

FIRST DRAFT ANNUAL REPORT
PARTICIPATORY MANAGEMENT OF MANGROVE FOREST RESOURCES PROJECT
MoE/ IDRC

**Prepared
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The integrated Participatory Management of Mangrove Forest Resources (PMMR) project was approved for two years December 1, 1997 to November 30, 1999 of funding supported by the International Development Centre in Canada.

The project was be implemented by the Department of Nature Conservation and Protection and the Department Natural Resources Assessment and Environmental Data Management of the Ministry Environment (MoE) for Cambodia.

The main collaborating agencies will include the Koh Kong Provincial Authorities, especially the Department of Environment, Department Rural Development, Department Agriculture Forestry and Fishery Koh Kong. NGOs such as the Cultural and Environmental Preservation Association (CEPA) will also involved. The Coastal Coordinating Unit of the Ministry Environment will facilitate co-ordination between various coastal projects programs and organization.

Technical and financial support was be provided by the International Development Research Centre (IDRC), Wetlands International (WI), the Danish International Development Agency (DANIDA) and the Coastal Resources Research Network (CoRR).

The PMMR project has the following three main components:

1. Community organization/participation
2. Resources inventory/assessments (including participatory mapping)
3. Sustainable livelihood options

This project will provide a framework of concepts, trained human resources and institutions for integrated community-based planing and management of the proposed Ramsar site and associated national protected coastal areas in Koh Kong province, Cambodia.

Participatory research to study existing community-level institutions and the fostering of new ones, will enable resources users to contribute effectively to co-management of the mangrove ecosystem and its resources. The project will carry out participatory resource inventories and facilitate community analysis of enhanced management and production strategies foe sustainable livelihoods of local people dependant upon the mangrove ecosystem for their livelihood.

This community-based resource management project will focus on selected villages in area of the proposed Koh Kaptic Ramsar site and Peam Krasaop Wildlife Sanctuary, Koh Kong Province Cambodia, near the Thailandborder (refer to map of study). Effort for community input will focus on the commune level, while working with the relevant provincial authorities, with Koh Sralao village as the initial of entry.

II. Long-term Project Goals:

- To provide options for coastal communities of Koh Kong Province to participate in the planing and management of the natural resources of the mangrove forests of a protected area currently populated by a mixture of long term-residents, internally displaced people and seasonal migrants.
- To understand the distribution among the members of a community in Koh Kong of knowledge of mangrove resources use and of their differential ability to access and use these resources which support their livelihoods.
- To initiate a process of natural resource management in and around the Peam Krasaop Wildlife Sanctuary and Koh Kaptic Ramsar site in the mangrove ecosystem of Koh Kong Province, integrating community participation with existing institutions of the national and provincial government.

III. Objectives:**1. Resources use Patterns**

To documents and assess patterns of resource use and the dependency of livelihood on mangrove resources differentiated by social groups, within the context of developing a framework for community-based resource management. Activities will include

- Research philosophy and design workshop
- PRA training sessions and field work
- Individual and group interviews
- Participant observation
- Environmental education and awareness raising
- Information sharing
- Community meetings

Expected outputs are:

- ◆ Data on resources use, sources of income and their distribution within the village
- ◆ Data on the sources and seasonality of food and income in selected villages
- ◆ Enhanced environmental awareness of the people in the project area through participatory analysis of their resource use and dependency.

2. Institutional Analysis

To identify and evaluate the institutional arrangements important for mangrove resource management. In a coastal village and their relation with commune, provincial and national institutions, and to assess the feasibility of these or as necessary alternative institutions, for the management of the Peam Krasaop Wildlife Sanctuary and associated multiple use zones. Activities will include:

- Stakeholder and institution identification
- Institutional analysis
- Study tour
- Case studies
- Assessment of alternative institutions
- Training workshop
- Collaboration with other projects and organizations

Expected output are:

- ◆ Identification of the user groups in Koh Sralao and their formal and informal institutional arrangements
- ◆ Data on the stakeholders in the area and on the control of the means of production for certain commodities, eg. charcoal and fisheries.
- ◆ Updated documentation of the policies and plans of the commune, provincial and central governments for the Peam Krasaop Wildlife Sanctuary and Koh Kapic Ramsar site .
- ◆ An analysis of the responsibilities and expectations of various levels of government and the local community with respect to resource management within and around the protected areas.

3. Draft Guidelines for Participatory Management Planning

To evaluate the role of local communities in, and support them in drafting plans for management of the Koh kapic Ramsar site and the Peam Krasaop Wildlife Sanctuary which will impact local communities. Activities will include:

- Collaboration with other projects and organizations
- Training on management planning
- Study tours
- Workshop (communities forestry, management options, etc.)
- Round-table discussions

Expected output:

- ◆ Draft management plans for the Ramsar site and Wildlife Sanctuary which include the participation of local communities and have the support of the provincial government and Ministry of Environment.
- ◆ Improved capacity of local community to participate in stakeholder consultations on resources management as evidenced by increased awareness of issues and participation in round-table discussion

4. Resource Inventories and Analysis

To assess the status and recent changes of the mangrove, sea-grass beds and coral reefs in Koh Kapic Ramsar site and PeamKrasaop Wildlife Sanctuary, and document the distribution and expansion of communities in the area. Activities will include:

- Training on resource assessments
- Research philosophy and design workshop
- Participatory mapping and assessments

- Species, habitat, and ecosystem inventories
- Water quality testing
- Seasonal variation monitoring
- GIS mapping and ground truthing (what the heck is this)
- Workshop (mangrove ecosystems, etc.)

