

Development of the Locally based  
Coastal Resource Management  
through Decentralization:  
Case of Thai Fishing Communities

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# Introduction



## Evolution of decentralization approach in coastal resource management

- ◆ Coastal resource tends to decline drastically since last several decades (FAO, 2005).
- ◆ The management approach currently prevailing is based on the intervention of central government, which aims at organizing the utilization of resources for solving any issues (Sen and Nielsen, 1996).
- ◆ Greater participation from resource users in management is increasingly concerned.
- ◆ Decentralization approach has been adopted worldwide in most of governance system.

## Present situation of Coastal Resource Management in Thailand

- ❖ Many measures have been implemented for coastal resource management during the recent decades.
- ❖ Some measures got successful cooperation with people but some failed.
- ❖ Government tried to find out practical approach to implement the measures on coastal resource management.
- ❖ Decentralization of authorities to manage coastal resource has been done to secure greater people's participation.

# Research Questions

- ❖ What kind of local organizations can take responsibility for coastal resource management?
- ❖ What process do they need for future devolution to make locally-based organization?
- ❖ What kind of institutional arrangement are necessary to manage coastal resource on a local basis?

# Objectives of study

1. To investigate the mechanism of people's participation in management process
2. To analyze the strengths and constraints of existing local organizations, mainly Ao.Bo.To., on coastal resource management
3. To assess the capacity of local organizations to recover coastal resource management under the uncertain situation like Tsunami 2004
4. To develop an appropriate institutional arrangement for coastal resource management based on the local organizations of Thailand

# Concepts of Coastal Resource Management (CRM)

# Management Approaches

- ◆ Both centralized management system and community-based management system have the limitations within their own to get efficiency in managing the coastal resource.
- ◆ The centralized system faces the incompliance of management measures from resources users.
- ◆ The community-based management system are inadequate for dealing with problems arise from outside community.
- ◆ Co-management is considered as the efficient approach to deal with the resource management problems by the cooperation among partners.

# People's participation on CRM

Participatory management approach offers a number of advantages (Kapoor, 2001)

- ◆ expanding the information available to the management process by considering local knowledge
- ◆ increasing the representation of the community or stakeholders as away to build legitimacy
- ◆ contributing in conflict resolution
- ◆ encouraging accountability and compliance among the participants

Typology of participation (Pretty and Hine, 1999)

- ◆ The degree of participation increase from the Passive, Consultation, Bought, Functional, Interactive and Self-mobilisation

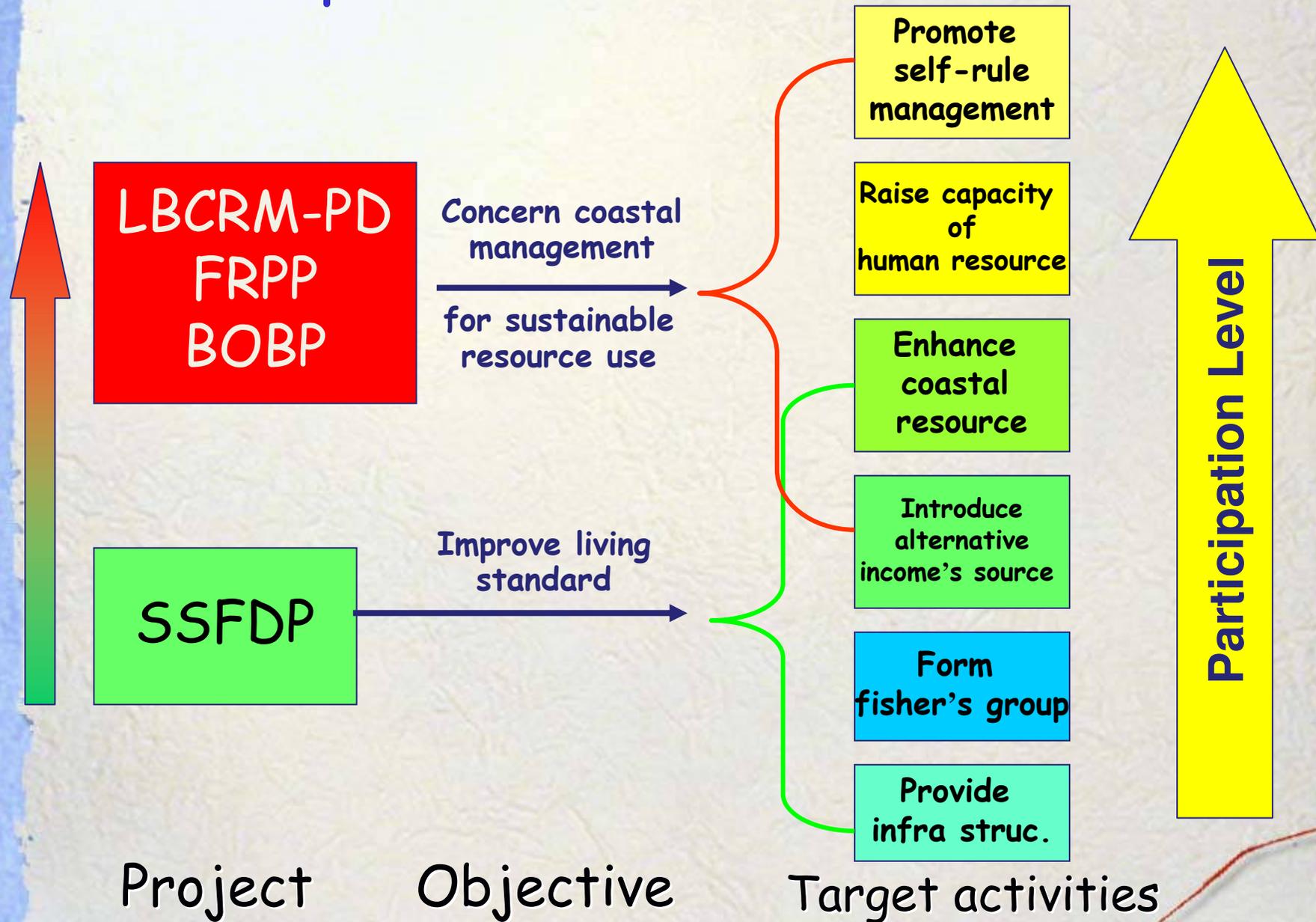
# Decentralization and CRM

- ◆ In both decentralization and co-management, the central government acts to transfer power and authority to local-level institutions.
- ◆ Elements of decentralization (Pomeroy and Berkes, 1997)
  - (1) De-concentration- *under supervision of central gov.*
  - (2) Delegation- *central gov. can take the power back*
  - (3) Devolution- *without reference back to central gov.*
  - (4) Privatization- *transfer to private enterprise*
- ◆ Various type of decentralization can be used by government to establish conditions that are conducive to co-management.

# Institutional arrangement of CRM

- ◆ Institution as sets of formal and informal rules and norms that shape interactions of humans with others and nature. It means the body of rules, regulations and processes that guide management (Agrawal and Gibson, 1999; Kalikoski et al, 2002).
- ◆ Another approach is to include organizational structure in the definition of an institution (Hayami, 2001).
- ◆ Institutional arrangement has been described as 'the composite of laws, customs, organizations and management strategies established by society to allocate scarce resources and competing values for a social purpose, such as to manage a nation's coastal resources and environments' (Sorensen et al, 1984).

