

# Overview of co-management model in the fisheries sector of Vietnam



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## **Abstract**

Co-management has attracted considerable attention around the world, including in Vietnam. However, debates on the concept of community-based management (CBM), co-management (COM), and community participant management in Vietnam are increasing, and the abundance of projects in Vietnam has now become a major constraint. Although most pilot co-management projects are recorded as “successful”, it is important to note that this evaluation was not made by an independent external agency, but the staff of the projects themselves! More important, there has been no consideration of how these co-management projects can be connected to traditional fishing villages in Vietnam. Since 2006, supported by the DANIDA-funded FSPS II project, a review of fisheries co-management models in Vietnam has been conducted, using a participatory approach. In this paper I provide a review of fisheries co-management in Vietnam, and highlight a comparison of present fisheries co-management with the traditional fishing village Van Chai. Initial findings demonstrate that in Vietnam these pilot co-management models were successful in terms of protection and development of fisheries resources, and the sharing of management power between government and community has occurred at different levels. However, most co-management models are not sustainable, owing to their being donor-driven rather than based on community needs. More important, owing to a lack of a concrete foundation and cohesion, and without including the inherited values of the traditional fisheries management unity, Van Chai, it could never be reasonably expected that fisheries co-management projects in Vietnam could be completely successful.

## **1. Introduction**

During the last decade there has been much discussion about the concepts of community-based management, co-management, and participatory management. Regardless of various controversies, these models have something to offer in terms of the development and protection of fisheries resources, limitation of destructive fishing gears, income generation, enhanced awareness of environmental protection, strengthening of self-regulation capacity, and the sustainable development of resources.

There is no major distinction between the co-management and community-based management, so models of either co-management or community-based management suffice to decentralize the management rights to users with participation of local authorities, i.e. fisheries officers or Commune People’s Committees. Social organizations (e.g. Women’s Union) and occupational organizations (e.g. fishers/processors associations) may become involved in this process, with institutional support from governmental and non-governmental organizations. There is, however a relative difference. Co-management models draw on the more active participation of governments at all levels as well as related institutions in the management activities. In this presentation, the management model which includes a sharing of management duties between governments and communities in the management of production, environment, and fisheries resources are regarded as a fisheries co-management model.

The aim of this presentation is to evaluate the overall status of co-management models in the fisheries sector of Vietnam, to provide insights based on “floating fishing villages”, with pros and cons, and to examine solutions regarding the implementation of co-management in the fisheries sector of Vietnam.

## 2. Overview assessment of co-management models in the fisheries sector of Vietnam

### 2.1 Study methodology:

- Follow up and assess the secondary documents;
- Conduct standard survey in 18 provinces representing seven eco-economic regions.
- Use PRA approach based on content of assessment criteria set.
- Conduct questionnaire-based household interviews.
- Conduct direct dialogues and interviews with managers.
- Consult experts through workshops and comments.
- Scoring against chosen criteria, based on results of group meetings, household interviews, direct dialogues with managers and give scores for individual criteria as follows:

**Table 1. Scoring**

Score	Content
1	Lots of change towards good orientation (eg. Income strongly increased after the implementation of model)
0,5	Changes towards good orientation (eg. Income increased after the implementation of model)
0	Unchanged (eg. Income unchanged after implementation of model)
-0,5	Changes towards bad orientation (eg. Income reduced after implementation of model)
-1	Lots of change towards bad orientation (eg. Income strongly reduced after implementation of model)

### 2.2 Survey location

+ Geographical sites: Survey to assess co-management models in fisheries sector was conducted throughout the country, focusing on 9 pilot provinces of FSPS II. Survey conducted in 18 provinces representing 7 eco-economic regions. The both province in bold are target province support by DANIDA (SCAFI/FSPS II)

- 1) Northern upland: **Son La**; Yen Bai; **Quang Ninh**
- 2) Red River delta: Hai Phong, Nam Định
- 3) North central coast: **Nghe An**, Ha Tinh, **Thua Thien Hue**
- 4) South central coast: Quang Nam, **Binh Định**, Khanh Hoa, Ninh Thuan
- 5) Central highlands: **Dac Lac**
- 6) Southeastern region: Dong Nai
- 7) Southwestern region: **Ben Tre**, **An Giang**, **Ca Mau**, Soc Trang

+ Timing: Assess on-going models and models carried out since 2001.