Expected output:

- ◆ Map and reports documenting the local and status of natural resources around the Peam Krasaop Wildlife Sanctuary and Koh Kapic Ramsar site.
- ◆ Map and reports on the location and composition of human settlements and activities in and around the Peam Krasaop Wildlife Sanctuary and assessment of threats to sustainable livelihoods.

5. Sustainable Livelihoods

To assess, through participatory research, option for sustainable livelihoods in one village highly dependent on the mangrove ecosystems and as possible, test option for food production and income generation on a pilot scale. Activities will include:

- Participatory research from local people
- Assessment of livelihood option
- Training and workshop on sustainable livelihoods
- Study tours
- Experimental testing of livelihood options
- Demonstration projects
- Monitoring and evaluations
- Report writings

Expected output:

- ◆ Analysis and assessment of livelihood options for selected villages
- ◆ Experimental testing of livelihood options for selected villages
- ◆ If possible, demonstration projects of improved or alternative income sources in selected villages

IV. Project Approach

The area covered by the Peam Krasaop Wildlife Sanctuary and Koh Kapic Ramsar site can be characterized as dynamic with increasing pressures on local resources resulting in uncertainly for planning of research in support of livelihoods. Changes are occurring in population, government policy, planning and enforcement. Previous work under the MoE/IDRC project “Mangrove Forest Resources and Local Communities” 1994 to 95, as well as other program work with MoE and the current RSA have provided sufficient baseline data for initial planning , but it is clear that specific research plan will have to be responsive to changes as they occur.

The stated objectives and the initial work plan will guide the research work in this project. Specific of work in the second year will be determined through a process of ongoing field research, evaluation, consultation, and further planning. The initial activity will be to train the field researchers and post them in one village, with the primary task of addressing project objectives 1 and 2, documenting resources use patterns and institutional arrangements. Other research for objective 3 and 4 will also start within the first six month of the project. An advisory committee will meet with the field staff approximately every six months to review the research results and set plans for the subsequent period.

The project work will start in one village but the initial field work include observations and data collection from the surrounding commune and district. Based on the results of the research, expansion to other villages will be considered. The assessment of resources will cover the area included in the Peam Krasaop Wildlife Sanctuary.

Past experience teaches us that participatory research such as is proposed here must be responsive to local needs and expectations. It is opportunities in dealing with the needs of local people and must be sensitive to the expectations raised when outsiders enter the villages. Working with local people on the management of resources is particularly difficult due to their lack of experience, their distrust of government’s institutions, a short planning horizon resulting from recent history of turmoil in the country and a lack of exposure to demonstrable success of similar approaches producing sustainable livelihoods. Thus, the specifics and budget allocations to address livelihood options in year 2 will be determined as the village research is assessed and specific activities are proposed.

The village of Koh Sralao has been chosen as the first site of field work because it is located within the proposed Ramsar site and earlier work has shown that the village is highly dependent on the mangrove ecosystem for food and income. It is also a village which has a core group of families resident for a number of generations. Permanent residents will make it easier to initiate work leading to long term management of local resources. Collaboration with other organizations and NGOs will cover a broader area in anticipation of future expansion of the work.

V. The Project Management

The PMMR project was collaborative effort of the Ministry of Environment and International Development Research Centre, as well many local and international partners. It was implemented jointed by two department within the Ministry of Environment: Department of Natural Conservation and Protection and Department of Natural Resource Assessment and Environmental Data Management. The

Project mangement and core research team consists of the following members:

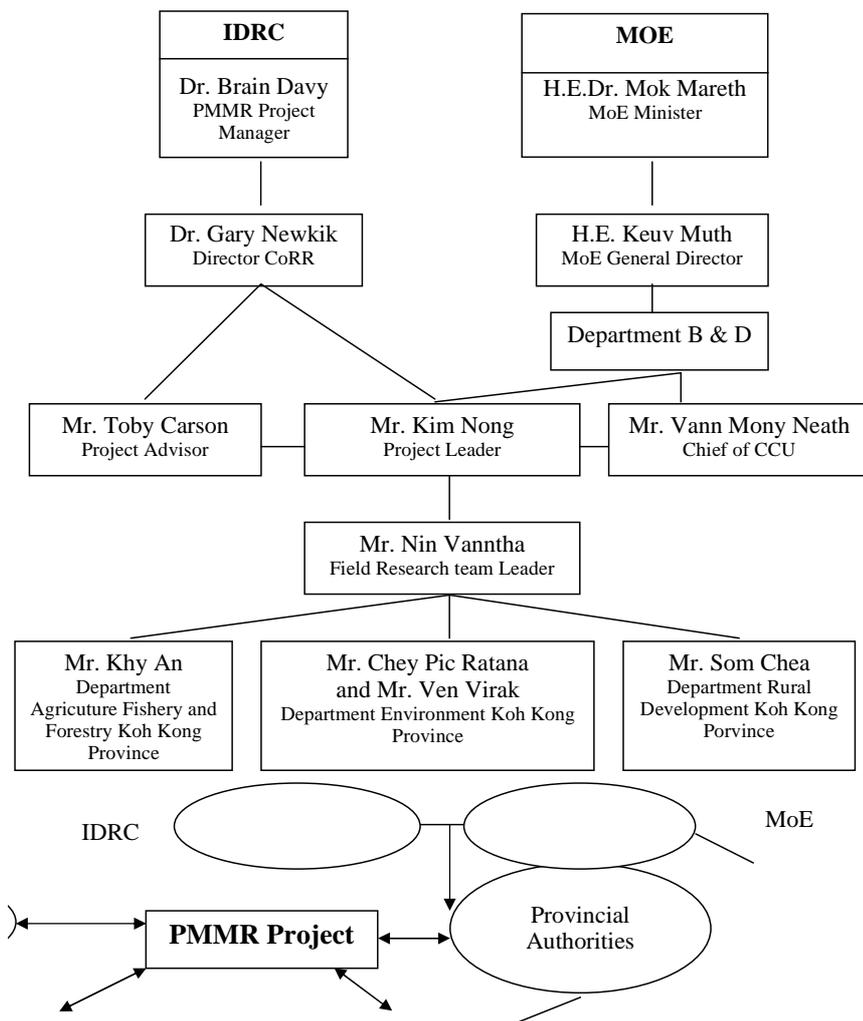
- 1) Dr. Brain Davy Project Manager, IDRC
- 2) Dr. Gary newkirk Project coordinating CoRR/IDRC
- 3) H.E. Dr. Mok Mareth Project Controler, Minister of Ministry Environment
- 4) Mr. Kim Nong PMMR project leader, Department of Natural Conservation and Protection MoE
- 5) Mr. Nin Vanntha PMMR field research team leader, Department of Natural Resources Assessment and Environmental Data Management
- 6) Mr. Toby Carson PMMR project advisor/IDRC
- 7) Mr. Khy An Research team, Provincial Department of Agriculture Forestry and Fishery, Koh Kong
- 8) Mr. Ven Virak PMMR Research team, Provincial Department of Environment, Koh Kong
- 9) Mr. Cheypic Ratana PMMR Research team, Provincial Department of Environment, Koh Kong
- 10) Mr. Som Chea PMMR Research team, Provincial Department of Rural Development, Koh Kong

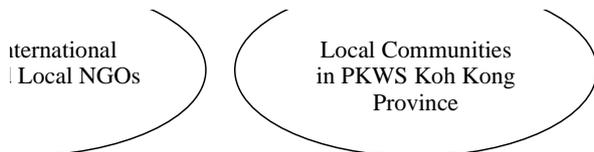
The project was coordination with national level, provincial level officers and cooperation with the Environmental Management of Coastal Zone Project, Community forestry and Wetland International office in Cambodia.

The coordinating member of the project such as:

- 1) H.E. Khev Muth Director General MoE
- 2) Mr. Chay Samith Director Department Natural Conservation and Protection MoE
- 3) Mss. Pum Vichet Deputy Director Department of Natural Resources Assessment and Environmental data management, MoE
- 4) Mr. Vann monyneath Chief of Coastal Coordinating Unit/MoE
- 5) Mr. Souv Sinthoun Chief of Provincial department of Environment Koh Kong

Chart of Project Administration and Collaboration





PART ONE TRAINING AND WORKSHOP OUTPUTS '98

The focus of this report is to show the PMMR team activities from beginning of the project December, 1997 until November, 1998. We will show what the PMMR team did and the result of activities.

1.1. Fist Training

The fist training course was called “**Mangrove Forest, Fishery and Aquaculture**” and was held from February 18 to 26, 1998 in Koh Pich Hotel, Koh Kong Province. This course was organized by PMMR team under co-sponsor by Participatory Management of Mangrove Forest Resources Project MoE/IDRC and Coastal Environmental Management Project MoE/DANIDA. There were 63 participants, of them 7 dignitary people, 7 honorary guests from Provincial Departments, 9 facilitators, and 7 resources people. The 24 participants were also from the Ministry of Environment, Agriculture Forestry and Fisheries, Tourism, Industry, Rural Development, and Coastal provincial-municipal authorities (sponsored by the DANIDA project) and PMMR team members in which 6 from the provincial authorities, 10 from Peam Krasaop region (heads of villages, communes, and district), 1 from provincial cabinet, 1 from provincial Provincial Rural Development and 1 from Provincial Women Affair.

◆ Objectives

1. To provide training in mangrove ecology and data collection, user, threats and management options
2. To facilitate assessment and mapping of the status of mangroves resources in the area of Peam Krasaop Wildlife Sanctuary and Koh Kapik Ramsar site which can be used as a case study for other areas along the coastline
3. To provide training in sustainable management of fishery and aquaculture
4. To facilitate assessment and monitoring of fisheries and aquaculture resources in the area of Peam Krasaop Wildlife Sanctuary and Koh Kapik Ramsar site which can be used as a case study for other areas along the coastline

The mangroves training package addressed the following broad themes:

- (a) Description of biology/ecology of mangroves (reproduction and lifecycle, flora and fauna dependencies, community structure, dynamic regime);
- (b) Mangrove mapping and assessment (field verification of air-photograph interpreted maps, training in field methods including transects, quadrats, species, identification and resource assessments, acquisition of qualitative/quantitative field data);
- (c) Mangrove resources utilization (sustainable exploitative uses, local knowledge, economic valuation, socio-economic and community influences use pressures);
- (d) Resource management opportunities and option (sustainable use requirements, day-to-day problem of local people, resource use conflicts and conflict resolution, Cambodian options and priorities, experience drawn from the region, recommended approach to sustainable management, priority steps/interventions).