# Past experiences of CRM in Thailand

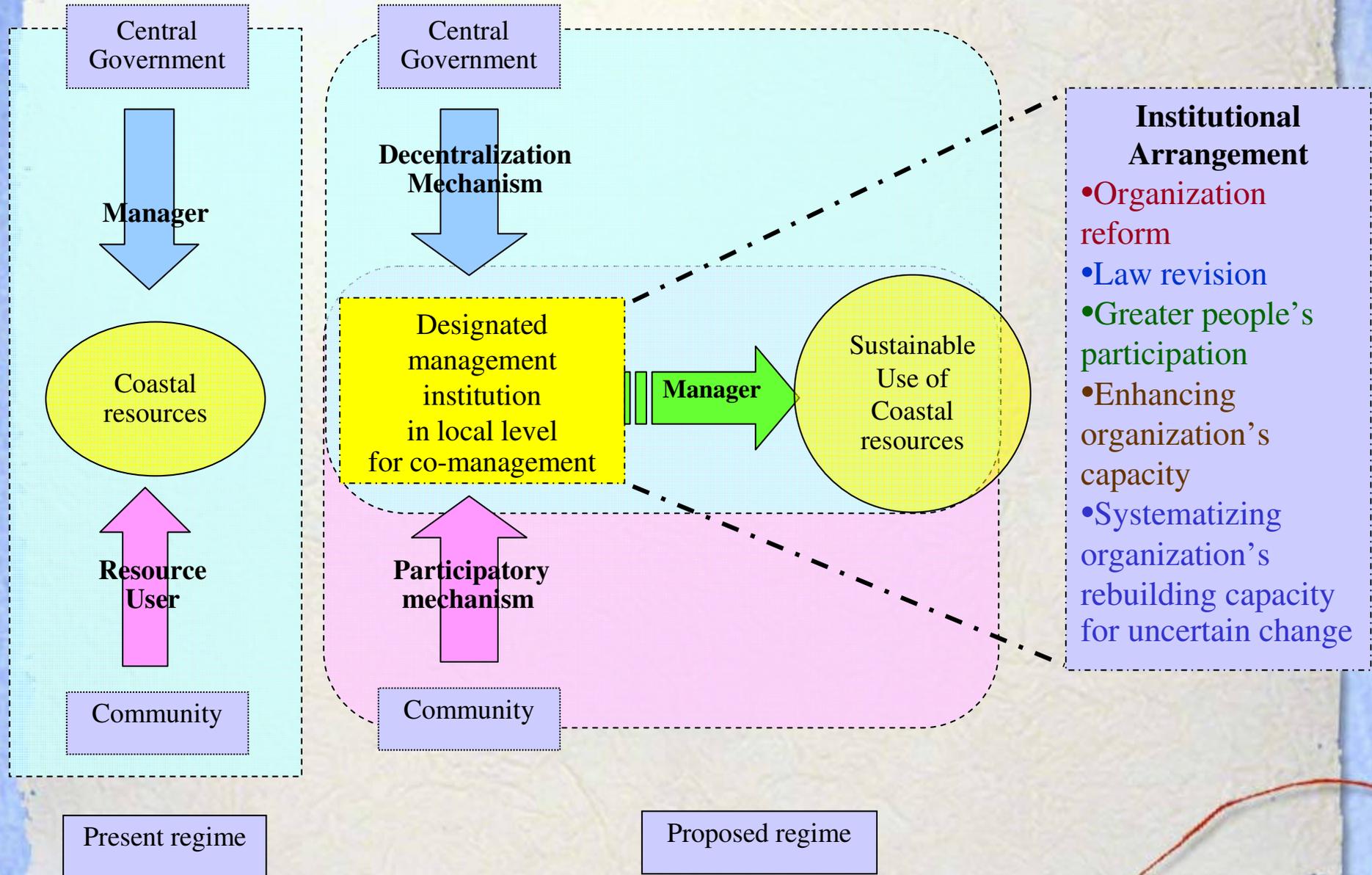


# Study Framework and Methodology

# Justification of study

- ◆ Decentralization refers to the systematic and rational dispersal of power, authority and responsibility from central government to local level; it needs an institutional arrangement to support in each process (Pomeroy and Berkes, 1997; Noble, 2000; Jentoft, 2004).
- ◆ The role of government in establishing conditions for co-management is the creation of legitimacy and accountability for the local organizations and institutional arrangements.

# Study Framework



# Methodology

## **Data collection**

### 1) Primary data

- interviewing leader and people by structured questionnaire
- having group discussions with community and local organization

### 2) Secondary data

- coastal development policy
- related law or regulation
- implemented project

## **Data analysis**

1) Descriptive statistics; frequency, mean and percentage were used for analyzing the household data on the attitude of fishers in several issues

2) Inference statistics; Using non-parametric analysis by Yate' corrected Chi-Square test (Continuity Correction) for testing hypothesis

# Study Areas

◆ Khao Thong

◆ Ao Luk Noi



Krabi

Krabi

# Analysed topics

- ◆ Level of people's participation in decision making process
- ◆ Strength and weakness of the local organizations
- ◆ The effects of uncertain environment on fishing communities
- ◆ Dynamic capability of the organization and people to deal with uncertain environment
- ◆ People's opinion on the local organization's performance

# Decentralization and Institutional Structure of Coastal Resource Management



# Scheme of decentralization

Central Government

- Share responsibility
- Problem identification
- Making self-rule management
- Monitoring and evaluation

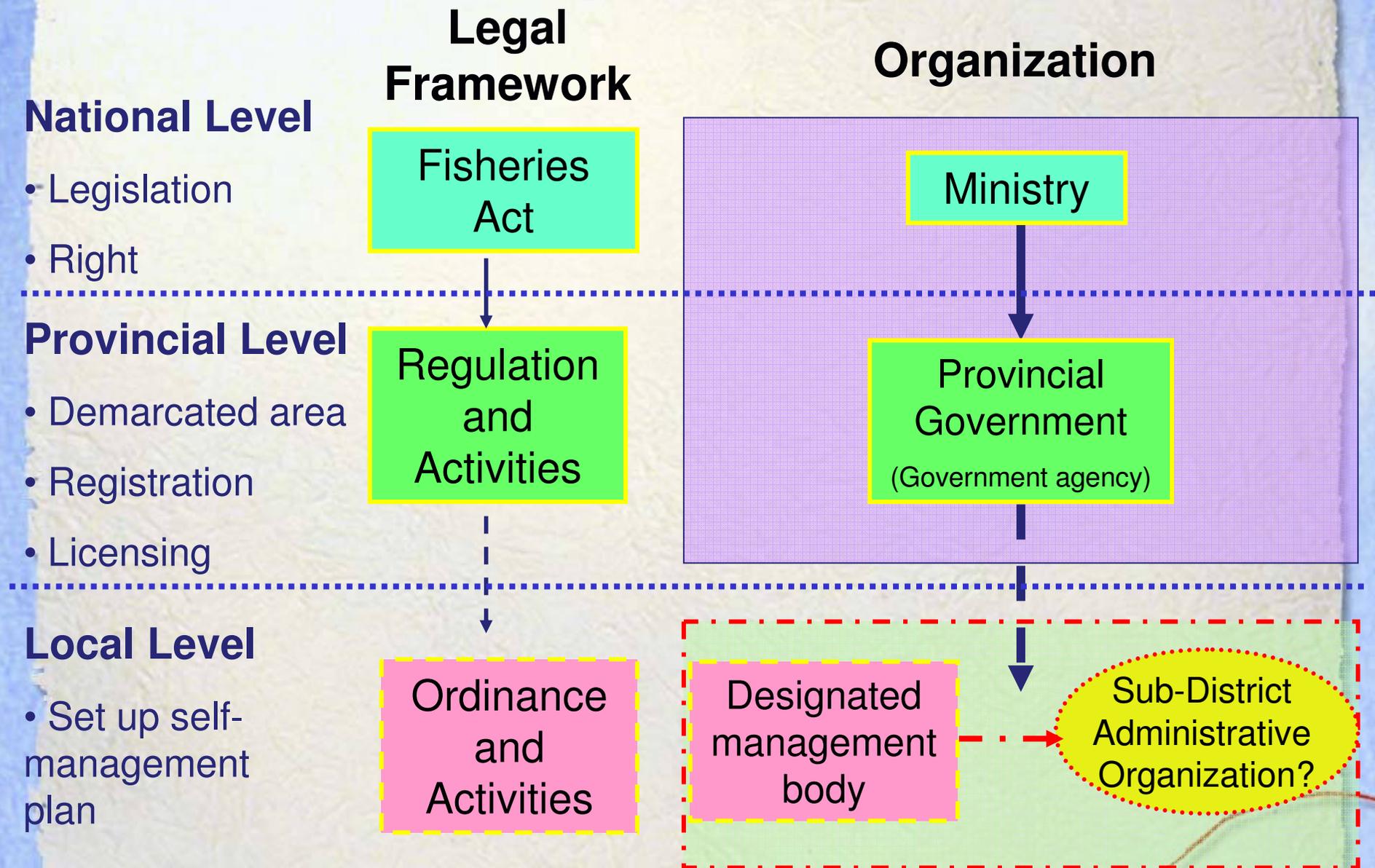


- Institutional arrangement
- Raise capacity of people
- Devolve authority
- Legal support

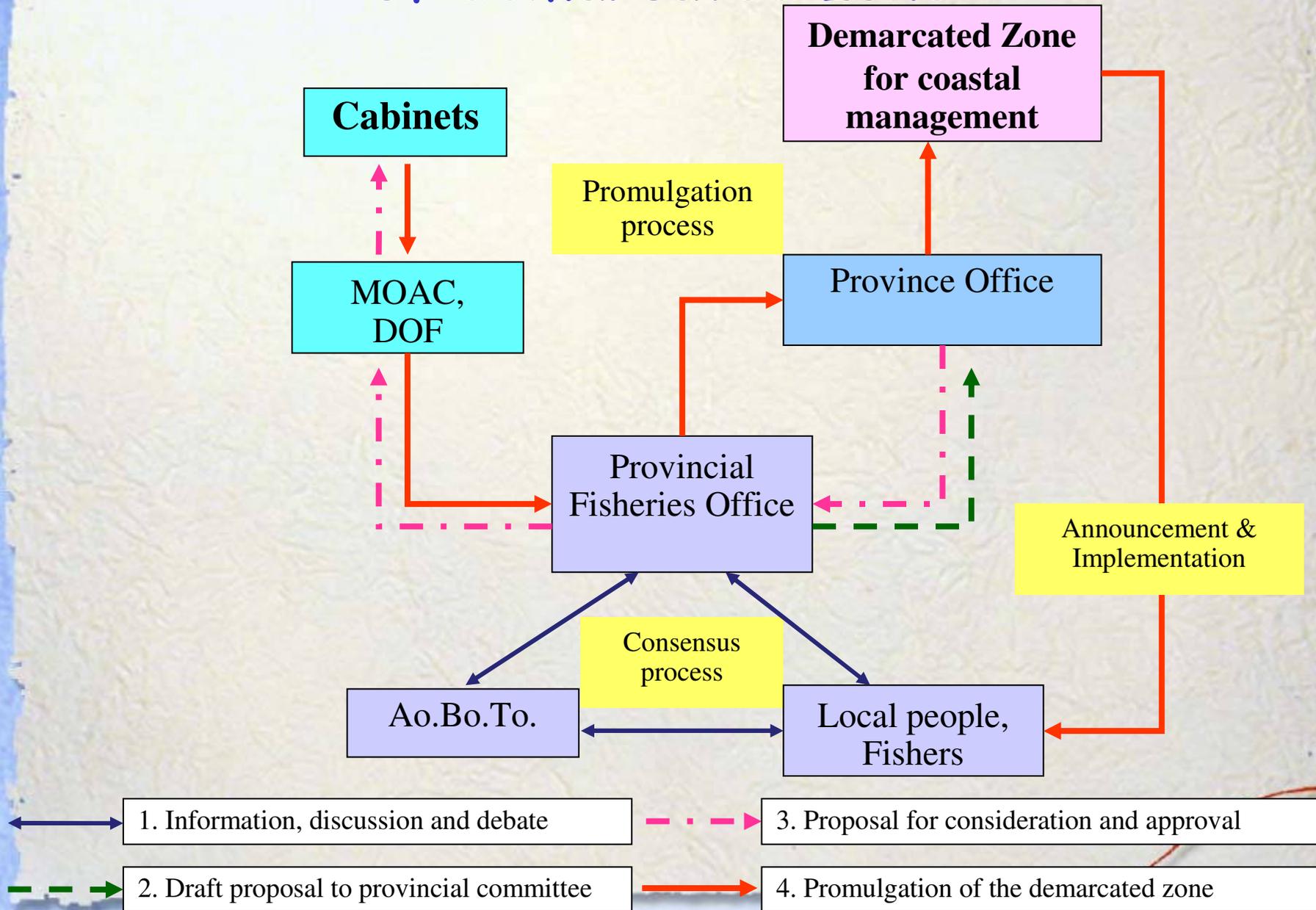
Local Levels

(Sub-District Administrative Organization, Village Council)