### 2.3 Assessment of current status of models – relevant to floating fishing village

#### 2.3.1 Assessment of implementation level of co-management models according to criteria set

##### 2.3.1.1 Criteria set:

Criteria set includes 56 standards divided into 3 groups, sub-groups in each large group are as follows:

**Group 1:** Criteria and indicators for establishment and implementation of models: 29 marks

The need for model implementation from government and community side (since the selection of model implementation location)

- Needs for model implementation
- Legal basis of models
- Systematical characteristics of fishing communities
- Coordination level among parties in the implementation

**Group 2:** Criteria and indicators for effectiveness of model application: 23 marks

- Effective in environment and resources
- Economic and social effectiveness
- Effective in management, institution, policies

**Group 3:** Criteria and synthesized indicators : 4 marks

- Model sustainability
- Level and possibility of model replication
- Content of criteria: see annex 1

### **2.3.1.2 Result of co-management model assessment:**

As already mentioned, many co-management models have been put forward for Vietnam, but no assessment has been done to evaluate their scope, effectiveness and sustainability.

Based on criteria set explained above, the results of survey conducted in 18 provinces may be summarized as follows:

<b>No</b>	<b>Province/model</b>	<b>Criteria of establishment &amp; implementation (guidepost 29)</b>	<b>Criteria of application effectiveness (guidepost 23)</b>	<b>Synthesized criteria (guidepost 4)</b>	<b>Total (max. 56)</b>
	<b>1. Quảng Ninh</b>				
	Fisheries sub-association model in Hai Lang commune – Tien Yen district	<b>23</b>	<b>14</b>	<b>1</b>	<b>38</b>
	Model on fisheries resources protection group in Phu Hai commune – Hai Ha district	<b>15</b>	<b>9</b>	<b>2</b>	<b>26</b>
	<b>2. Sơn La</b>				
	Model on fishing and protection of pond fish in Ta Hoc commune, Mai Son district	<b>5</b>	<b>-</b>	<b>-</b>	<b>5</b>
	Model on fishing and protection of fisheries resources in Qui Huong commune, Moc Chau district	<b>6</b>	<b>-</b>	<b>-</b>	<b>6</b>
	<b>3. Yên Bái</b>				
	Model on co-management of villages around Thac Ba lakes in Minh Tien commune – Luc Yen district, Yen Bai	<b>18</b>	<b>12</b>	<b>1</b>	<b>31</b>
	Model on co-management of Van Hoi lagoons in Van Hoi commune, Tran Yen district	<b>18</b>	<b>11,5</b>	<b>2</b>	<b>31,5</b>
	<b>4. Hải Phòng</b>				
	Model on cage culture for food safety	<b>25</b>	<b>14</b>	<b>1</b>	<b>40</b>

No	Province/model	Criteria of establishment & implementation (guidepost 29)	Criteria of application effectiveness (guidepost 23)	Synthesized criteria (guidepost 4)	Total (max. 56)
	products in Beo place, Cat Ba downtown, Cat Hai district				
	Model on conservation of fisheries resources in Phu Long commune, Cat Hai district	23	14,5	2	39,5
	<b>5. Nam Định</b>				
	Model on mollusc culture association in Giao Xuan commune – Giao Thuy district	18	8	2	28
	Model on aquaculture club in Hai Chau commune, Hai Hau district	13	14	2	29
	<b>6. Nghệ An</b>				
	Model on co-management through aquaculture associations of Quynh Loc commune, Quynh Luu district	26	6	1	33
	<b>7. Hà Tĩnh</b>				
	Model on aquaculture cooperative of Ho Do commune, Loc Ha district	25	6,5	0,5	32
	<b>8. Thừa Thiên Huế</b>				
	Model on management of fisheries resources through fisheries sub-association of Quang Thai commune, Quang Dien district	23	12	1	36
	Model on management of fisheries resources through fisheries sub-association of Điền Hải commune, Phong Điền district	17	14	1	32
	<b>9. Quảng Nam</b>				
	Model on aquaculture group of Cam Ha, Hoi An	14,5	7	1,5	23
	Marine protected areas board of Cu Lao Chao ward, Tan Hiep commune, Hoi An	19,5	6,5	1,5	27,5
	<b>10. Bình Định</b>				
	Model on fisheries resources protection sub-association in My Thang commune, Phu My district	17	4	0	21
	Model on shrimp culture in Hoai My commune, Hoai Nhon district	24	16,5	2	42,5
	<b>11. Khánh Hòa</b>				
	Model in Ran Trao, Xuan Tu ward, Van Hung, Van Ninh	20	20	2,5	42,5
	Model on community-based fisheries resources protection and clam culture in Nha Phu lagoon, Ninh Ich commune, Ninh Hoa district	22	15,5	2	39,5
	<b>12. Ninh Thuận</b>				
	Model on shrimp farming and algae	18	6,5	1	25,5