◆ Methodology

The methodology of this training is to presents the content of each topic, cater training materials (hand-out), show slides and to give good examples group discussion and debate, idea, experience sharing, and initiatives of each group to set up priorities, were made. In addition field studies and surveys on the general situation to identify problems, issues and interview with local people with respect to short question for getting the facts were also conducted.

- Lectures
- Visuals, overhead and slide projector, etc.
- Field surveys (including orientation and debriefing)
- Small group exercises
- Mapping, transect, quadrad and assessment techniques
- Case studies
- Small group discussions

◆ Evaluation

The positive results from the evaluation of this training are as follows:

- 12% of the total participants evaluated the training as Excellent;
- 80% Good and
- Only 8% Fair

◆ (See Annex 1)

1.2. Second Training

Participatory Rural Appraisal (PRA) training for the participatory Management of Mangrove Forest Resources Project (MoE/IDRC) was expected to be implemented in late January but had to be postponed due to funding and timing constraints. Introductory training was provided for the research team in Koh Kong province from February 12-15 and during the mangrove fisheries and aquaculture training from February 18-26, 98.

As a result, PRA training was planned for March 31 to April 6 with assistance of Becky Rivera and Fredo Lazarte, training Coordinators of the Tambuyong Development Centre, the Philippines. The attending on this training was 23 participants: 2 resource persons from Tambuyong Centre of the Philippines, 7 member of the PMMR research teams, 1 translator from Wetland International, 2 staffs from Community Forestry Unit, 1 Deputy Director of Natural Resources Assessment of MoE, 5 from Provincial cabinet and departments, 2 from district offices and 3 from community leaders and chief of village in Peam Krasoap Wildlife Sanctuary area.

◆ Objective

The PMMR research team has identified both long-term and short-term objective:

Long-Term:

- To work with community so that local people can participate in the project
- To build relationship between local people, government agencies and NGOs
- To train and build the capacity of local people so they can join in planning for the co-management of coastal natural resources
- To assess local resources use patterns, institution, livelihoods, and management planning options through participatory research.

Short-Term:

- To build capacity of the research team and other people related to the project for participatory research and to assess about local socio-economic conditions;
- To provide knowledge and skills in PRA philosophy, tools and field methods;
- To identify and understand the priority issues concerning to natural resources utilization in local communities.

The training module's working title is: " PRA in Resource Management, Issues and challenges " There are three main objectives of the training module:

1. To discuss the importance of PRA in community resource management;
2. To share some PRA methods used by CBCRM practitioners in the Philippines;
3. To share insights on issues and challenges encountered in conducting PRA in coastal communities.

◆ Philosophy

- Why do PRA?
- Who are the beneficiaries?
- What are the advantages and limitations
- How is it carried out?
- Principles
- Participation
- Collecting information together with community
- Sharing of information
- Research benefits community
- Long-term commitment

◆ Methodology and Tools/Techniques

(a) Mapping and diagrams

The training was to provide theories and field work on 3 communes, Koh Kapic, Peam Krasoap and Toul Kaky in Peam Krasoap Wildlife Sanctuary.

- Transect and village map in each of these villages
- Seasonal Calendars and Daily Activities Calendars, Venn diagrams, Flow diagrams,
- Community structures, Institutional analysis, Problem tree, Problem ranking, Decision trees and livelihood analysis.

(b) Interviewing

In the process of this training all participants was spend 1 day to interview with local people in up each villages such as:

- Group and individual discussion
- Semi-structure
- Community meeting and direct observations on livelihood of local community.

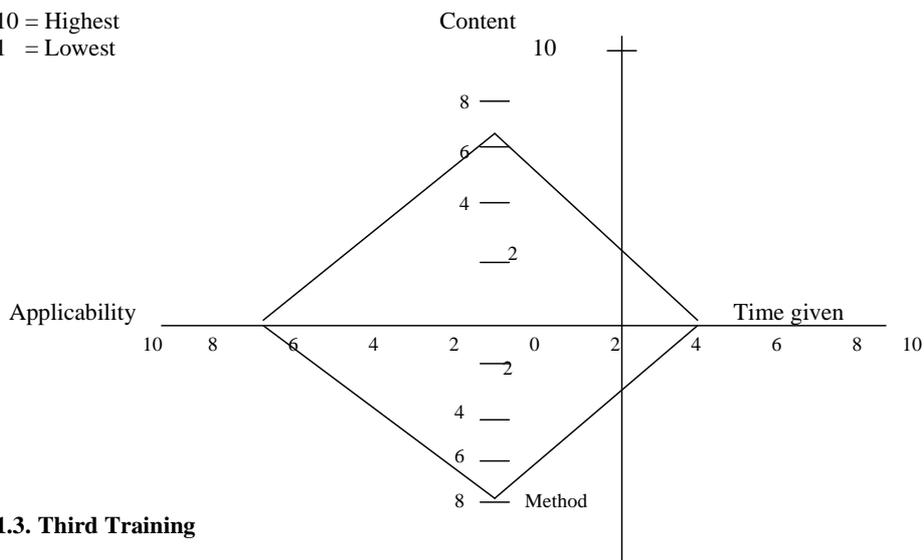
(c) Secondary source review

- Collect data and information
- Compilation and documentation
- Analyzing
- Sharing information

(d) Triangulation

This training course showed successful achievement as following: the content is 70%, 50% of the time for appropriate with the course, 70% of the teaching method and 70% of the access to the practice. (See Annex 2)

10 = Highest
1 = Lowest



1.3. Third Training

The training course on **Environmental Education and Mangrove Resources Protection through Local Community Participation** was held from September 28-30, 98, organized by PMMR research team. This course consisted of 41 participants and 7 PMMR team including Mss Melissa Dalhousie University student. The trainer are PMMR research team, Mr. Kim Nong, Nin Vanntha, Mr. Venn Virak, Mr. Khy Ann and Mss Melissa, and the trainees are local people and village leaders from 4 villages in PKWS, and staff of Department of Environment Koh Kong.