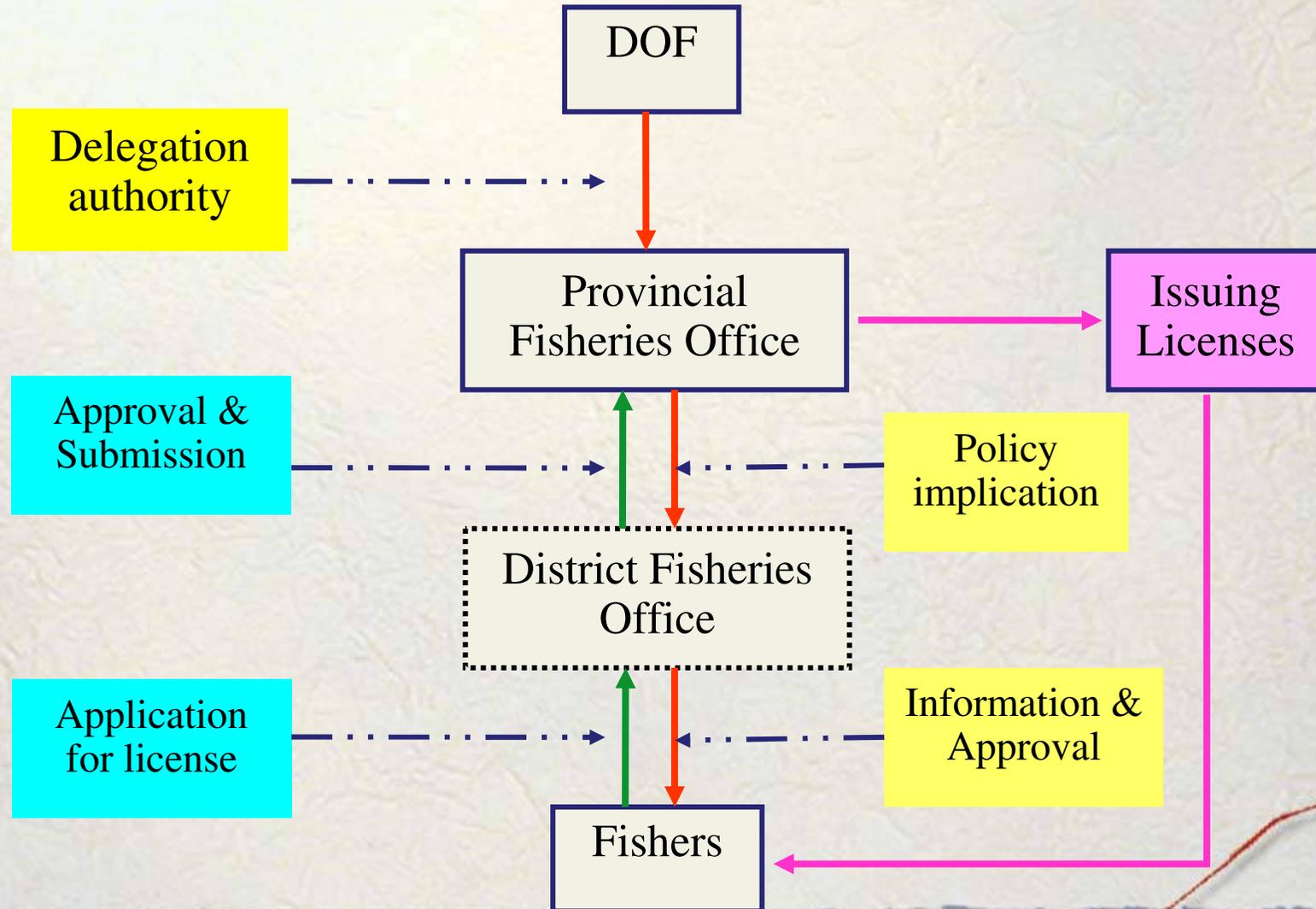
# Mechanism of decentralization



# De-concentration of authority on setting of demarcated zone



# Delegation of authority on licensing of fishing gear

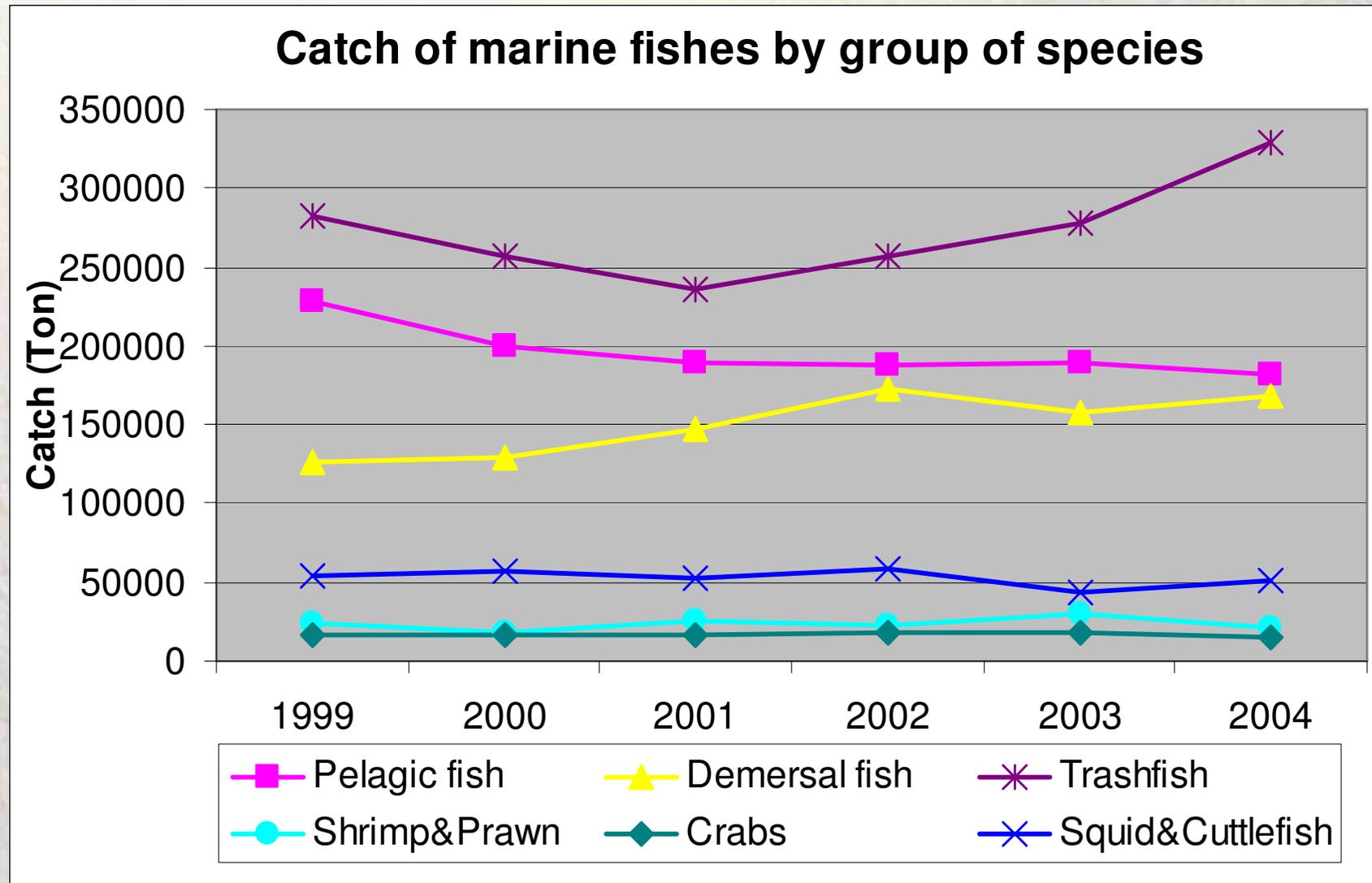


# Devolution of authority by establishing Sub-District Administrative Organization (Ao.Bo.To.- in Thai)

- ◆ Autonomous organization
  - primary government unit
  - formulate their own development plan
- ◆ Democratic organization
  - Council members selected from the election of local people
- ◆ Local need based organization
  - Council members are responsible for solving local problems
  - Regulate rules to control activities

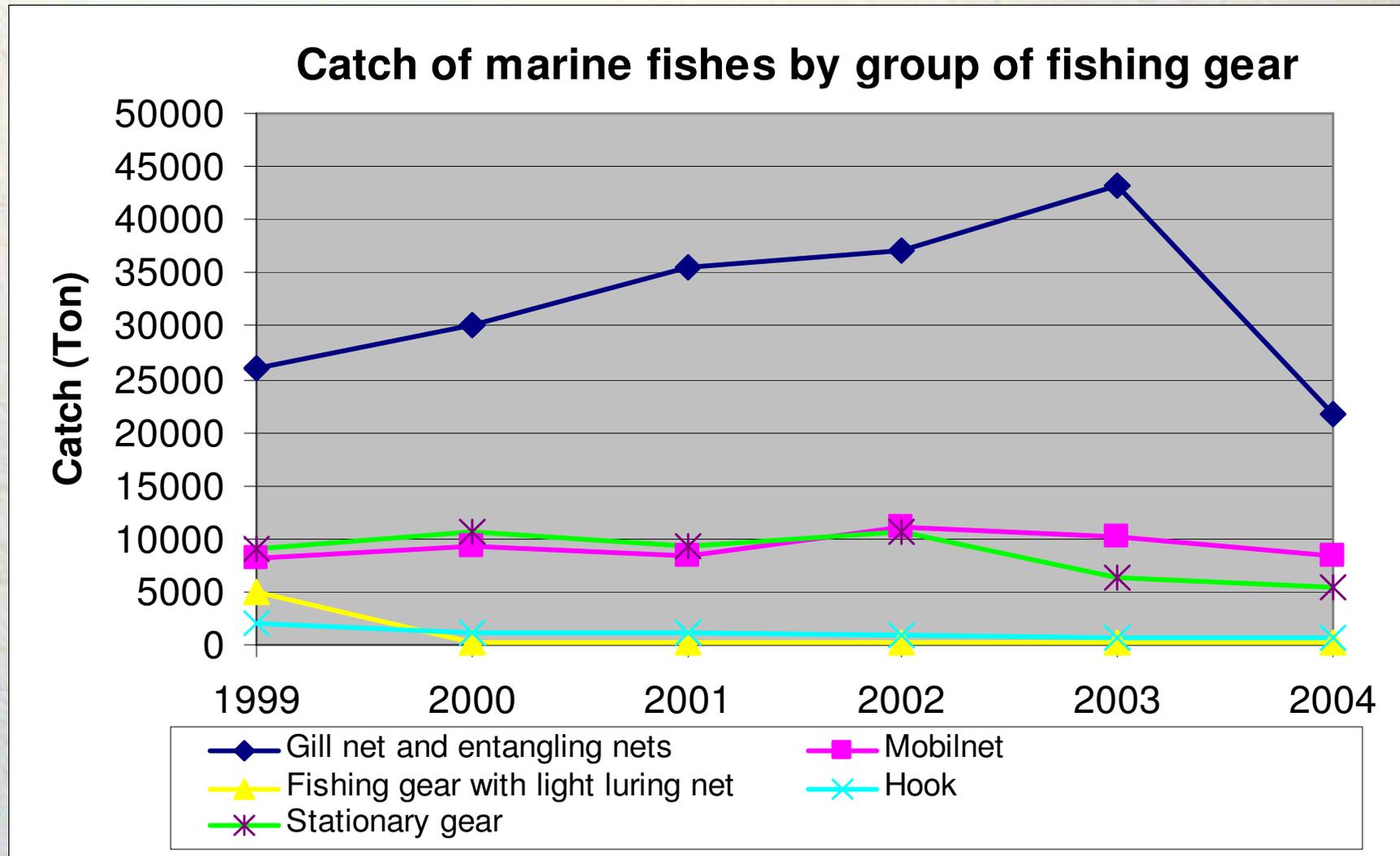
Participatory Mechanism for  
Coastal Resource Management  
by Local Organizations

# Fisheries resources status in Andaman Sea Coast



Source: Department of Fisheries, 2006

# Small-scale fisheries status in Andaman Sea Coast



Source: Department of Fisheries, 2006

# Distribution of mangroves in Andaman Sea Coast

Unit: Rai

Province	Mangrove area 2000	Mangrove area 2004	Change
Ranong	170,334.80	162,953.19	-7,381.61
PhangNga	262,736.48	276,884.87	14,148.39
Phuket	11,724.86	10,504.20	-1,220.66
<b>Krabi</b>	<b>219,338.38</b>	<b>225,649.07</b>	<b>6,310.69</b>
Trang	223,676.91	191,317.17	-32,359.74
Satun	245,821.59	222,284.09	-23,537.50
Total	1,133,633.02	1,089,592.61	-44,040.41

Source: NACA Secretariat Office, 2005

Remark: 1 Rai = 1600 m<sup>2</sup>

# Statement of Issues

- ◆ Coastal resources combine with many aspects; fisheries, mangrove and coastal tourism
- ◆ Many activities within same area raise conflict of coastal resource utilization
- ◆ Co-management of coastal resource needs more participation of people, but there are many types of participation (Pretty & Hine, 1999).
- ◆ Effective coastal resource management is dependent upon the strength of the local organization and its ability to command respect from its members.
- ◆ Success is often simply due to the leadership of the local organization (Pomeroy, 1995).

# Type of participation in community development planning and CRM

(modified from Pretty and Hine, 1999)

## **(I) *Receiving information***

People get information about the development or management project.

## **(II) *Giving comments***

People have chance to discuss and give comment to set up development or management project.

## **(III) *Involving in activities***

People participate in implementing activities of development project.

## **(IV) *Making decision***

People participate in joint analysis and make decision on project.

## **(V) *Monitoring and Adjustment***

People share responsible to monitor and adjust project.

# Methodology



## **Population and Sample:**

- 1) cluster random sampling of people in six villages of khaoThong Sub-district
- 2) sample size: 102 respondents (10% of the population)



## **Variables**

- 1) Position of people in their community

Based on economical and non-economical quality like honour, prestige or religion

The position of people in community are Leader of village, Member of Ao.Bo.To. Council, Head of occupational group, Leader of religion.

- 2) People's Participation in development project planning

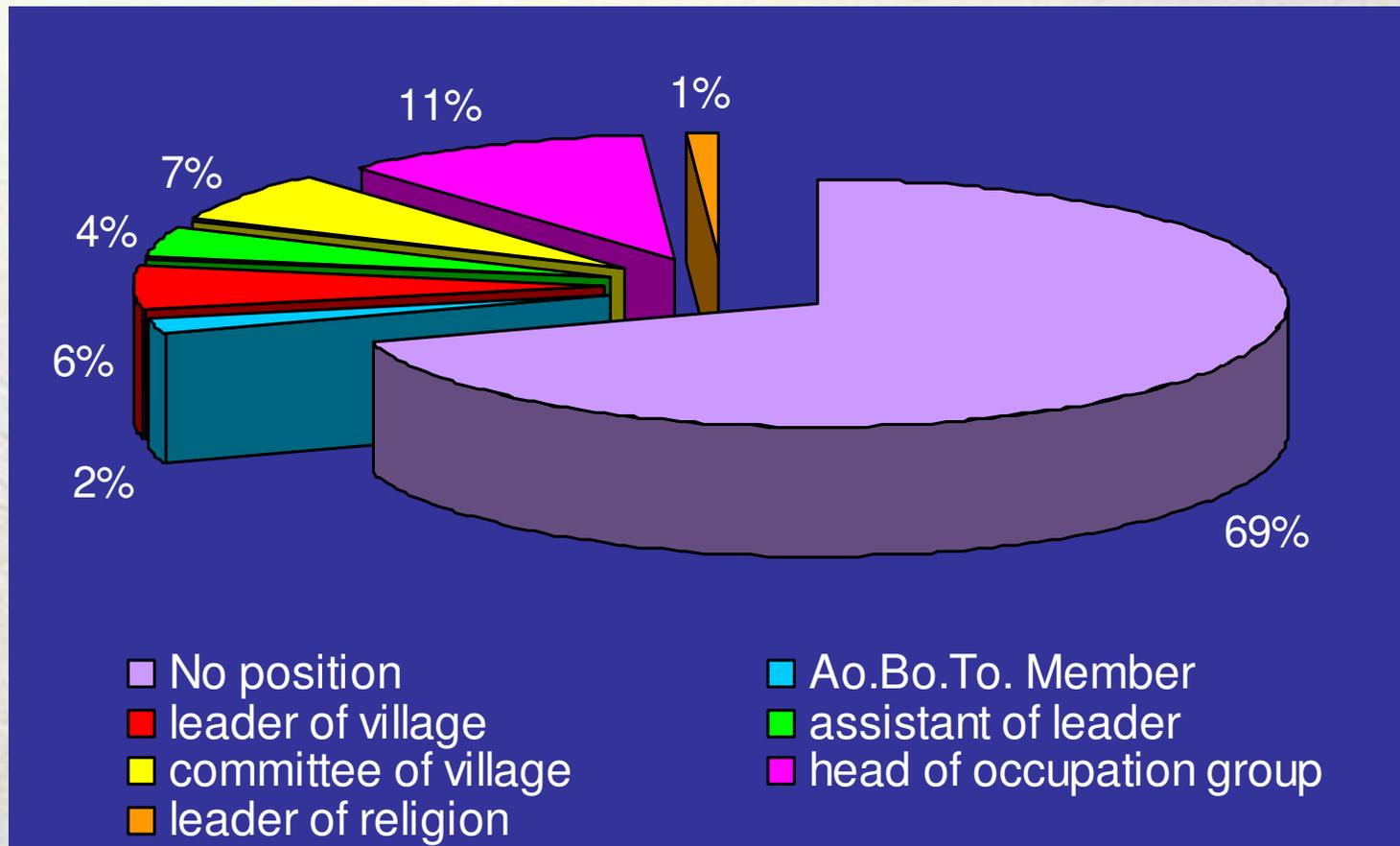
# Analysis

- ◆ Descriptive statistic; frequency, percentage about people participation
- ◆ Using non-parametric analysis by Yate' corrected Chi-Square test (Continuity Correction)

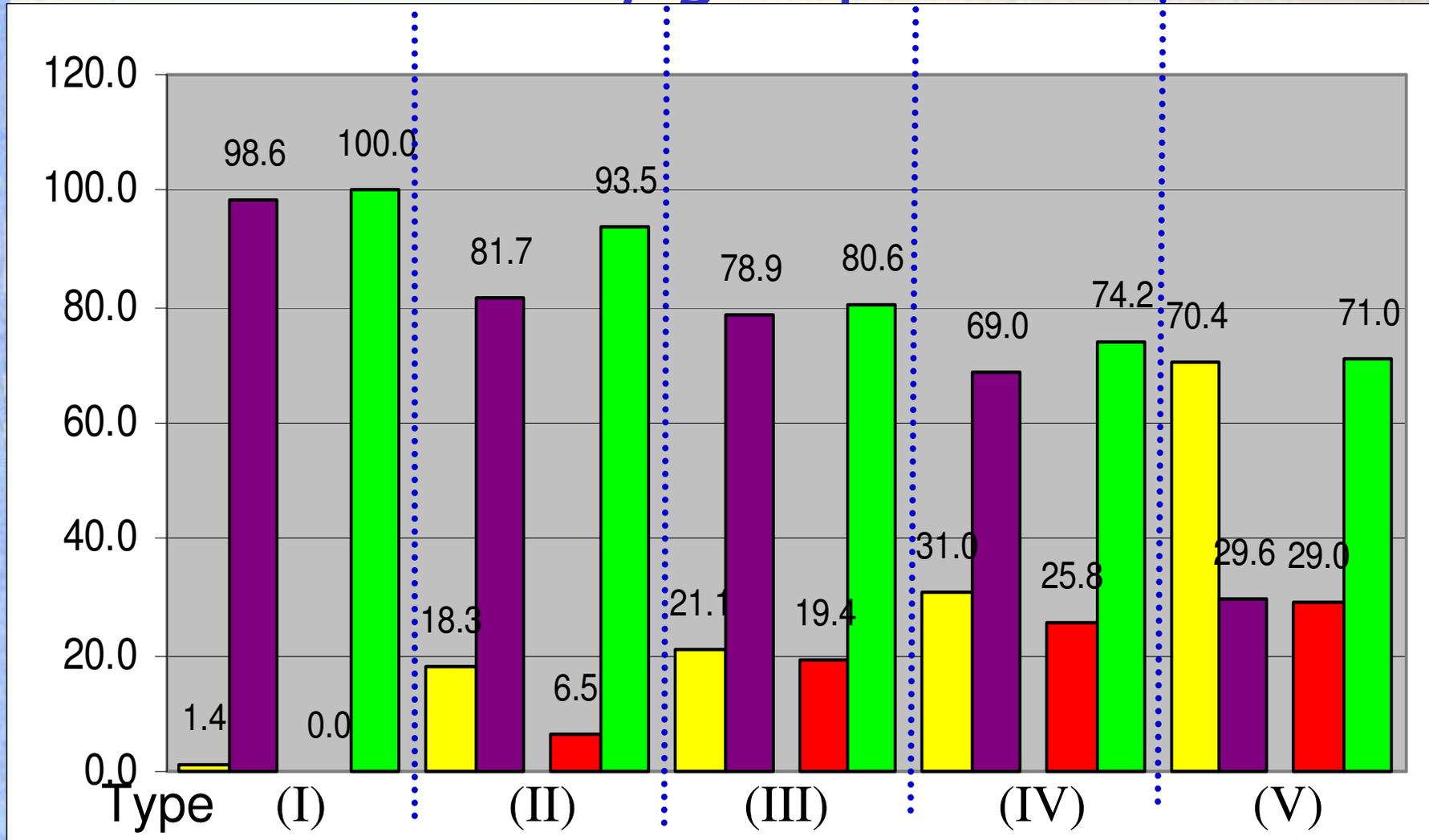
$$\chi^2 = \frac{\sum (|O_{ij} - E_{ij}| - 0.5)^2}{E_{ij}}$$

- ◆  $H_0$  = the position of people in community are independent from the chance to participate on community development
- $H_1$  = the position of people in community are dependent from the chance to participate on community development.

# Type of position in community by percentage



# Percentage of people's participation by group



No position & No par.

No position & Par.

Position & No par.

Position & Par.

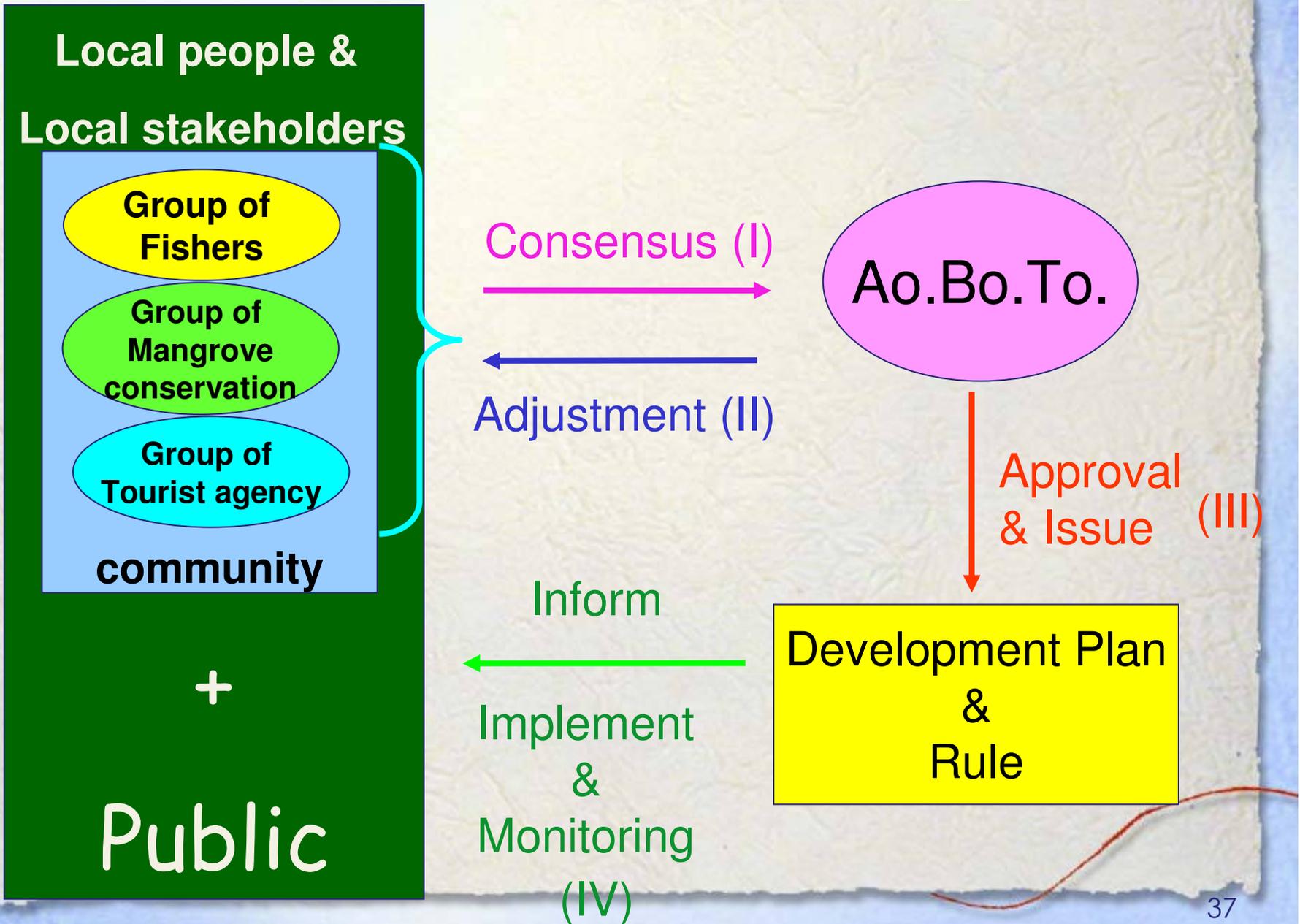
# Hypothesis Testing

Type of Participation	Chi-square value	Degree of Freedom	P-value
(I)	0.000	1	1.000
(II)	1.566	1	0.211
(III)	0.000	1	1.000
(IV)	0.085	1	0.770
(V)	13.510	1	0.000*

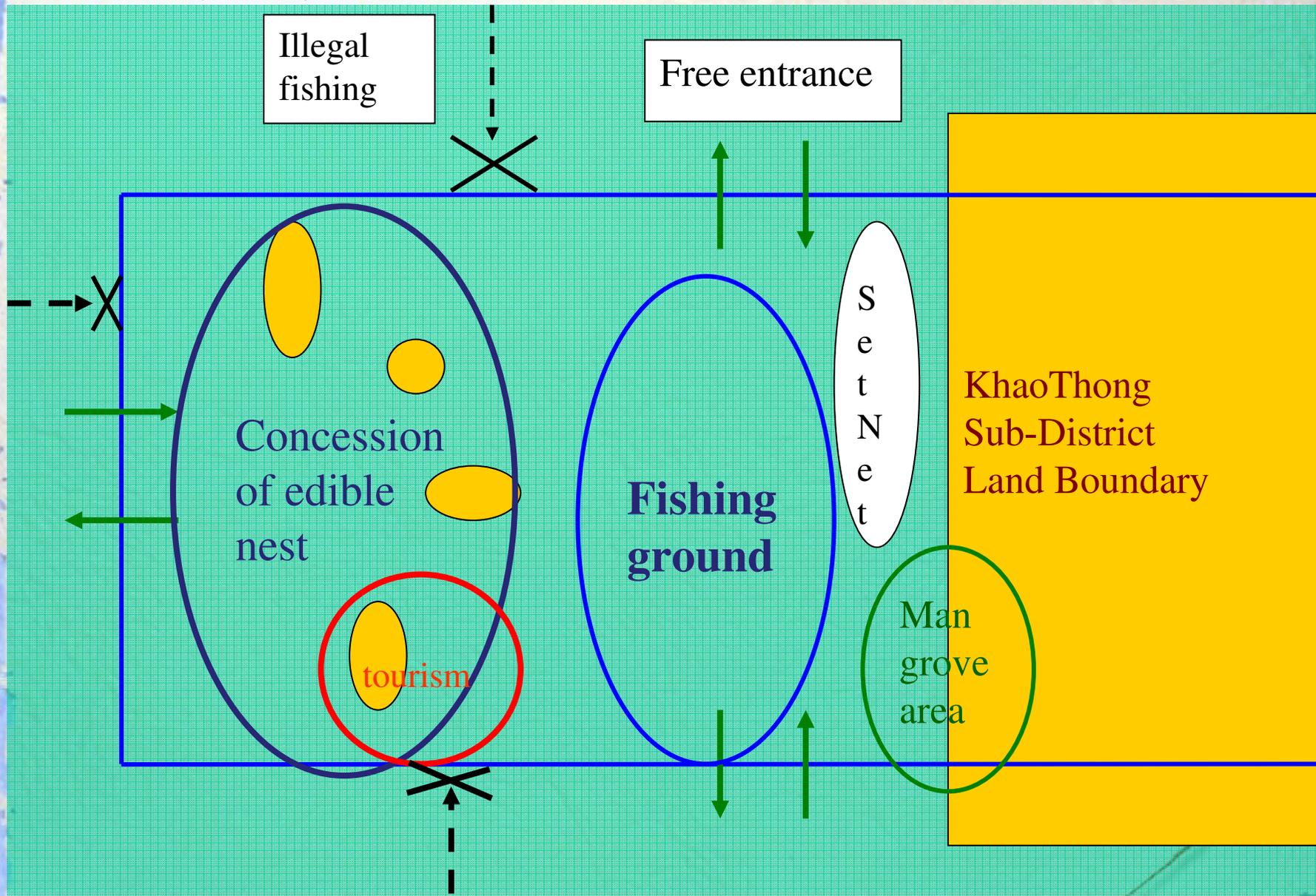
The value of test lead to reject the null hypothesis of the last type with significant at probability 0.05 level

➔ position of people in community have relationship with participation in monitoring of development plan

# Process of coastal area management



# Multi-purpose of utilization and zoning map



# Community's protected mangrove



Signboard informs marking point

# The regulation of Sub-District on Community's Protected Mangrove(CPM)

## ◆ *Conserved as the nursery ground*

- area 0.9 km<sup>2</sup> of CPM

## ◆ *Some prohibited rules*

- motorized boat passing in this area
- cutting any tree for any purpose; except for re-arrangement mangrove area by the committee
- collecting any wild flower and tree

## ◆ *Monitoring team*

- CPM committee has been set up to monitor the activities in its area

Recent Challenges toward  
Local Institutionalization on  
Coastal Resource Management

# Existing local organizations and their authorities

## ◆ Sub-district Administrative Organization

This organization is the primary local government unit that has responsibility for community development and people's welfare within a sub-district area.

## ◆ Village committee

The village committee consists of the people who are selected as the representative of village. They have traditionally duty in village governance, with the police function by law to protect the village society peacefully.

## ◆ Fisher's organizations

The purposes of establishment are to deal in production and marketing problems and promote coastal resource conservation.

# Methodology

## Population and Sample

- 1) random sampling of people in three coastal villages of KhaoThong Sub-district
- 2) sample size: 50 respondents

## Variables

- 1) People's opinion on village committee's performance
- 2) People's opinion on Ao.Bo.To.'s performance

## Data management

- 1) A five-point scale was rated the opinion as “strongly agree/very good”, “agree/good”, “neutral/moderate”, “disagree/poor”, and “strongly disagree/very poor” with a corresponding score of “5”, “4”, “3”, “2”, and “1” respectively.
- 2) The score were added together to categorize the level of people's opinion into three levels: less favorable, moderate favorable, and highly favorable.

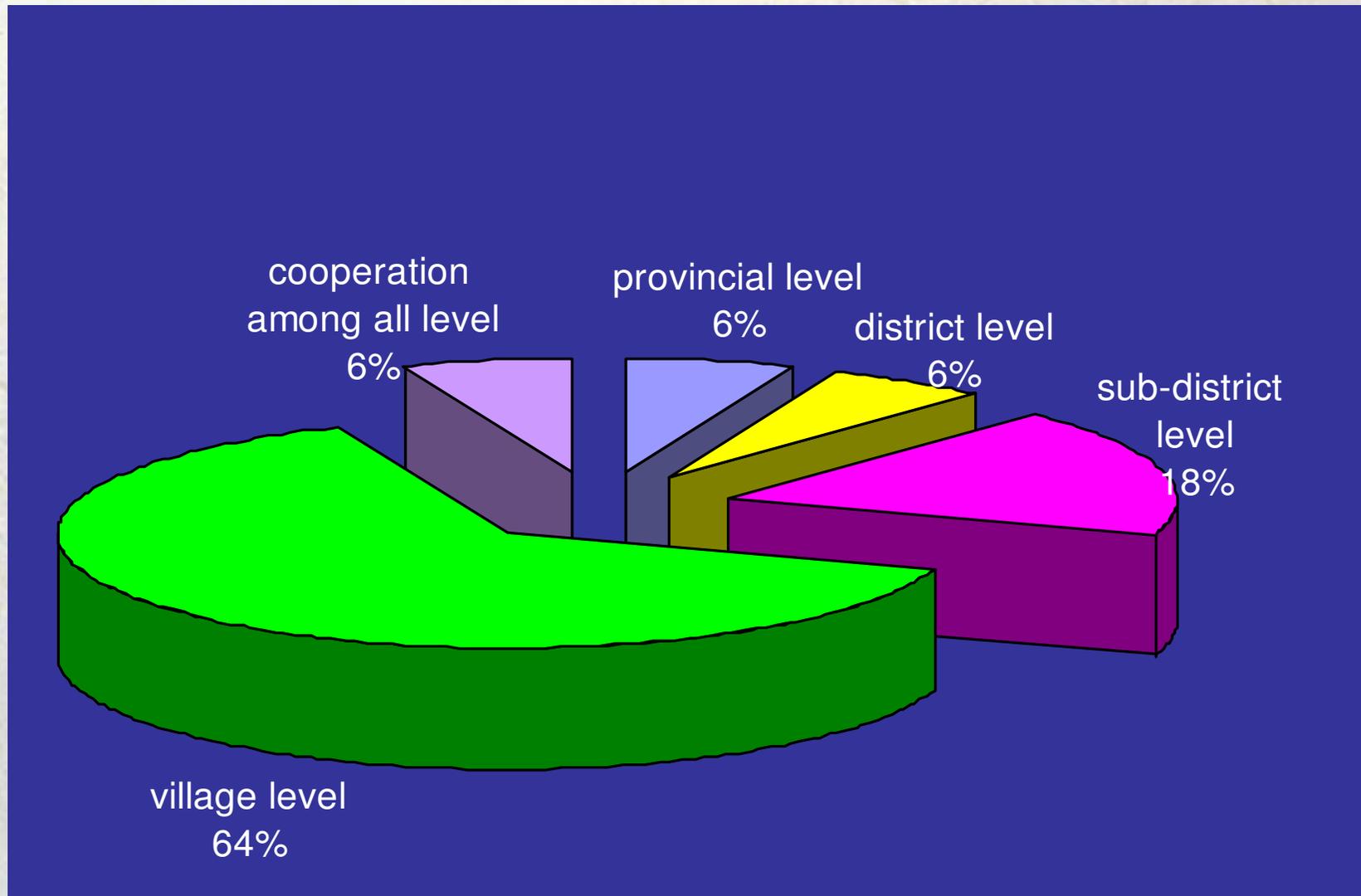
## The level of people's opinion on performance of village committee

Level of people's opinion (possible score)	Frequency	Percent	Descriptive Statistics of observed score			
			Min	Max	Mean	SD
Less favorable (1-14)	0	0	18	40	29.3	5.4
Moderate favorable (15-28)	24	48				
High favorable (29-40)	26	52				
Total	50	100				

## The level of people's opinion on performance of Ao.Bo.To.

Level of people's opinion (possible score)	Frequency	Percent	Descriptive Statistics of observed score			
			Min	Max	Mean	SD
Less favorable (1-20)	1	2	19	60	43.6	7.8
Moderate favorable (21-40)	20	40				
High favorable (41-60)	29	58				
Total	50	100				

# The organization which be trusting to manage coastal resource



# Important characteristics of Ao.Bo.To. to support community development

## **1. People-participated governmental organization**

The members of Ao.Bo.To. Council are elected as the representatives of local people in their villages.

## **2. More flexible governmental organization**

Ao.Bo.To. is the autonomous organization in the allocation of budget and realizing the sub-district's development plan.

## **3. Self-regulated organization**

Ao.Bo.To. has authority to formulate its regulations that gives a legal status for enforcement within its jurisdiction.

# The constraints of management capacity of Ao.Bo.To.

## **1. Administrative capacity**

It lacked clarification about the scope of authority on natural resource management.

## **2. Planning capacity**

The Ao.Bo.To.'s staffs may not consider much about the sustainability of natural resource.

## **3. Implementing capacity**

The capacity to implement development projects on their initiative was severely restricted by inadequate revenues.

## **4. Monitoring and enforcement capacity**

The law of proclamation sea boundary do not directly concern about coastal resources.

Local Management Practice  
for  
Coping with Uncertain Change

# Statement of Issues

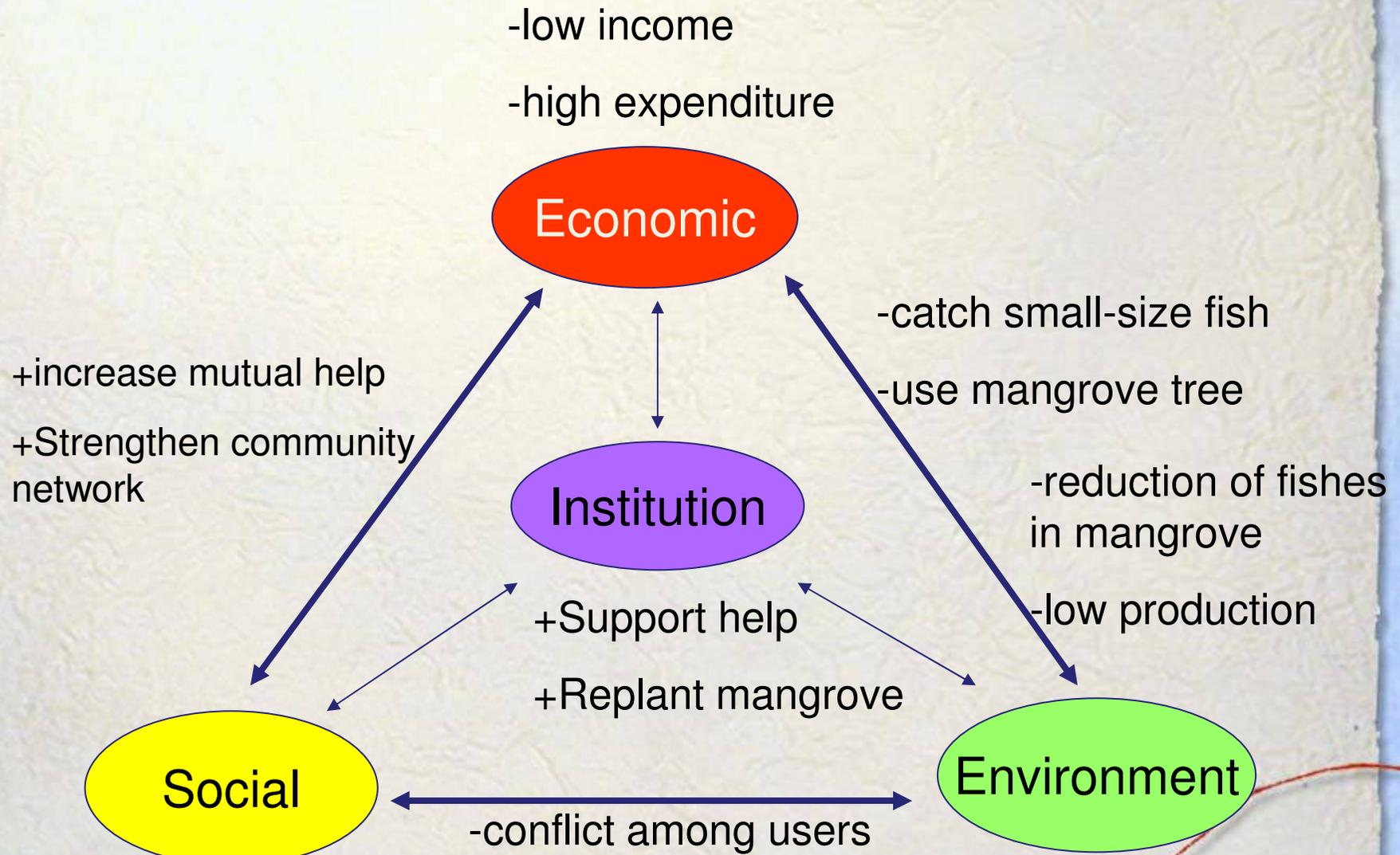
- After the Tsunami disaster, fishers lost income and lack of new source of investment
- The activities concern for resource management and community development were stopped, people were busy to recover their occupation activities
- The Coastal Resource Management (CRM) was unstable during this recovering period
- There was feasibility to modify fishing technique to get more catches without sustainable resources concern
- The capacity of local organizations to handle the uncertain change is the important factor of recovery

# Major effects by Tsunami

Aspect	Rank	Percentage of people's opinion	
		Aquaculture	Capture
Economic	1	Income of fishing activities 100% (decrease)	Income of fishing activities 80.6% (decrease)
	2	Price of harvested fish 86.5% (decrease)	Expenditure for fishing 70.6% (increase)
	3	Use of loan and other credit 75.0% (increase)	Household expenditure 60.8% (increase)
Social	1	Nervous to next disaster 91.9% (increase)	Nervous to next disaster 84.9% (increase)
	2	Mutual help among people 43.2% (increase)	Mutual help among people 34.8% (increase)
	3	Being member of people's group 33.3% (increase)	Time spend for community meeting 32.3% (increase)

Aspect	Rank	Percentage of people's opinion	
		Aquaculture	Capture
Environment	1	Fishery production 67.5% (decrease)	Fishery production 69.5% (decrease)
	2	Size of caught fish 38.9% (decrease)	Size of caught fish 43.4% (decrease)
	3	Fishes in mangrove area 27.0% (decrease)	Fishes in mangrove area 39.1% (decrease)
Institution	1	Supported facilities from Sub-district level 41.7% (increase)	Supported facilities from Sub-district level 35.3% (increase)
	2	Utilization of small-size fish 21.6% (increase)	Utilization of small-size fish 23.2% (increase)
	3	Replantation of mangrove trees 38.9% (increase)	Enhancement of fish larvae 20.3% (increase)

# Linkage among effects to sustainable CRM





AoLukNoi  
Cage culture

# Situation of the cage culture

Pre-Tsunami



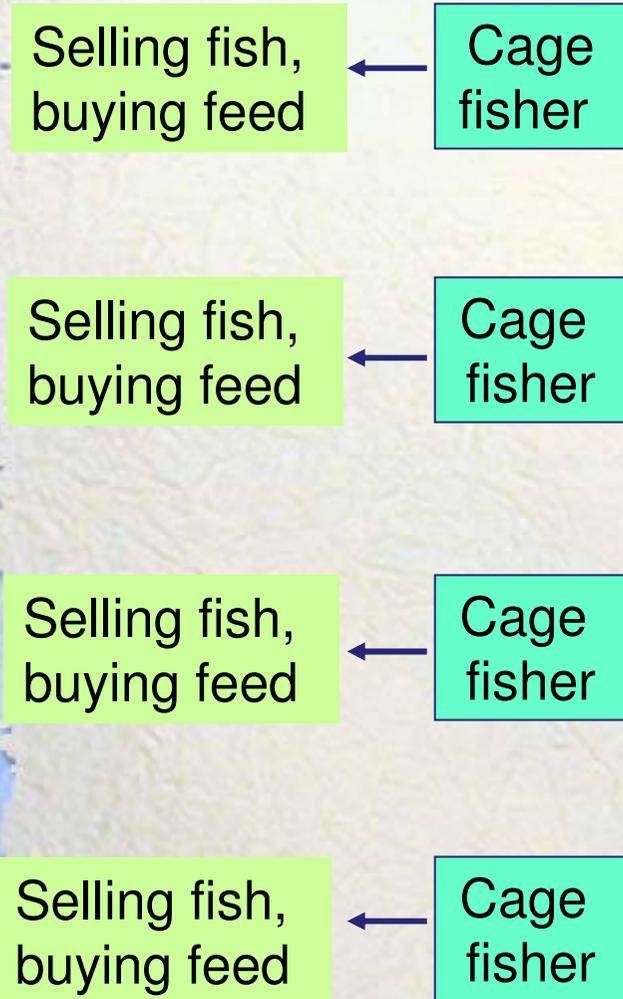
Post-Tsunami

- ◆ System of employing cage culture as who come first who reserve the place first
- ◆ Normally, reserved the place of culture in front of house that convenient to work
- ◆ They adjusted the place of cage to avoid conflict with other
- ◆ Individually operated in culturing process

- ◆ Gradually set up the cage with small number since lack of source investment
- ◆ Set up cage at the same place as it was before
- ◆ Some fishers who cannot afford to reinvest new cage, but they still have the same place to set up cage
- ◆ Group operation in culturing process