No	Province/model	Criteria of establishment & implementation (guidepost 29)	Criteria of application effectiveness (guidepost 23)	Synthesized criteria (guidepost 4)	Total (max. 56)
	culture group in Phuong Hai commune, Ninh Hai district, Ninh Thuan				
	Model on <i>Babylonia</i> snail culture in Thanh Hai commune, Ninh Hai district	18	10	2,5	31,5
	<b>13. Dak Lak</b>				
	Model on fisheries sub-association in Lak river – Lien Son downtown	17,5	6,5	1	25
	Model on fisheries sub-association in EASUP lake – Easup district	21,5	10,5	2	34
	<b>14. Dong Nai</b>				
	Model of fisheries management cooperatives of Da Ton reservoir, Tan Phu district	12	9	1	22
	Model on fisheries management cooperative of Bau Ham reservoir, Trang Bom district	10	8	1	19
	<b>15. An Giang</b>				
	Model on fisheries management in Bung Binh Thien, Quoc Thai commune, An Phu district (ĐX)	5,5	-	1	6,5
	Model on fisheries resources management in Vam Nao river, My Hoi Dong commune, Cho Moi district (ĐX)	8	-	1	9
	<b>16. Soc Trang</b>				
	Model on aquaculture management cooperative: Vinh Tan cooperative, Vinh Than commune, My Xuyen district	12	4,5	1,5	18
	Model on aquaculture management cooperative: Quyet Thang cooperative, Hoa Tu commune, My Xuyen district	12	6,5	1,5	20
	<b>17. Ben Tre</b>				
	Model on fisheries resources protection and exploitation cooperative: Rang Dong cooperative, Thoi Thuan commune, Binh Dai district	23,5	22	3,5	49
	Model of fish farming areas management board in Thanh Phuoc commune, Binh Dai district	20,5	18,5	2,5	41,5
	<b>18. Ca Mau</b>				
	Model on clam culture management in Khanh Hoi commune, U Minh district (ĐX)	7,5	-	1,5	9
	Model on management of marine areas in Cai Doi Vam downtown, Phu Tan district. (ĐX)	5	-	1,5	6,5

### **- Results for co-management scope, effectiveness and sustainability of models**

Table. Results of scoring the co-management model assessment in fisheries sector which are on-going and already established. Management models subject to co-management models in fisheries sector of Vietnam have been established, but within limited scope.

+ Co-management scope:

*In terms of need for model implementation from government and community side (since the selection of model selection),*

*The need for model implementation*

*Legal basis of model* : Many models lack guidance or local regulations on allocation of marine areas, demarcation of marine areas.

*The systematic characteristics of fishing community organization*: In addition to perfect models (Quang Ninh, Hai Phong, Thua Thie-Hue, Binh Dinh, Ninh Thuan, Dak Lak), there are some models which are neither integrated in policies nor recognized by government. However, people are aware of the existence of these models.

*Coordination level among parties in the implementation*: These models show the cooperation between the government and communities. However, this coordination is not clear and people are not satisfied.

+ Model's effectiveness: Most of the models have been getting a certain level of effectiveness in terms of environment, resources, socio-economy, policies, management and institution, but few of them are of high effectiveness, and even some had adverse impact (e.g. in Cu Lao Cham MPA, Tan Hiep commune, Hoi An, Quang Nam, criteria on income, employment, satisfaction to solutions offered by outsiders, tend to reduce).