- ◆ The objectives of the course are:
 - To encourage and to help the local people to understand on the coastal environment, mangrove ecosystem and natural resources;
 - To call for the local people and authorities to participate the mangrove forest protection and conservation in order to the sustainable usage;
 - To conduct the network human resources in coastal villages to facilitate the good relationship with the project team and local people together the community participation;
 - To collect data and information on natural resource uses in community that were and doing depletion by human activities.

◆ The methodology

The training is composed of lectures, small group exercises, game playing. The PMMR team are resource people (including: Miss Melissa) helped make the training so successful.

The contents of this course are following:

- 1) What is Environment ?
 - Natural environment, society-environment, Human environment
- 2) Water is life source
 - the important of water, the dangerous transmitted by the water
- 3) wildlife
 - wildlife and human
- 4) Mangrove forest and it benefit
- 5) Environmental pollution
 - What is pollution, water pollution, soil pollution
- 6) Participatory Rural Appraisal (PRA)
 - What is participation?, Mapping, Seasonal calendar, Daily activity, Problem tree
- 7) Trend of Environmental changing from 1970s to 1998

The results of this course shown through the evaluation and group presentation:

- 70% of the participants more understanding on the environment, mangrove forest and it benefits, the important of wildlife etc.
 - 20% of them are fair understanding of the course, and
 - 10% of them are little understanding, because, them has a low knowledge.
- (See Annex 3)

The Summary, PMMR research team prepared three times of training courses a year ago, in order to ensure human resources development, related to the management and use of the natural resources in Peam Krasop Wildlife Sanctuary.

The results on this course shown in the following graphic:

Tip of Training	First	Second	Third	Total
Involval Institutions				
National level	15	5	2	22
Provincial level	33	9	8	50
District level	4	2	0	6
Commune level	3	2	2	7
Village level	1	1	5	7

Local People	1	0	23	24
NGOs				
DANIDA	2	0	0	2
IUCN	1	1	0	2
AFSC	2	0	0	2
IDRC	1	1	1	3
WI	1	0	0	1
Philippines	0	2	0	2
Total number of People	64	23	41	128



1.4. Training Workshop and Other Activities

The capacity building is importance for PMMR research team. The ongoing work of building linkage between Government Agencies, International Organization and with Local NGOs out site and in site of Cambodia is considered a vital component of the PMMR research team. The PMMR team has involved many of workshop and meeting related on coastal development, especially Mr. Toby Carson, Mr. Kim Nong and Mr. Ninn Vanntha were attended the following:

a). Training workshop

- Three member of the full time of PMMR team were participated in training workshop was prepared by Coastal Environmental Management MoE/DANIDA that focus to provincial capacity building as:
 - Introduction to Coastal Zone Management,
 - Islands, Beaches, Coral Reef and Mapping
 - Priorities and Action Planning for Cambodia Coastal Province
 - Mr. Kim Nong project leader was attended workshop and Study tour in Thailand with counterparts Danida project. The objective of workshop and study tour are:
 1. Increase of knowledge related to the coastal zone management
 2. Understanding of various problems occurred in the coastal zone of Thailand
 3. Management and planning for coastal zone development
 4. Understanding of the research activities of coastal natural resources
 5. Understanding of relationship between the local people and responsible authorities / institutions in implementing the coastal zone development plant.
 - To join the training Course on “ Participatory Management and Zoning of Protected areas “ from July 01-05, 98 in Borkor National Park, Kompot Province, supported by IDRC, WWF, SPEC and MoE.
- The Workshop and study tour held by ICLARM

The PMMR team was cooperated with ICLARM Project on “ Management of Fisheries, Coastal Resources and the Coastal Environmental in Cambodia “ Institutional, Legal and Policy Perspectives. 3 members of PMMR team was operated with ICLARM project study together focus on Institutional Analyses of Management of Fisheries, Coastal Resources and Coastal Environment-Policy Legal and Institutional Perspectives .

 - PMMR Team want to study tour in Thailand and Malaysia together with ICLARM project team for experiences changing has during 9 days from April 26 to 05 May, 98

- To attended National workshop on “ Management of Fisheries, Coastal resources and the Coastal Environment – Policy, Legal and Institutional Perspectives “
- 2 member team Mr. Kim Nong and Mr. Nin Vanntha were to attended workshop of:
 - The Southeast Asia CBCRM Case Writing Project, that held in Hue April 21-25, 98 and in Philippines August 24-28, 98 and Organized by Coastal Resources Research Network (CoRR) and CSWCD CBCRM Resource Centre.
 - To attended the inter-ministerial forum on Tole Sap Biosphere Reserve in Phnom Penh September 16, 98. This forum supported by European Commission Support Program to the Environmental Sector in Cambodia (SPEC)