# People establish an aquaculture group for self-help

## Before crisis



Cage fishers group

## After crisis

Reconstructing new cages with collected equipments

Selling fish together to reach demand of market

Buying feed for fish together to reduce the price and cost of transportation

Exchanging information to solve confronted problems

# Khao Thong Shallow water set net



# Situation of shallow water set net

Pre-Tsunami



Post-Tsunami

- ◆ Set net was installed along the coastal area of sub-district
- ◆ They adjusted the place of set net to avoid conflict with other fishing gears
- ◆ Some fishers had license of set net but they did not install
- ◆ They preferred to earn income by other fishing gear

- ◆ Rapidly re-install set net with the mutual help among fishers
- ◆ Many fishers want to install set net since they fear to go out for fishing
- ◆ Fishers make agreement to control number of set net by allowing only who have license to install in the same place
- ◆ Not allow to expand the area of installing set net

## The CRM activities during recovery period

- ✿ Reduce the critical of investment cost
  - Promoting alternative job to fishers' family
  - Promoting money savings
- ✿ The mutual help and network among people was strengthened to solve the faced problem
- ✿ Protect natural resource for long term utilization
  - Planning to replant mangrove trees in Sub-district area to increase the nursery ground of aquatic animals
  - Enhancing fish larvae to mangrove area
- ✿ Ao.Bo.To. as the facilitator
  - Finding source of relief help to solve both economic and coastal resource management

Alternative Institutional  
Arrangement for Effective  
Coastal Resource Management

# Conclusions

## ◆ ***Capacity of existing organizations***

- Each organization has advantages and disadvantages in regards of ability.
- Ao.Bo.To. has autonomous authority to allocate budget for sub-district development.
- Leader and committee of village has power to govern people and their police function authority supported the monitoring mission.
- Fishers group who directly involves in coastal activities has knowledge and up-to-date information about resources that is important for management planning.
- Decentralization on coastal resource management by delegating clear function and authority can enhance management capacity of local organization.

# Conclusions (Ctd.)

## ◆ ***People's participation***

- People prefer to manage the local resource by village and sub-district level.
- Consensus among people needs legitimate support.
- People are encouraged to join in making decision and implementation process on community development plan both at village level and sub-district level.
- The position of people in community has relationship with the participation in monitoring and surveillance mission.
- Ordinary people do participate in monitoring mission as bay-watching volunteer.

# Conclusions (Ctd.)

## ◆ ***Related legislations***

- The Constitution of Thailand supports the decentralized authority of natural resource management to local level.
- The Ao.Bo.To. has authority to regulate sub-district rule for self-management.
- Comprehensive knowledge about existing law could apply to local resource management.

## ◆ ***Dealing with uncertain situation***

- Social network is the important link among local people to solve economic problems that may reduce the pressure of unsustainable resource use.
- The local organization is an important facilitator to help people relieved from critical situation both in economic and coastal resource management.

# Recommendations

## ◆ ***Awareness of people in participation***

- Make clear understanding from people to get the effectiveness of coastal resource management
- Encourage people to realize the benefit of participation in making decision and implementing process on community development plan
- Educate people by arranging training

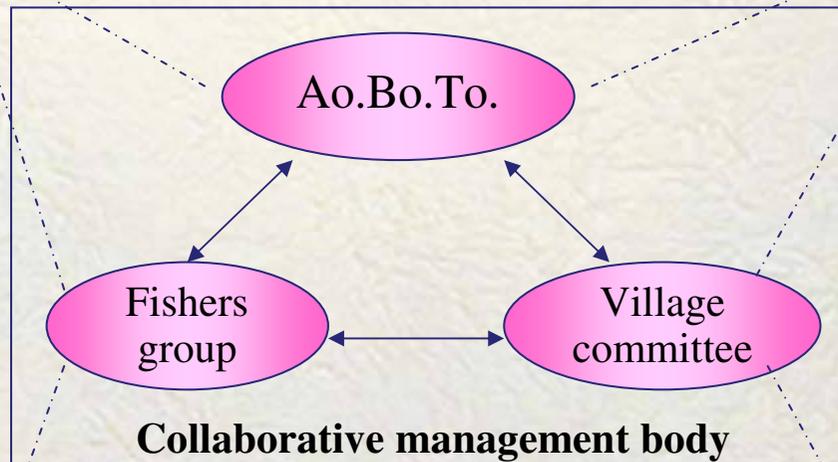
## ◆ ***Network among Sub-Districts and Province***

- Establish network between the neighboring Sub-Districts to make more effective regulation in wider area
- Empower the capacity of collaborative management body on coastal resource management by support from related government agencies

# Designated management body at local level

- Enhance capacity of Ao.Bo.To. on budget allocation
- Train the member and staffs of Ao.Bo.To. on related laws to self-regulate the management measure within jurisdiction

- Build awareness on sustainable resource use
- Encourage people to participate in management process

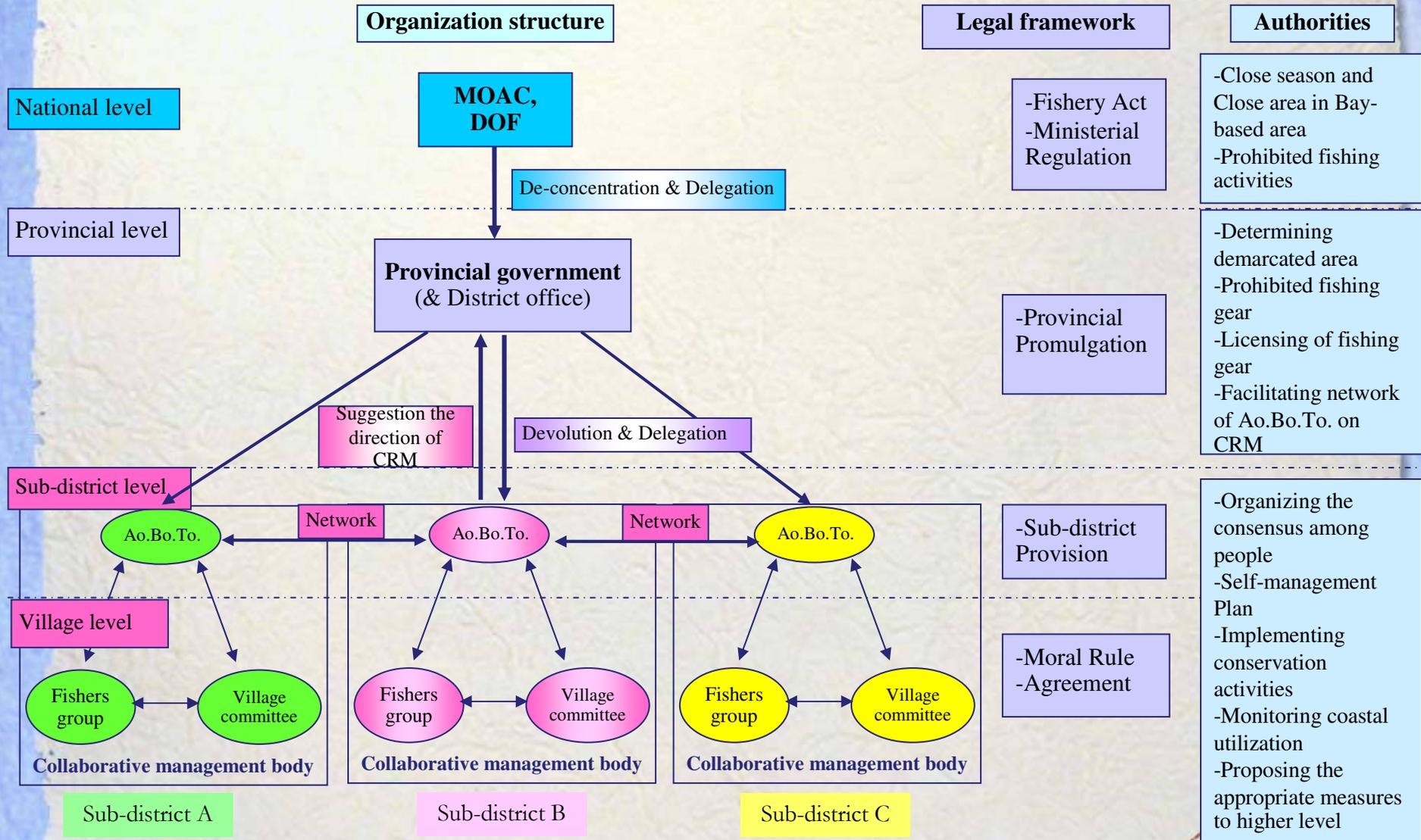


- Support enforcement facility to village committee
- Train volunteer on monitoring coastal activities



Sustainable Use on Coastal Resource

# Proposed mechanism of decentralization and participation on CRM



# Policy implication

## ***Institutional arrangement* in local level for developing the locally based coastal resource management**

- ◆ *Organization re-structuring*  
Form the collaborative management body
- ◆ *Legislation revision*  
Promulgate the prescriptive plan and process of decentralization on coastal resource management
- ◆ *Encouraging people's participation*  
Promote the formal and practical method to get people's participation
- ◆ *Enhancing organization's capacity*  
Enhance knowledge of Ao.Bo.To. member on related function and authorities on CRM
- ◆ *Systematizing organization's rebuilding capacity*  
Arrange the center of managing the relief help

A photograph of a sunset over a body of water. The sun is a bright, glowing orb in the upper left quadrant, casting a long, shimmering reflection across the water's surface. To the right, a large, dark, forested island or headland is silhouetted against the sky. In the background, a range of low mountains is visible under a hazy, orange-tinted sky. The foreground shows the dark silhouettes of trees and what appears to be a tent or canopy structure on the left.

Thank you very much