+ The sustainability and duplication possibility of the model:

In terms of sustainability: people are willing to contribute to the model establishment, however they are not optimistic about the future of such model if support is not provided.

In terms of replication possibility: Few models are known and visited thanks to the active advertisement (Cu Lao Cham-Quang Nam, Trao reef-Khanh Hoa). Information on number of accordingly established models is not available.

### **- Grouping of co-management models in fisheries sector:**

+ Grouping as per subjects of management: aquaculture site, fishing ground, marine protected areas, reservoir fisheries.

+ Grouping as per organization model: fisheries sub-association, occupational groups, community group, cooperatives.

### **2.3.2 Comparison of the similarity and difference between co-management models and floating fishing villages regarding the people's participation.**

According to Nguyen Duy Thieu, *van chai* (floating fishing village) is the socio-administrative unit of the fishing families living on water, equivalent to "village" in terrestrial areas.

In the Van Chai, there are unwritten regulations/norms which are strictly followed by the residents. These regulations are the same as self-regulation rules of the co-management models. The content of specific unwritten regulations is different within each village, but it covers the main categories, as follows:

+ Regulation on the duties of mutual assistance in the occupation and accidents at sea.

+ Regulation on the anchoring places of floating fishing villages.

+ Regulation on the fishing season

+ Regulation on the fishing gears or toxic substances prohibited.

+ Regulation on the rights to fish of fishers in specific areas

+ Regulation on the wedding or funeral events

+ Regulation on the repair, construction of temples, pagoda etc.

+ Regulation on the festivals and their organization

Below is the comparison in the organization and formulation of fishing village's regulations and co-management models.

**Table. Comparison between floating fishing villages and co-management models**

No	Content	Floating fishing village	Co-management models
1	Scope of application	Floating households living in watershed	Fisheries-related households
2	Basis of the relationship	Kinship – occupation	Occupation
3	Organization/model established following practical needs of people	x	X
4	People wish to join organization/model	x	X
5	Official documents/evidence of local government certifying the commitment to the establishment of organization/model	None	X
6	Legal documents allowing the implementation of organization/model	x	X
7	Legal documents clearly stating that the government decentralize the management right over the water bodies (marine/reservoir/estuarine) to the community (with coordinates, map, scale of organization/model) for aquaculture/capture fisheries	x	Some available, some not
8	Official documents/evidence pertaining to the existence of the fishing community participation in management	x	Some available, some not
9	Evidence of the existence and operation of the organization (plan, end-of-term report)	x	Some available, some not
10	Official documents/evidence on the systematic characteristics of fishing community	x	
11	Fishing community organizations exists (fisheries sub-association, group) at community level	x	x
12	Existence of legal regulations on the coordination between government and community	None	Some available, some not
13	People are involved in the formulation of regulations	x	x
14	Official factors binding the community's conformity to regulations	Occupational customs, relative reputation	Legitimacy
15	Awareness of compliance	Good	Not good

It is also observed that only in Tra O lagoon-Thau Thien Hue and tam Giang lagoon-Binh Dinh, the knowledge and ways of managing fisheries were learn and applied to fisheries co-management models. These two models were successful in term of reducing un-friendly fishing practices (Binh Dinh) and enhance responsibility of local fishers in fisheries management.

## ***2.4 Findings of pros and cons in the implementation of co-management in fisheries sector of Vietnam***

### ***2.4.1 Advantages***

There are some advantages for application of co-management in the fisheries management of Vietnam as follows:

- Policy: since 1997, the “Overall Master plan on Fisheries Sector by 2010” supported by DANIDA was approved by the Government, which pinpointed strategies for fisheries sector, such as “allocate rights and obligations to the fisheries resources users”, of which it is clearly stated that “rights and obligations of fisheries resources users are granted to the fisheries management organizations from provincial to district and commune level”. The term “co-management” appeared in this document (CBFM) as such “Establish the research and development station in the selected region and apply the community-based fisheries management approach”.