b). Other Activities Meeting

- Round table meeting with H.E. Dr. Mok Mareth Minister of Environment, H.E. Khev Muth Director General MoE, focus on the project processing, Memorandum of Grant Conditions and Term reference of the project implementation.
- Meeting with Dr. Gary Newkirk coordinator of Coastal Resources Research Network (CoRR) to prepared project work plan, to review the term reference of project members and select research team building.
- The PMMR research team were collaborated and meeting with Provincial authorities like Koh Kong, ModulSeyma and Smach Meanchey districts and all communes in Peam Krasoap Wildlife Sanctuary for sharing and inform the goals, objective and project activities. PMMR project was supported by Provincial Governor to the implemented project in Koh Kong Province.
- To participated the round table with CoRR, ICLARM, WI, EIA, DANIDA, MoE and Coordinating Unit (CCU) the parallel project focus on the Coastal Zone Management, and have the plan for the workshop organizing, study tour experiences changing from neighboring and other each projects collaboration in MoE.
- To meeting with ADB Coastal Zone Section and Environmental impact Assessment, Danida coastal project for expressing the goals, objective and project progress for sharing the past experiences and comment changing.
- The PMMR team was organized field visit project site by Dr. Randy Spence Regional Director IDRC in Singapore, Mr. Andrew McNaughton, Director administration and Finance, H.E. Sabu Bacha under secretariat MoE, Mr. Khev Muth Director general MoE., Mr. Ing Von Secon Provincial governor, Mr. Say Hak Third Provincial Governor, Koh Kong Province, Mr. Chay Sameth Acting Director Department of Natural Conservation and Protection Mss Pum Vicheth Deputy Director Department of Natural Resources Assessment and other provincial official government in PKWS. The objective on this field visit was shown supporting on project development in this area and observed all activities and the livelihood problem of coastal local people.

PART TWO:

RESEARCH AND FIELD WORK ACTIVITIES:

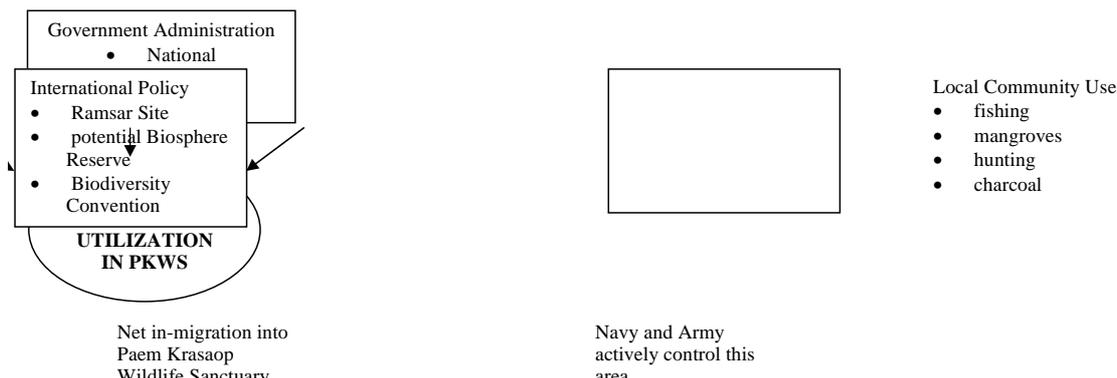
2.1. Role of Provincial Institutions in Koh Kong

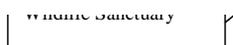
The Peam Krasoap Wildlife Sanctuary and Ramsar site Koh Kapic were located in Koh Kong Province. This area was general administration by Provincial Authorities, and help technical management by ministries that had department in Province, example: Department of Environment, Department Agriculture Forestry and Fisheries, Department Rural Development, etc.

PMMR research team has conducted the closely collaborated with the technical institutions of Koh Kong Province in order to the data collection, documents that concerned on the role and responsibilities of coastal resources management in PKWS.

In the Past, this area managed by department of Agriculture. Now the management of Peam Krossoap Wildlife Sanctuary is mandated under Royal Decree on "Creation and Designation of Protected Areas" on November 1, 1993. The Ministry of Environment, in collaboration with concerned Ministries, local authorities and local people, takes huge responsibility for supervising, planning, managing all activities, conserving and protecting all coastal natural resources in this area. But previous management on this area faced a variety of constraints concerning to policy, legal and institutional perspectives.

It is difficult to manage resources in the Wildlife Sanctuary because the technical officials do not have the real power to manage the resources. The Army is supposed to protect illegal activity from local people but is not doing a good job. There is international and national policy relating to the environment which as been discussed; however, for the practical management in this area this policy is not followed. The following diagram shows how difficult it is to manage the resources in the Wildlife Sanctuary.





2.2. Villages around PKWS

2.1. Output Field Study Site: Peam Krasaop Commune

a). Status and Location

Peam Krasaop commune is in Mondul Seima district, Koh Kong. The commune borders with Prek Yej Lat (Yej Lat stream) in the North, the Gulf of Thailand in the South, Paklong commune in the West, and Prek Toek Sap (Toek Sap stream) in the East. It is 11 km away from concrete wharf (port) at Koh Kong Town. Its total area is about 1,400 ha, covering mangrove areas, 4 small islands, and 6 streams flowing into mangrove areas. The population is 950, of them 200 are shifting people. Nowadays, this commune is designated as a Wildlife Sanctuary.

b). Field Research Outputs

1. *Outputs and Assessment*

A- First site: from the waterline to 25m there is beautiful sand beach without plants, but with small wastes from waves. Plant types such as Sngao (look like pine), small plants, vines and grass have seen in areas from the 25m to 100m. Sngao's height is about 15m. Swamp forests with the height of 20m exist in area from the 100m. In this site, most of forests are destroyed. There is an abundance of biodiversity in this site.

