

ARTIFICIAL REEFS CONSTRUCTION PROJECT IN THAILAND

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■ ARTIFICIAL REEFS CONSTRUCTION IN THAILAND

Department of Fisheries, Ministry of Agriculture and Cooperatives take responsibility and duty to construct artificial reefs in Thailand. The government has distributed annual budget for construction cost since 1985. From the 6th national socio-economic development plan in 1987, the project of artificial reefs construction was started until now.

Before the artificial reefs construction project began, there were many artificial reefs experimental studies done by Marine Fisheries Station. Department of Fisheries. Using both natural and man made materials such as rock, wood, used tires and concrete tube to build for reef modules in various shapes. Another reef materials were designed concrete block in pyramid shapes and simple dice block. The results showed its potential to develop for fishery resource enhancement, better fishing ground for small-scale fisheries.

On the early of artificial reef construction project from 1985-1986, used tires and concrete pipes were mostly used and installed by dropping from sea surface. With the few experience of artificial reefs construction, most of the reef blocks were scattered in wide area, less fish aggregating, sunken in muddy bottom, damaged by pair trawl net boat and made troubles to gill net fishing gear of small scale fisheries. Artificial reefs construction area was within 3 kilometers from shore, where push net and trawl net were prohibited, which one objective was to be an obstacle material for those illegal fishing.

In 1987, designed concrete dice block which dimension size of one meter was used. The reef blocks were installed in smaller area

of 6 square kilometers of each village site, divided into small groups at the corner and mid-length of the edge and one or two large groups at the center for better fish aggregating and reducing gill net damaged.

From 1988-1991 of the 6th national socio-economic development plan, there were two types of artificial reef construction

1. Small area artificial reef construction of 6-3 square kilometers for each village site Aimed for better fishing ground of small-scale fisheries. Reef block was concrete dice block which dimension size on one meter

2. Large area artificial reef construction of 50 square kilometers for each province site Aimed for fisheries resource enhancement and better fishing ground of fishery communities Reef block composed of concrete dice block which dimension size of 1.0 meter in large group and 1.5 and or, 2.0 meters in small group lining around

From 1992-1996 of the 7th national socio-economic development plan, two types of artificial reef construction were continued with some improvement in installation plan

1. Small area artificial reef construction

Decrease area into 0.5 square kilometers for each village site

Concrete dice block which dimension size of one meter in large group at center and 1.5 meters in small group at corner and mid length

2. Large area artificial reef construction

Concrete dice block which dimension size of 1.0 meter in large group for better fishing ground and 1.5 meters in small group lining around

From 1997-2001 of the 8th national socio-economic development plan, two types of artificial reef construction were continued with some improvement in installation plan

1. Small area artificial reef construction

Improve area into 1.0 square kilometers for each village site

Only concrete dice block which dimension size of 1.5 meter was used in 2-4 large group at center and small group at corner and mid length

2. Large area artificial reef construction

Maintained area of 50 square kilometers for each province site

Only concrete dice block which dimension size of 1.5 meter was used in large group and small group lining in cross section

From 2001-2003 of the 9th national economic development plan, two types of artificial reef construction were continued with some improvement in installation plan

1. Small area artificial reef construction

Same as before but there is a tendency to install in many groups instead of by area

2. Large area artificial reef construction

Decrease area into 30.0 square kilometers for each province site

There is more difficult in decision making of artificial reef site from difference fishing villages

■ OBJECTIVES IN ARTIFICIAL REEF CONSTRUCTION

1. To attract or aggregate fish for more efficiency fishing ground

2. To protect juvenile and young fish or be nursery ground which safety from high efficiency fishing gears such as trawl net and push net

3. To increase fishery resource production in natural

4. To be a new habitat for target fish which wanted to improve stock enhancement

■ ARTIFICIAL REEF SITE SELECTION

1. Water depth at least 5.0 meters at LLW for safety in marine transportation

2. Bottom condition of the sea is not mud and silt to avoid in sinking of concrete reef block

3. Reef site area is far away from river mouth to avoid in rapid salinity changing

4. There is not much sedimentation to avoid unsuccessful succession of sessile organisms

5. Reef site area is not an obstacle for marine communication

6. Reef site area is not in area declare for marine utilities such as port area, anchor area, pilot navigation area etc.

7. Reef site area is not in area declare for navy utilities such as navy protected region, marine exercise area, country border line area etc.