- Institution: the orientation of the State and Government is “State and people work together”, “People know, people do, people check” and on 7/7/2003 the Government issued Decree 79/2003/NĐ-CP relating to the Regulation on the democracy at commune level as the basic conditions for the application of co-management in fisheries sector in Vietnam.

Article 5 of Fisheries Law states that “Government shall identify the coastal marine areas based on the depth, distance from land and other points in the coastal areas to decentralize to the local authorities for the integrated management in line with development of production and trade”.

Decree 123/2006-ND-CP provide decentralization from central government to provincial government to have more power of managing fisheries in provincial water, especially coastal fisheries through community based fisheries management or co-management.

- In terms of ideology of fishing community, they wish to be authorized to manage water bodies and their fisheries activities.

-The support of leaders of MOFI, related departments, institutes, centers and DOFI and local government is available.

### ***2.4.2. Difficulties:***

#### **- Institution:**

+ Law allows people to fish without limitation on quantity. None of the legal documents regulates the marine areas for co-management in the community.

+ Law and regulations are available, but the compliance is not good, owing to a lack of sanctions.

+ Lack of guidelines on implementation of co-management in the fisheries sector.

+ Lack of cooperation among different sectors and departments of governments in the implementation of management duties.

+ Local organizations do not properly take care of fisheries.

+ The development of regulations on restricted/banned fishing was not agreed to by many people, so it is difficult to implement without Government’s actions of enforcement.

#### **Living standards**

- Low living standards lead to limited capacity to establish and implement the management regulations.

- There are too many fisheries types with different fishing gears, so it is difficult to have common regulations.

#### **Awareness**

- People keep good neighboring relationships, so it is difficult to apply regulations/law that may harm such relations.

- Limited knowledge of people in the environment, fisheries resources, the growth and conservation.



- Limited awareness of co-management of staff and people.

### **Operation costs**

- Initial budget for operation is not enough.

- Budget for awareness raising for staff, managers and communities is limited.

## ***2.5 Lessons drawn for the success of model***

### **Identification of scope and stakeholders of management**

The identification of the scope and subject of management will be the key to success of the model: What is the scope? Who are stakeholders of management? Who will be involved in the management? These questions need to be answered as clearly as possible.

### **Awareness raising for stakeholders (direct and indirect to community)**

This is a very important task. To raise awareness should cover both economic, social, political, resource, eco-environment and management knowledge. The two major issues of concern are sustainable development and community activities.

### **Capacity enhancement for management stakeholders**

This is also an important task. Managers should have management capacity, which includes the methodologies, modalities and contents. The management stakeholders should have management capacity for effective model implementation.

### **Selection of key persons**

The key persons for management include members of management board, and core groups in the communities. Efficient staff should be selected to best perform their task and to be a good example for the involvement of communities.

### **Establishment of rational management mechanism**

Management mechanisms based on the criteria such as effectiveness, involvement of stakeholders (especially of the community), assurance of equity for participating parties should be established.

There should be an effective cooperation among parties in taking management tasks. Such parties are local governments, line agencies, research institutes, fisheries extension centers, police, tax officers, management board members, fishing communities. They should work together in the establishment and implementation of regulations to reach its objectives.

Community is the core and determinant forces in the formulation of regulations and work-plan of the group. Government will give advice, approval and support where necessary upon request of the community.

Community should best perform the regulations if the regulations are clear with transparent authorization of roles, duties, benefits and agreement of the stakeholders.

### **Legal conditions for the model implementation**

Management regulations of the model should be harmonized with the current legal documents but should bear the specific conditions of the locality. Regulations should be formulated based on the agreement of the local authorities at grassroots levels in terms of administration, and execution mechanism.

Models should include the active participation of government in problem solving and approval of management decisions, but the government should not interfere deeply into the management activities of the community.

Co-management must be in line with the administrative reform and implementation of democracy and decentralization policies of the Government. Strong decentralization to the local government in the management of resources is highly required.

### **Seeking and well-using the technical and financial support from international development assistance organizations**

Eco-environment has become the global issue, and the co-management model is an issue of interest to many international development agencies. Actively seeking and well-using technical and financial support will facilitate the enhancement of awareness, research, documentation, and replication of models in an effective way. However, it is important to ensure the sustainability of the models after the termination of support.

## **2.6 Recommendations for boosting the application of co-management in fisheries sector**

Activities are needed to reach the basis objectives as follows:

- 1) Raise awareness on the co-management in the fisheries sector:
  - Understand the concept, content, and the necessity of co-management in the fisheries sector.
  - Understand the status of application of co-management in the fisheries sector in Vietnam
- 2) Complete the procedures and guidance of application of co-management in the fisheries sector
- 3) Enhance capacity for the application of model on co-management in fisheries sector
- 4) Develop the application of co-management model in the fisheries sector – based on the occupational villages and floating fishing villages.

## **3. Conclusion**

Co-management is effective and good for the protection and development of aquatic resources and habitats.

The success of the general management in general and co-management in particular not only requires the application of a single modality, but these should be combined as the best solution to the basic issues such as policies, institution, awareness and living conditions.

The success of the application of co-management in the fisheries management needs the effort of both fisheries sector and the support of related agencies, sectors, stakeholders as well as the technical and financial support of international organizations./.

## **Annex 1. Criteria set**

Criteria group no	Criteria order	Criteria
<b>I</b>		<b>Criteria and indicators on establishment and implementation of models (29 marks)</b>
<b>1</b>		<b><i>Level of need for model implementation from government and community (since the selection of model location)</i></b>
	1	Interviewees think that the model implementation is derived from their actual needs
	2	Evidence of community confirming their willingness to join model implementation
	3	Official staff interviewed think that the model implementation is derived from the actual need of local government
	4	Official document/evidence of local government certifying the commitment of participation into model
<b>2</b>		<b><i>Level of need for model implementation</i></b>
	5	Interviewees think it necessary to carry out model
	6	Articles/news on the pressure on the environment, resources in the model areas and it is necessary to establish an effective management modality
<b>3</b>		<b><i>Legal basis of model</i></b>
	7	Legal documents allowing model implementation
	8	Legal documents stating clearly that government authorizes the management of water bodies to the communities (coordinates, map, scale)
	9	Interviewees confirm the border of model
	10	Interviewees understand the rights and obligations in such areas
<b>4</b>		<b><i>Systematical characteristics of the fishing community</i></b>
	11	Official document/evidence of the existence of fishing community organization taking part in the management
	12	Evidence of the existence and operation of this organization (plan, report)
	13	Official document/evidence of the systematical characteristics of fishing community