B- Second site: it is found that most of plants are about 10m high, and many trunks of mangroves were cut down in the past 4-5 years. Very small amount of biodiversity is found in this site.

It is considered that both sites are different in terms of plantation and biodiversity.

2. *Impacts on mangroves*

A- *Human Factors*

- 75 charcoal kilns, each of which consists of 2-5 cubic meters,
- 50.21 ha of shrimp farming, of which only 18 ha are operative at present,
- 155 residences, of which 125 are using firewood and mangrove charcoals,
- Construction of saw mills in the coast,
- Urban wastes,
- Anarchical building in the coast,
- Waste and oily wastes from fishing vessels,
- Waves from ship operations, motor boats, and high speed motor boats.

B- *Natural Factors*

- Strong winds
- Small weather change (hot then before)

2.2. Output Field Study site: Koh Kapik Commune

a). Status and Location

Koh Kapik, Tuol Barang, and Lam Dam villages (in Koh Kapik commune, Koh Kong district), consist of 590 families or 2990 persons, 1556 men and 1434 women. These villages are small islands with best mangrove stand and many small streams. At present, Koh Kapik area is designated as Ramsar Site. Similar to other villages in Peam Krasoap commune, this commune is composed of significant natural resources such as fish, crab, snail and wild animals dwelling in mangrove areas, and small-scale palm plantation. More of these people are fisherman, small people are official Government and other occupations.

b). Field Research Outputs

1. *Outputs and Assessment*

- The people live in this area now are a lot of migration people from middle part of country, and more original people live this are escaped to Thailand after Pol Pot Regime.
- From 1953 to 1975 the situation on this area is very good for livelihood (many animal birds and good environment), no illegal fishing and mangrove cutting and all infrastructure management is very good.
- The Comparison between 1970s to 1990s all coastal natural resources are damage by people illegal activities and some this activities protected by power person managed in this area.
- Low management infrastructure and people not have power protect hey area and not understand on benefit of biodiversity mangrove ecosystem.

2. *Impacts on Mangrove from 1990 to 98*

A- *Human Factors*

- More cutting of Mangroves for charcoal production and each charcoal kilns had different diameter from 6m to 2m,
- 80% of fish production decreased from 10-20 kg/nigh to 3-4 kg/nigh (small scale-fishing), less quantity of fish and some species are nearly extinct, because now they used modern fishing gear such as engine boat pushing net were sestroys the biodiversity and bottom of the ocean and dynamite, poison fishing with chemical TNT.
- There are 3 shrimp farm 40.55ha, but now the shrimp farm activities was stop because not have benefit to owner farm, and some time operational tilapia species of fish is the secondary culture.
- Construction of saw mills in the coast,
- Urban wastes,

- Anarchical building in the coast,
- Waste and oily wastes from fishing vessels,
- Waves from ship operations, motor boats, and high speed motor boats.

C- **Natural Factors**

- Strong winds
- Small weather change (hot then before)

2.3. Output field Study site: Tuol Koky commune

a). **General Status**

Tuol Koky commune is located in the eastern part of Koh Kong Provincial town, and is about 20km away from this town. The total area of the commune is 800 ha, of which 106 ha are paddy, 12,82 ha are shrimp farms, and the remaining is residence, streams, mangroves and small mountains. The population is 984 persons, or 218 families. The report of the commune shows that 80% of the total population are farmers, 7% are fishermen, 5% are forest by-product harvesters (Klim Chan), 3% are sellers, 0.5% are shrimp farmers, and the remaining 4.5% are involved in other occupations.

b). **Livelihoods**

The communal leader's statement and report show that 40% of the total population have high livelihood, 25%-medium, and 3.5% have low livelihood. There are no thieves and robberies to deteriorate the security and the social order in the region. All people including monks, teachers, and all local authorities live in good relation and friends and consolidation.

d). **Problems Occurred**

- Continuing of mangrove cutting by shifting people,(migrants)
- Lack of freshwater in dry seasons,
- No hospitals for curing illness,
- Lack of fertile soil/land,
- No residence

2.4. Output field Study site: Koh Sraloav Village

a). **General Status/ Location**

Koh Sralao village is located in Koh Kapik commune, Koh Kong district, Koh Kong province. It covers 2600m long and 2100m wide. It is also located in the middle of Peam Krasoap Wildlife Sanctuary and composed of streams and small islands surrounded by mangrove forests. The village is considered a small island where a small mountain exists. This village borders with Tatay commune to the East, Koh Kapik commune to the West, Toul Kaky commune of Mondul Seima district to the North and Chrouy Pross to the South. The village were probably established before French Colonization. The study area is a small island with a small island and is approximately from 2m to 5m if compared with the seawater level (estimated by villagers, do not have documents).

In the study area, the total population is 1070 person, in which 568 are female, equaling to 289 families and 218 residences. In this amount, about 70% of population are Buddhist, 20% Islam and 10% of Christian (Report of Village leader). Each year, people migrate from different provinces in Cambodia to stay in the Village. Housing in the Village reflects the socio-economic status of the villager and reflects the inequalities found between households. Residences are built in along the islands stream edges. In addition, this Village has one health clinic, one pagoda with 8 monks, and a public elementary school with 86 pupils and teachers.