■ STEP OF ARTIFICIAL REEF CONSTRUCTION

1. Site selection

2. Choosing area with the agreement of local fishermen

3. Survey of fishing status and environment conditions

4. Ask permission from Navy and Harbor Department

5. Bid process

6. Control on reef block construction and installation

7. Inform and advertise position of reef site to local fishermen and near by

8. Report to any government agencies concerned

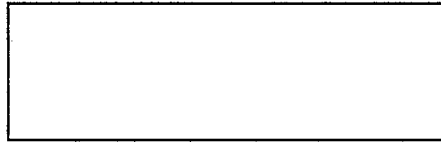
Result of Artificial Reefs Construction by DOF, from 1985-2003

Year of Budget	Small Areas			Large Areas			Total	
	Budget (Baht)	No. of Village	Area (km ²)	Budget (Baht)	No. of Province	Area (km ²)	Budget (Baht)	Area (km ²)
1985	3,000,000	5	40.81				3,000,000	40.81
1986	2,500,000	5	47.80				2,500,000	47.80
Total	5,500,000	10	88.61				5,500,000	88.61
6th National Socio-economic Development Plan								
1987	2,500,000	5	30.00				2,500,000	30.00
1988	2,000,000	4	16.00	30,000,000	2	100.00	32,000,000	116.00
1989	2,500,000	5	22.00	30,000,000	2	100.00	32,500,000	122.00
1990	5,600,000	8	24.00	30,000,000	2	100.00	35,600,000	124.00
1991	5,880,000	8	24.00	30,000,000	2	100.00	35,880,000	124.00
Total	18,480,000	30	116.00	120,000,000	8	400.00	138,480,000	516.00
7th National Socio-economic Development Plan								
1992	5,880,000	8	24.00				5,880,000	24.00
1993	7,500,000	10	2.50	30,000,000	2	100.00	37,500,000	102.50
1994	15,000,000	10	5.00	30,000,000	2	100.00	45,000,000	105.00
1995	15,000,000	10	5.00	30,000,000	2	100.00	45,000,000	105.00
1996	45,000,000	29	14.50	15,000,000	1	50.00	60,000,000	64.50
Total	88,380,000	67	51.00	105,000,000	7	350.00	193,380,000	401.00
8th National Socio-economic Development Plan								
1997	10,000,000	5	2.50	30,000,000	2	100.00	40,000,000	102.50
1998	20,000,000	10	5.00	15,000,000	1	50.00	35,000,000	55.00
Addition	30,000,000	10	10.00	20,000,000	1	50.00	50,000,000	60.00
1999	60,000,000	20	20.00	40,000,000	2	100.00	100,000,000	120.00
2000	75,000,000	25	25.00	40,000,000	2	100.00	115,000,000	125.00
Addition	12,000,000	4	4.00				12,000,000	4.00
2001	45,000,000	15	15.00	20,000,000	1	50.00	65,000,000	65.00
Total	252,000,000	89	81.50	165,000,000	9	450.00	417,000,000	531.50
9th National Socio-economic Development Plan								
2002	33,000,000	11	11.00	20,000,000	1	30.00	53,000,000	41.00
2003	48,000,000	16	16.00	40,000,000	2	60.00	88,000,000	
Total	445,360,000	223	364.11	450,000,000	27	1,290.00	895,360,000	1,654.11

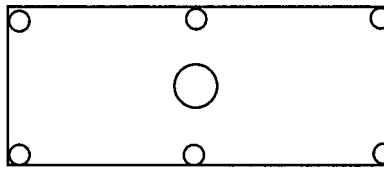
Development in Small-scale Area of ARs Construction

Reef Block installation plan

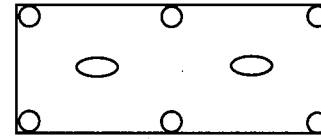
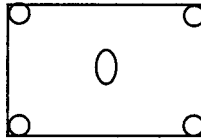
Large area (8 km²)
Scater around area



Decrease area to 3 sq.km.
Group arrangement



Decrease area to 0.25 & 0.5 km
1.0 m reef block in large
group at center
1.5 m at corner outside



Increase area to 1 sq.km.
only 1.5 m reef block

