Area

There are about seven big *ikan larangan* systems in West Sumatra Province, which spread out in Padang Pariaman, Pasaman, and Agam districts. The *ikan larangan* sites were selected in Lubuk Landur (Pasaman district) to represent the traditional system, while *ikan larangan* in Kayu Tanam and in Pasir Lawas (Padang Pariaman district) were taken as a sample for semi-traditional and modern systems, respectively. These three selected sites are considered as the most successful in applying co-management regime to manage the *ikan larangan*. Selection of the study areas was arrived at after field survey and discussions with the competent people.

### 2.2. Data and Sampling Method

There are two types of data were collected for this study, i.e. primary and secondary data. The primary data were taken from household survey, informal discussion with key-persons, and focus group discussion (FGD) with the competent persons.

Ninety-nine household samples were withdrawn from the three selected sites of *ikan larangan* using purposive random sampling. The face to face interviews was applied to survey the household respondents. Training was given to all enumerators before they undertook the survey and the researcher supervised the survey. A standardized questionnaire was used to collect data from the respondents. The secondary data were collected from the concerned institutions (Fisheries Office, Central Bureau of Statistics of West Sumatra Province, and the Provincial Government Offices) and some other various related publications.

### 2.3. Analitical Approach

A research framework for institutional analysis as recommended by ICLARM (Pomeroy, 1993) was applied in the study in some extents. However, this article focuses on exploring the features and several attributes belong to the Ikan Larangan systems, particularly for the modern one which has potential development in practice for to day.

## III. FEATURES AND ATTRIBUTES OF IKAN LARANGAN SYSTEM

*Ikan larangan* as one of the revived tradition in West Sumatra originally was aimed to reserve the living food for the community. The situation is similar with tradition of *lumbung padi* system in Java for a long time ago. The *lumbung padi* is a kind of paddy storage for community members in one village. Everybody has an obligation to store for certain quantity of paddy and it will be redistributed to him/her again when unfavorable season or difficult time was coming. Thereafter, originally *ikan larangan* purpose was for food security to the community. Due to time progress, then

*ikan larangan* has multi-purpose motives. From environmental purpose, *ikan larangan* object helps in cleaning up the river from waste disposal and conserving fisheries and natural resources along the river. While, from economic side lately *ikan larangan* promises in uplifting the income of community as well as the region and provide a good employment and business opportunities. Empowering community for productive works and socialization could be executed by encouraging co-management among the related parties involved in *ikan larangan*. Lastly, by creating sense of belonging from the people to the community's resources could enhance the political stability in the region. People will have sense of unity and sharing problems and benefits. This is a very potential asset to avoid from rush, instability, and other unexpected situations.

There are three general types of *ikan larangan* in West Sumatera, i.e. traditional, semi-traditional, and modern. The classification is mainly based on whether there is a *pawang* influence. Most of *ikan larangan* that are existed a long time ago (since Dutch colonial) has had employed a *pawang*. While, *ikan larangan* that were established lately (in 1990s) do not use *pawang* but rather like a farming system. The later one then called as a modern system of *ikan larangan*.

The most unique characteristic found in every *ikan larangan* system in West Sumatera (traditional to modern) is that community member voluntarily provide a very high commitment to surveillance and to manage the resource. The very excellent awareness may hardly found in the other places of Indonesia. A summary of salient characteristics of *ikan larangan* in West Sumatera, Indonesia is shown in Table 1 (in Appendix).

### 3.1. Biological Attributes

Generally, the fish species cultured in ikan larangan are *ikan mas* (Cyprinus carpio) with local name of *ikan rayo* which is the most dominant, and *ikan gariang* (Labeobardus lambroides) with local name of *ikan lambau*. On the average, the weight of fish is about 2 to 3 kg per head. Along the body of irrigation canal (about 4 to 5 km) of Pasir Lawas was developed for rearing *ikan larangan* since 1990s. The fingerling is come from natural and beside that the village organizer also adding it after the harvest time with stocking rate of 90% for *rayo* and 10% for *gariang*.

Feeding habit: The fish of *ikan larangan* feed a kind of leaves grass called as *jariamun*. It is a kind of grass family that grow in bottom and bank of river. This type of grass will be a good habitat for animal organism (Ephemeroptera and Dyptera) including for fish. The external feeding such as cassava, crackers, maize, snack, rice, etc are usually fed by people who interested to see the schooling fish for recreation. The habitat for *ikan larangan* can be taken place in irrigation facilities. *Ikan larangan* Pasir Lawas is using ANAI secondary irrigation with 1 to 2.5 meters in depth. The water is fairly clear, running and usually down-pour in stream. The water flow is regulated with one-in-and out-valve in order to protect fish running away.

### 3.2. Market Attributes

The modern of *ikan larangan* is reared along irrigation canal or river since 1990s. It is operated without the help of *pawang* (magic). *Ikan larangan* in this village is managed like fish farming system using irrigation canal. The fish species of *ikan larangan* in the study areas are *rayo* and *gariang*. The management of *ikan larangan* in the study area is led by the head of village (local term: *kepala desa*). *Ikan larangan* Pasir Lawas usually harvested once to twice in a year.

Fishing with Bait: The opening season of *ikan larangan* is announced

mouth to mouth by the community and/or advertised via radio, newspapers or leaflet. The grand opening season usually take place after Haj festive day. People are welcomed to fish with long-line bait (local term: *pancing*). In the first-day of opening *ikan larangan* the ticket for fishing entrance is Rp. 15,000 per bait. While in the second and third days decreases to Rp. 10,000 per bait. In the fourth day, *ikan larangan* is opened free for the community. After the third-day all fishing gear are allowable including hand-net, scoop, etc. In the last the village organizer dried out the water to sweep the fish and distribute to all community in the three villages nearby location of *ikan larangan*. Each household will receive about 0,5 kg. The net revenue earned from ticketing is managed by village organizer for expenditures of development efforts such as for infrastructure, mosques, and others. After about seven days of harvest, then fingerling is planted with given stocking rate by the village organizer. There is no special tradition or ceremony held during closing and opening *ikan larangan*.

Supply: The fish which are caught from fishing could be brought home by the amateur fishers but the professional fishers usually sell the fish to the fish traders or to individual person who came to see the opening *ikan larangan*. The number of fish caught from *ikan larangan* is quite small compared to the regular fish demanded by the society. The fish supplied by *ikan larangan* system has not able to fulfil the food security for local community. Unless, there are several sites of *ikan larangan* with different time of harvest, thus it can ensure the routine supply of fish to the society. Most of fish are consumed without processing. The fishers sold fish directly to the buyer with price of between Rp. 7,000 to Rp. 20,000 per kg. The demand for fish in the study area is potentially high since people there like to consume fish in their daily diet.

Cost and Price: The operation cost of *ikan larangan* covered for fry, labor

(during opening and planting of fish), maintenance for irrigation canal, and advertisement of fishing competition in the first three days of opening *ikan larangan*. There is no cost spent for fertilizer. In overall, the cost spent by *ikan larangan* committee for one season is about Rp. 200,000. The community member should contribute of Rp. 2,500 per household for buying the fry. The fish price depends on the freshness and quantity supplied in the market. In the adjacent market, prices of *rayo* and *gariang* fish are about Rp. 15,000 and Rp. 20,000 per kg, respectively.

As of now, there is no subsidy or grant given by the competent parties like others. All expenditures and other responsibilities of *ikan larangan* are under the management of the local community. Self-enforcement for surveillance of *ikan larangan* resource is also on the hand of the society.

Marketing Distribution: Menu served by Minangkabau tribe in West Sumatera mostly accompanied by fish dish. The popular dish of fish called as *gulai ikan*, *balado ikan*, *kapau ikan*, *pepes ikan*, etc. People in West Sumatera are prefer to consume fish from fresh or salty waters. There is almost no brackish water pond available in West Sumatera.

There are only three channels of fish distribution for *ikan larangan* in Pasir Lawas, namely: (1) fishers to consumers, (2) fishers to fish traders, and (3) fishers to vendors. Only fresh fish is sold throughout the marketing channels above. The demand of fish from *ikan larangan* is greater than its supply, therefore fish usually sold out in a short time and no need to be processed or preserved. Thus, there is no storage facility available in the study area. Fish traders (vendor) usually walk around the village to sell the fish from *ikan larangan*. Fish buyers will pay their transaction with cash.

Beneficiaries: From the estimation made by the village officer noted that there are about 2,000 persons who benefited from *ikan larangan* in the study area. Whilst about 200 persons were utilized

lake or river to fish and about 1,000 persons cultivated fish in the ponds. The idea of *ikan larangan* was originally initiated by the local community in the study area.

Others: The Irrigation Office of the Department of Public Works in West Sumatera Province provide permission to the local community for using the irrigation canals for rearing fish. This indicated that understanding from the stakeholders (government) like what was done by the Irrigation Office in West Sumatera should be encouraged and perhaps can be followed by the other local government in Indonesia like in Java which has many irrigation facilities. Moreover, participation from all parties of government, community leaders, key-persons, and academic society are necessary to underdone co-management activities successfully.

### 3.3. Institutional Arrangements Attributes

Co-management is defined as the sharing of responsibility and/ or authority between the government and local resource users or community to manage the fishery or resource (Pomeroy et al., 1994). Fishers have informed to the government regarding to the prospect and condition of *ikan larangan* object. However, as of now the government (e.g. Fisheries Office) has not provide a sufficient response or action to the community since the government is still assessing the *ikan larangan*. Thereafter, consultation activities between community members and government have not been started. Implementation and law enforcement and regulations for *ikan larangan* remain guided by customary rule and convention agreed by community. Therefore, amount of responsibility and/ or authority should be allocated to manage *ikan larangan* in West Sumatera are differ for government and community.

Pomeroy et al. (1994) claimed that co-management involves various degrees

of delegation of management responsibility and authority between the local level (resource users or community) and the state level (national, provincial, and district governments). After discussion with the competent persons in the Fisheries Office, academicians, religion and social leaders in the study area as well as in other places of Indonesia, then researcher can conclude that the level of hierarchy contributed by

government-based management is quite smaller than a portion shared by community-based management. Delegation of authority given by the central government to the local level has not been done transparently and even hardly found although decentralization policy to lower level has been authorized by Regulation No. 5, Year 1979 and the Regulation No. 22, Year 1999.

Figure 1. The Visual Hierarchy of Co-Management Arrangements for **Ikan Larangan** in West Sumatera, Indonesia

	B	
Government-based Management	A	
Community-based Management		

Note: A: There is an incentive and willingness on the part of fishers to actively participate with time, effort, and money in fisheries management.

There is an individual or core group who takes leadership responsibility for the management process.

B: The government has established formal policy and/ or Laws for decentralization of administrative functions (Regulation No. 22/1999, amendment of Regulation No. 5/1974). However, delegation of management responsibility and/or authority to local government and local group organization levels has not been given.

Source: Using illustration from Berkes (1994) as cited in Pomeroy et al. (1994) with justification of the researcher, 1999.

The general role and function of the related institutions of *ikan larangan* in West Sumatera is listed in Table 2. There are five components formed *ikan larangan* institution, namely: (1) sub-district government level, the head called as *camat*; (2) *pemuka adat* (KAN), the head called as *ninik-mamak*; (3) religious leader, called as *buya*; (4) village government level, the head called as *kepala desa*; and (5) community. The most active institutions to underdone *ikan larangan* management are *ninik-mamak*, *buya*, and

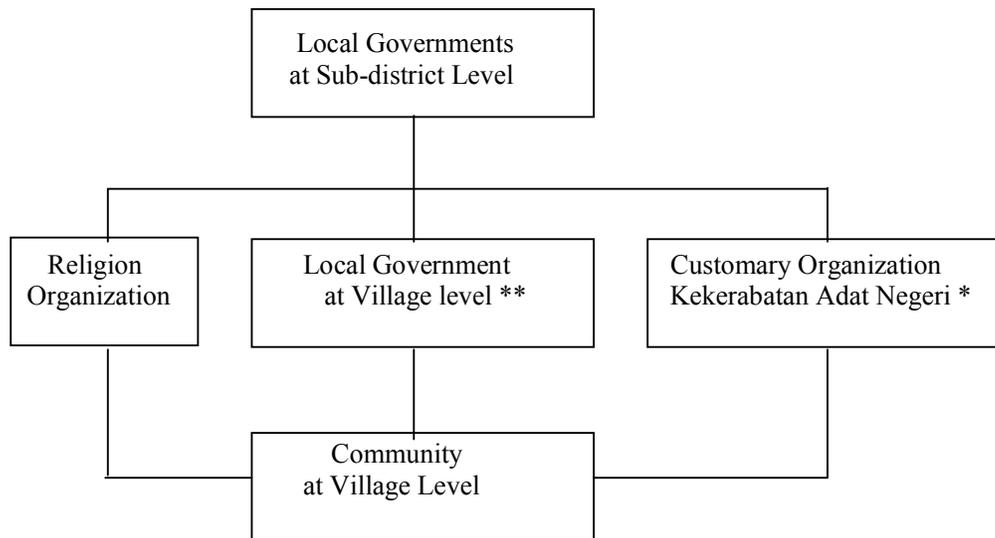
community. The formal leader for village and sub-district level usually involved indirectly in managing *ikan larangan*. All institutions related to *ikan larangan* (except for sub-district level) put on high level of commitment towards the success of *ikan larangan* as evaluated by respondents in the study areas. The details functions of the related institution of *Ikan Larangan* is shown in Table 2 and the general prototype of the institutional arrangements in West Sumatra is depicted in Figure 2.

Table 2. Role and Function of the Related Institutions of Ikan Larangan

No.	Subject	Role	Function
1	Head of Sub-district (Camat)	Formal or governmental supervision	To provide a formal umbrella support for ikan larangan system operated in his authority
2	Pemuka Adat - KAN (Ninik-Mamak)	Customary supervision	To provide advices regarding to the importance of ikan larangan to their maternalistic family, thus ikan larangan will be accepted by their community to determine the panalty or sanction to their family members who violate the rule agreed by them
3	Religion leader (Buya)	Religion supervision	To provide their help in fencing ikan larangan with spiritual or magic power. Therefore, the fish will always move to their home-range set by the buya. They also determine the closing and opening the ikan larangan object and directing allocation of the return from ikan larangan
4	Head of Village (Kepala Desa)	Coordinator	To coordinate the operational activities of ikan larangan in the field from chairing the meeting throughout dividing the sharing system from fish harvest and allocating the revenues for village development
5	Community	Members	Community is the most party which is benefited more from the ikan larangan system. At the same time, they also help in maintaining and enforcing the rules of game of ikan larangan and running activities of harvest

Source: Based on discussion with the competent key-persons and Fisheries Office (1999)

Figure 2. The Existing Institutional Arrangement for Ikan Larangan in West Sumatera



Note:

- \* IL (Ikan Larangan) leader for traditional system is buya or ninik-mamak; modern IL (head of village or kepala desa); and semi modern (combination of buya/ninik-mamak/head of the village).
- \*\* The secretary and treasurer are usually from people representative (LKMD) and youth organization, respectively.

Source: Based on discussion with the competent key-persons and Fisheries Office (1999)

#### IV. CONCLUDING REMARKS

There are several salient characteristics of *ikan larangan* in West Sumatera. The most unique one is community provide a very high commitment to carry out their obligation for the resource management. People also very aware to surveillance the *ikan larangan* resources with self-enforcement. This character of community is seldom found in other places of Indonesia.

The level of hierarchy contributed by government-based-management is quite smaller than a portion shared by community-based-management for *ikan larangan*. To date, delegation of formal authority given by the central government

to the local level has not been done proportionately and even hardly found for co-management application of *ikan larangan*. However, Regulation No. 22 Year 1999 as the amendment of regulation No. 5 Year 1974 (concerning to Local Government in Indonesia) encourages the implementation of decentralization policy in Indonesia. The salient characteristics of co-management system for *ikan larangan* could be adopted to prescribe the acceptable resource management for the similar circumstances of the resource in Indonesia. The findings of the study are expected to encourage the government to legalize the local institutional system of *ikan larangan* to be a formal system.

## APPENDIX

Table 1. Summary of Ikan Larangan Features by Its Type

<b>Table 1</b>				
<b>Lists of Ikan Larangan Objects in West Sumatera</b>				
No.	Sites	Type	Location	No. of Household Sampled
1	Salibutan	Semi-traditional	Desa Silabutan Kec. Lubuk Aling Kab. Padang Pariaman	
2	Pasir Lawas	Modern	Desa Pasir Lawas Kec. Lubuk Simatung Kab. Padang Pariaman	Selected as the study area (n=60)
3	Titian Panjang (Kayu Tanam)	Semi-traditional	Desa Palambaran Kec. 2x16 Lingkung Kab. Padang Pariaman	Selected as the study area (n=20)
4	Sungai Jernih	Traditional	Desa Sungai Jernih Kec. Baso Kab. Agam	
5	Sungai Jaring	Semi-traditional	Desa Pauh Kembar Desa Padang Kandang Kec. Nansa Baris Kab. Padang Pariaman	
6	Sungai Silambu	Traditional	Desa Sepakat Langgam Kec. Kenali Kab. Pasaman	
7	Lubuk Landur	Traditional	Desa Lubuk Landur Kec. Pasaman Kab. Pasaman	Selected as the study area (n=19)
8*	IPBS	Semi-traditional	Desa Kapundung Kec. Kenali Kab. Pasaman	
9*	Ikan Baruduh	Semi-traditional	Desa Padang Sawah Kec. Lubuk Basung Kab. Agam	
Note:				
Desa = village; Kec. = Sub-district; Kab. = District				
* = Small in scale				

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