After 1979 most of them moved back and reestablished their former village. People are living in the village were dependent on coastal resources for their livelihood. The socio-economic status consists of two main types of resources which are important to these people which are fishery and mangrove resources. Although these two main resources were abundant in the past, the overall rapid changes towards a cash economy has encouraged people from both inside and outsider the coastal village to increase their level of exploitation of these resources.

b). **Field Research Outputs**

1. **Weather factors:**

Temperature in this area of Peam Krasoap Wildlife Sanctuary was dependent upon the annual temperature of Koh Kong and it is also dependent on the broadcast of Thailand climate. On the other hand, documents detail that in Koh Kong the temperature is a minimum of 24-25 Celsius (January), The maximum being 31-32 Celsius. But now the climate changes to being 34-36 Celsius (along the coast).

The annual rainfall in Koh Kong varies between 2000- 4000mm in the period of May to October (Report of Provincial department of Agriculture). The rainfall have closely relation with fishing activities of local people that lives in coastal area, it has impacted ton environmental factor such as water temperature, salinity and ground water which also affect the survival of mangrove, and water way traveling of humans that live in the coastline. The average wind speed is between 2-4 m/s but there are strong winds offshore, reaching approximately 60 Km/h during the rainy season This speed can strongly affect the environment of the coastal zone.

	Dry Season Nov-Apr	Wet Season May-Oct
Temperature	24-28°C	31-36°C
Rainfall	> 50 mm	2000-4000mm
Speed Wind	2-4 m/s	< 60 Km/h

2. Natural Resources

• *Mangrove forest Resources*

Mangrove provides habitats for aquatic life. Mangrove also provides local people with many forest products for home consumption and sale such as firewood, medicine, source income, and charcoal products, construction material and for fishing equipment. Village life along the coast in Peam Krasoap Wildlife Sanctuary is closely interwoven with the mangrove ecosystem. In Koh Kong province has the vast majority of mangrove forest in Cambodia (63,200 ha estimated by LUMO in 1992 and 31,000 ha by Chea Pengchheng, DoF, 1993) and Pum Vicheth and David Ashwell (1994) estimated the current remaining areas to be not more than 16,000 ha. Depending on different sources, there are different information figures and difficulty to the limitation of the exact number of mangrove forests.

Most of the mangrove areas have been designated as within the protected areas under the Royal Degree, "Creation and Designation of Protected Areas signed by King Norodom Sihanouk on November 1, 1993." These Protected Areas include the Peam Krasoap WS (23,750ha) and Botum Sakor National Park (171,250ha). In addition Koh Kapik and associated islands have been nominated as a Wetland of International Importance under the Ramsar Convention (Asia Wetland Bureau: 1994).

Generally, mangrove species are trees and shrubs that grow on the inter-tidal flats in sheltered areas of river, bays and estuaries. Hamilton and Snedaker (1984) define them as salt tolerant forest ecosystems of the inter-tidal region along coastline. Normally, they are referred to as several families (but particularly the family Rhizophoraceae) and possessing similarity in their physiological characteristics as well as their structural adaptations to similar habitats.

Refer to the observation in the field with local people, elders and the village leader, people know the names of mangrove forest types. See Appendix A for the local name, family name and scientific name.

• *Fishery Resources*

According to the Fishery Law, mangrove, coral reef and seagrass are also considered are fisheries resources. The main fishery resources, however, are fish, shrimps, and mollusk.

There are 435 fish species from 97 families in the Marine water of Cambodia, including Koh Kong. The main species which were found in the study area of Peam Krasoap Wildlife Sanctuary like many species of crabs, shrimps, shell fish, sea star, seahorse, seacucumber, jelly fish, etc. Species of planktons, benthos and other nutrients, which serve as food for fish and other marine life, are expected to be abundant in the Koh Kong sea, especially in the inshore area.

• *Wildlife*

Mangroves are important habitats for all wildlife of wetland. They provide physical habitats for a large variety of coastal species, including waterfowl, shorebirds, mangrove monkeys, and other valued animals of wetlands.

According to the observation in the field of Mr. Seng Kimhout (1998) with local community leader and elders, people know the names of coastal birds in Peam Krasoap which consists of 22 shorebirds. The English names are as following:

3. Occupation

Depending on the location and traditional ecological knowledge of people's living in this village, the main profession of villagers are:

- 60% of the population are fisherman. Fishing activities based on the family economic conditions of each family (small and large scale condition);
 - 15% are charcoal production, in particular. The migrated people are charcoal producers;
 - 15% of poorest workers;
 - 10% of small-scale sellers.
- (Report from chief of Koh Sralao village)

4. Problems

After surveying in this village and from reports from the chief of the village, problems were increased by the following human activities:

- Lack of understanding regarding mangrove ecosystem.
- Dumping solid and liquid waste directly in to the sea.
- Lack of capacity for community participation in long term resource management planning.
- Low environmental education and awareness of sustainable use of resource.
- Lack of sanitation and the main diseases occurring in children and adults every year are diarrhea, malaria, high temperature and cough.
- Loss of habitat and biodiversity is detrimental to both to stability of the ecosystem as a whole and to the livelihoods of the coastal people.
- Lack of advocacy from local people for protecting natural resources.

2.5. Summary Output in Peam Krasoap Wildlife Sanctuary

All these commune are located in Peam Krasoap Wildlife Sanctuary. Through field study one year ago, the PMMR research team has been divided 2 main priority issues. The main reasons are:

