

AN EFFECTIVE INVESTMENT IN COASTAL FISHERY MANAGEMENT: THAILAND'S EXPERIENCE

by

Sakul Supongpan
Department of Fisheries, Bangkok, Thailand

1. Background

Thailand has a coastline of 2,625 km and an area of 420,280 km within the 200-mile zone. Coastal fishing is therefore one of the country's most important occupations. According to the 1995 marine fisheries census, there were 2,548 fishing villages which included 214 commercial fishing villages and 2,334 coastal small-scale fishing villages. The latter accounted for about 92 per cent of all marine fishing villages.

Most of Thai coastal small-scale fishermen live at subsistence level. They have been currently in crisis due to the near-depletion of fish stocks and a lack of the basic infrastructure.

1.1 Marine Resources Depletion

Depletion resulted from

- modernized fishing technology and exploitative fishing gear, particularly by commercial fishing boats/vessels
- industrial development and the uncontrollable demand for raw materials to feed processing industry, which have stimulated fishermen to greater efforts
- exploitation and depletion of coastal habitats, particularly mangrove forests, for aquaculture

1.2 Lack of Fishing Infrastructure

The basic infrastructure is inadequate for many coastal fishing communities. A scattering, or living in isolation, of fishing villages along the coastlines makes it difficult to manage marine fisheries through the existing system of commercial fish landing and marketing which provides fishing facilities such as piers, landing places, and water/power systems to the fishing communities. The lack of adequate basic structures which are crucial to coastal fisheries has increased an unnecessarily financial and marketing pressure on small-scale fishermen.

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To resolve coastal small-scale fishery problems, the National Economic and Social Development Board (NESDB) agreed that a series of marine fishery development projects were implemented by the Department of Fisheries. This included the Southern Fishing Villages in Rural Poverty Areas Project (1983-86), the Small-Scale Marine Fishery Development Project (1985-86) under the Fifth National Development Plan, and the Coastal Small-Scale Fishery Development Project Phase I and II under the Sixth and the Seventh National Development Plans (1987-96).

Despite all governmental efforts, the problem of coastal small-scale fishing livelihoods remains. The coastal small-scale fishermen are still severely affected by depleting fish stocks and even changing phenomena in some villages. At the current rate of population increase, and with a stable or increasing level of demand for fish, their fishing problems are further aggravated. In trying to deal with such a difficult situation, the Department of Fisheries has continued to implement the Coastal Small-Scale Fishery Development Project, with a greater emphasis on institutional arrangements and local participation in the management process.

2. Strategies for dealing with the small-scale fishery problems

2.1 Fishing Facility Construction

If the small-scale fishing livelihood is going to be gotten better, several conditions must be improved. This includes coastal rehabilitation, conservation and effective exploitation of fishery resources, and provision of basic fishing infrastructure. Living in remote areas out of reach, some small-scale fishing villages are in need of basic structures for their fishing operation, such as community landings, fishing-gear repair shops and stores, capstans, and freshwater tanks. These fishing facilities need to be developed or constructed by the government as part of nationwide socio-economic development programs.

2.2 Coastal Rehabilitation

The coastal zone is an area of high population density, especially in small-scale fishing communities. Some of the key problems which emerge are competition for the resources, over-exploitation, the use of non-selective fishing gear, and coastal habitat destruction. The rapid depletion of coastal resources and habitats directly affects many thousands of small-scale fishermen and their families which primarily live in poverty. Many of them have to seek different alternatives which press more adverse effects on fishery resources and coastal ecology. An increasing number of villagers begins to use modern fishing gear and goes fishing further offshore to get more catch, accelerating unnecessary

investments and conflicts with commercial operators. Such problems can be resolved by restoring coastal resources and habitats through effective implementation of mangrove rehabilitation, artificial reef construction, and live species stocking.

2.3 Demonstration and Promotion of Non-Destructive Fishing Gear

Many coastal small-scale fishermen discard their old fishing gear before they consider recycle the worn nets or the broken tools. There is apparently no intention of maintaining or repairing the fishing gear which is due mainly to the lack of the technical know-how to attempt such maintain and/or repair job. Involving the coastal small-scale fishermen in non-destructive fishing gear demonstration and promotion activities will enable them to familiar with different types of gear, to understand the impacts of certain kinds of gear on fish stocks and habitats, to learn how to apply the tools that suit particular fishing grounds, and to be apprenticed to gear repairers. In this respect the fishing gear demonstration and promotion activities will contribute towards the coastal small-scale fishermen's lower costs of fishing operation, and towards coastal resource conservation.

2.4 Development of Alternative Sources of Income and/or Livelihoods

Coastal Aquaculture

Aquaculture potential of Thailand's coastal areas has been well-accepted as an alternative source of income. The pond and cage culture systems along the country's coastlines reveal how valuable and productive aquaculture can be which more than compensates for losing the exclusive fishing zones. Expansion of coastal aquaculture is also due to other combinations which make the development goes faster: depleted fish stocks that reduces capture; over-fishing; high fuel costs; and the deterioration of the aquatic environment. The technologies for effective production and processing, as well as suitable sites, are also available. Further expansion of the coastal culture

development is therefore physically and technically feasible. Well-planned activities and effective production of cultured marine fisheries will contribute towards better livelihood of coastal communities while decrease fishing pressure on natural stocks.

Post-Harvest Production

Fisheries, both capture and aquaculture, is a major source of animal protein for the population, particularly low-income residents in remote rural villages. Although coastal people, in general, prefer to consume fresh fish and to preserve or convert fish to various fish products, there is still a need to improve facilities and infrastructure, as well as human resources capability for fish handling, processing, distribution, and marketing. More efforts should be made to

provide training to the coastal small-scale fishery communities for making the full use of fish catches for direct human consumption.

3. Some Perspectives From Implementing Agency

The DOF's coastal small-scale fishery development project is aimed at promoting the small-scale fishing livelihood. The project was initiated in the Fifth National Development Plan and has been implemented ever since. A variety of project activities can be grouped into five components.

3.1 Basic infrastructure component

This component provides fishing infrastructure necessary for small-scale fishery development to selected coastal villages. Frequent and appropriate uses of such infrastructure by the villagers thus indicate success in achieving the objective of this component. The implementing result, however, has revealed that most of these structures have not been fully utilized.

Fish landing piers and breakwaters are not fully used to capacity - only around 80 per cent of the structures are being used. The failure lies behind a few reasons:

- The structures have not been built according to strict specifications, and thus cannot be used;
- Some coastal fishermen prefer to park their fishing boats right behind their back door and unload fish in their house before deliver to a fish market.

Fishing gear repair shops, fish processing houses, freshwater tanks, and other facilities are not fully utilized due to the following problems:

- Poor design and construction that do not make possible for the structure's practical usefulness;
- Unfavorable construction sites-several public properties made available for construction are remote from community centers, and thus are not suitable location;
- Underdeveloped raw material supply, storage and marketing systems - fishermen are not prepared for the development of fish processing and marketing.

3.2 Coastal rehabilitation component

A significant number of large artificial reef complexes are successfully placed in several coastal fishing grounds. According to fishermen, increasing fish stocks and biodiversity resources have been observed in and around such grounds.

However, the problem still remains. Some reef complexes have been destroyed by commercial trawlers. There is a lot of debris everywhere which obstruct small-scale fishing operation.

3.3 Fishing gear demonstration component and Supplying (Fishermen groups)

It is hard to implement the fishing gear demonstration activities which require the fishermen's co-operation and changing their attitude towards new livelihoods. Continuity in the activities and expansion of demonstrating modules into new kinds of fishing gear will prove a success. However, so far as the project is concerned, only continuity has been observed. To overcome some of the obstacles the following is needed:

Local market conditions - a monopolized nature of the local markets will contribute significantly to the success of this component;

Attitude towards new livelihoods and a village culture - it is observed that where the fishing villagers are Muslims they tend to resist any changes in livelihoods and ways of living. An understanding of such limitation will help the official in dealing with the problem.

4. Fish product development (or fish processing) component (Housewife groups)

A number of factors contribute to the success of this component. This includes a change in consumption and marketing behavior, and some adjustment to the changing environments. Whether the fishing villagers have applied the knowledge to their everyday lives and whether this has led them to change their livelihood are thus the measures of success. Experience shows that participants of this component only use the knowledge in their everyday lives.

5. Aquaculture component (Aquaculture fishermen groups)

This component would be a new source of income and an alternative livelihood to the fishermen. To develop a sustainable coastal aquaculture livelihood, however, will require good environment. Continuity in providing sound management advice and problem solution is therefore very important.

Admittedly, there has not been much progress on the project implementation. The following factors have contributed to the success or failure of the Coastal Small-Scale Fishery Development Project.

- Natural environment factors
- Social and cultural values as perceived by fishing villagers

- Market factors

A possible suggestion is to conduct an intensive study on each project site, particularly on the social issues.

Some Perspectives from Beneficiaries

There is a sufficient evidence that the project has been well-accepted by the coastal small-scale fishermen and their families. Increasing number of villages are nominated for project site and activities are requested, particularly on infrastructure and artificial reefs. For success of the implementation it is important to ensure that the officials concerned have full knowledge and understanding of what is expected from the project activities and how to achieve the goals in different villages.