Criteria group no	Criteria order	Criteria
	14	Interviewees recognize the existence of fishing community organizations (fisheries sub-association, group) at community level in the studied areas.
<b>5</b>		<b><i>Level of coordination among parties in the organization and implementation</i></b>
<b>5.1</b>		<b><i>Coordination among parties</i></b>
	15	Legal evidence regulating the community and government to coordinate
<b>5.2</b>		<b><i>Coordination, establishment of legal document relating to model</i></b>
	16	Interviewees confirm to have taken part in the formulation of legal documents together with government relating to fisheries.
	17	Interviewees satisfy with this work
<b>5.3</b>		<b><i>Participation into implementation of project and activities of model</i></b>
	18	Interviewees certify to take part in projects and activities relating to fisheries within model areas.
	19	Interviewees satisfy with this work
<b>5.4</b>		<b><i>Coordination in monitoring of projects in areas of management</i></b>
	20	Interviewees certify the people take part in the monitoring of projects within the fisheries sector relating to model
	21	Interviewees satisfy with this work
<b>5.5</b>		<b><i>Participation into the issues relating to co-management in fisheries</i></b>
	22	Interviewees took part in training course on co-management in fisheries
	23	Interviewees think they are happy with such training course
<b>5.6</b>		<b><i>Coordination and participation into dissemination of legal documents related</i></b>
	24	Interviewees took [part in dissemination on legal documents relating to fisheries
<b>5.7</b>		<b><i>Participation into conservation of fisheries resources and environmental protection</i></b>
	25	Interviewees take part into the patrol, management, protection and recovery of sensitive eco system
<b>5.8</b>		<b><i>Participation into the decision making relating to fisheries sector</i></b>
	26	Interviewees confirm to have participated into decision making (meetings) related to their interests in the model
	27	Legal documents specifying the rights of parties to join the decision making in model
<b>5.9</b>		<b><i>Coordination, participation into livelihood improvement (enhance of expertise, training of new job, product consumption) )</i></b>
	28	Interviewees take part in the improvement of livelihood
<b>5.10</b>		<b><i>Coordination spirit among parties</i></b>
	29	Interviewees think that coordination spirit among parties is changed thanks to model
<b>II</b>		<b>Criteria and indicators on model application effectiveness (23 marks)</b>
<b>6</b>		<b><i>Effectiveness in environment and resources</i></b>
<b>6.1</b>		<b><i>Environmental status</i></b>
	30	Interviewees think that environment is better
<b>6.2</b>		<b><i>Level of abundance of resources</i></b>
	31	Interviewees think resource is better due to model work
<b>6.3</b>		<b><i>Fish size or fish farming productivity</i></b>
	32	Interviewees confirm the increase in fish size and fish farming productivity compared to previous period before the model implementation
<b>6.4</b>		<b><i>Level of biodiversity</i></b>
	33	Interviewees think number of fish species especially indigenous and high economic value ones is increased in the model areas thanks to the affect of model implementation
<b>7</b>		<b><i>Socio-economic effectiveness</i></b>
<b>7.1</b>		<b><i>Household income</i></b>
	34	Interviewees think their income has increased
<b>7.2</b>		<b><i>Rate of employment</i></b>
	35	Employees think the model implementation has generated employment for the community
<b>7.3</b>		<b><i>Contribution to the production value and local budget</i></b>
	36	Total value of fish production in model areas in the local production value
	37	Contribution level of model to local budget
<b>7.4</b>		<b><i>Poverty rate</i></b>

Criteria group no	Criteria order	Criteria
	38	Proportion of fisheries households engaged in the models before and after the model implementation
	39	Proportion of poor households engaged in model areas compared to those in province and country.
<b>7.5</b>		<b><i>Rich-poor gap</i></b>
	40	Income gap between owners of the highest income and lowest one in the model areas compared to average difference of province and country.
<b>8</b>		<b><i>Effectiveness in management, institution and policy</i></b>
<b>8.1</b>		<b><i>Level of conflict in internal community and between community and other stakeholders</i></b>
	41	Interviewees think there is a reduction in dispute among members of internal model
	42	Interviewees think there is a reduction in disputes among members of the same occupation and outsiders
	43	Interviewees think there is a reduction in disputes among community and other stakeholders
<b>8.2</b>		<b><i>Level of awareness of parties in the management, protection of fisheries resources and environment</i></b>
	44	Interviewees confirm their awareness has been improved compared to that before the model implementation
<b>8.3</b>		<b><i>Level of compliance with legal documents and community's regulations</i></b>
	45	Interviewees confirm the active change in the compliance of legal documents and community's regulations in fisheries
	46	Interviewees confirm the reduction of breach
	47	Number of violations to legal documents and community's regulations is reduced
<b>8.4</b>		<b><i>Level of reception and feedback, solution to proposals or related issues among parties</i></b>
	48	Interviewees proposed proposals to the parties in the solution to the activities related to model
	49	Interviewees satisfy with solutions of parties
<b>8.5</b>		<b><i>Level of transparency in information of fisheries management</i></b>
	50	Interviewees satisfy with transparency in local information in fisheries management
<b>8.6</b>		<b><i>Management capacity of government and community</i></b>
	51	Local staff and managers of communities confirm the management capacity of them is improved thanks to model results.
	52	Interviewees think the model implementation helps fisheries management better (timing, manpower, cost)
<b>III</b>		<b>Criteria groups and synthesized indicators (4 marks)</b>
<b>9</b>		<b><i>Model's sustainability</i></b>
	53	Interviewees think models will be best carried out even the outside support is stopped.
	54	Member fishers commit to continuously make in kind contribution/ labour work to maintain regulations and operations of models
<b>10</b>		<b><i>Level and replication possibility of model</i></b>
	55	Number of new models established after visiting of model
	56	Number of relevant agencies that visit and learn experiences from models and apply in practice