Project Constraints

- **Project administration** - diversified project activities, which include construction, demonstration and promotion and aquaculture, could be difficult to manage the project based on general administrative rules and standardized methods;
- **Project site** - diversified social and cultural conditions of the selected fishing villages have been major constraints.

Recommended Strategies

- **Project administration** - should be improved to create flexibility through single agency administration;
- **Project site** - detail studies on socio-economic conditions of the selected fishing villages should be conducted, both prior to and during, project implementation.

Thai Seas Rehabilitation Project Activities

1. Coastal fishery resources management project (community ownership rights in the fishery/collective fishing rights/territorial use rights in some coastal settlements)
2. Basic infrastructure activities
 - fishing infrastructure construction or renovation

3. Alternative livelihood activities
 - demonstration and provision of non-destructive fishing gear
 - coastal aquaculture
 - fish products development (fish processing and marketing)
4. Coastal conservation activities
 - artificial reefs construction and replacement
 - live species stocking (or releasing)
5. Coastal fishery development and management research activities
 - fishery research
 - research on socio-economic and cultural conditions

Plan for infrastructure facilities and activities allocation under the 8th National Economic and Social Development Plan for small scale fisheries development in 22 coastal provinces

Activities	Unit	Fiscal Year					Request 1997
		1997	1998	1999	2000	2001	
1. Artificial Reef Installation	sites	15	15	15	15	15	38
2. Retaining Wall	sites	25	25	25	25	25	40
3. Fishing Equipment Repairing and Storage	units	5	5	5	5	5	32
4. Rain Water Tank	units	5	5	5	5	5	32
5. Demonstration of Fishing Gears and Supplying	villages	30	30	30	30	30	40
6. Fishing Pica Construction	sites	25	25	25	25	25	40
7. Fish Processing and Nutrition	units	12	12	12	12	12	12
8. Green mussel and Bloody cockle culture	villages	10	10	10	10	10	21
9. Fish culture	villages	10	10	10	10	10	19
10. Seed releasing (number)	millions	30	30	30	30	30	38
11. Infrastructure Deepening (Marine Breakwaters, Guay, Artificial beach)	sites	10	10	10	10	10	7
12. Pilot Project of Fishing (rights)	villages	3		3		3	3

Basic Fishing Infrastructure: Level of Use, 1987-1991 and 1992-1995

Infrastructure	Landing Piers		Fishing Gear Repair Shops		Rain Water Tank		Fish Processing House	
	1987-1991	1992-1995	1982-1999	1992-1995	1987-1991	1992-1995	1987-1991	1992-1995
Unit	42	111	7	20	4	11	5	7
In Use (%)	88	90	58	72	73	75	59	50
Not In Use (%)	12	10	42	28	27	25	41	50

Public Hearings of Cases on Artificial Reefs

Usefulness	Favorable		Nonfavorable	
	1987-1991	1992-1996	1987-1991	1992-1996
Unit	30	68	30	68
Percentage	82	93	18	7

Small scale Fisheries Development Project 1987-1996

Activity	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Total
Total Cost	15,350,000	13,448,400	18,362,600	46,088,900	50,310,400	69,231,000	116,865,700	146,524,700	122,719,600	176,774,400	775,675,700
Land and Infrastructure Cost	2,650,000	4,201,800	4,753,400	32,000,000	33,413,000	38,103,000	90,650,000	111,050,000	89,150,000	144,150,000	550,121,200
Landing Piers		700,000	700,000	20,000,000	21,000,000	30,000,000	60,000,000	90,000,000	57,500,000	57,500,000	337,400,000
Retaining Wall				5,000,000	5,250,000	600,000	18,000,000	900,000	9,000,000	9,000,000	47,750,000
Marine Break Water									2,500,000	27,500,000	30,000,000
Fishing Gear Repair Shop Sand Stores	150,000	152,200	304,400	600,000	630,000	840,000	3,300,000	3,300,000	3,300,000	3,300,000	15,876,600
Fish Processing Houses		249,600	294,000	300,000	315,000	353,000	1,100,000	1,100,000	1,100,000	1,100,000	5,911,600
Rain Water Tanks		100,000	200,000		338,000	430,000	750,000	750,000	750,000	750,000	4,068,000
Artificial Reefs	2,500,000	3,000,000	3,000,000	5,600,000	5,880,000	5,880,000	7,500,000	15,000,000	15,000,000	45,000,000	108,360,000
Landing Pier Renovation Coast			110,000	500,000							610,000
Landing Device Cost			145,000								145,000
Total	2,650,000	4,201,800	4,753,400	32,000,000	33,413,000	38,103,000	90,650,000	111,050,000	89,150,000	144,150,000	550,121,200