

Biannual Project Progress Report

- Project title** : **Integrated Coastal Resources Management in Shihanoukville (ICRM – SV)**
- Program Categories** : Program under the ASEAN-SEAFDEC FCG Mechanism
- Program Title** : Capacity Building of Human Resources and Participation in Integrated Coastal Resources Management
- Duration of Project** : 3 years and 2 months from November 2005 to December 2008
- Executing Agency** : The Fisheries Administration, Ministry of Agriculture, Forestry and Fisheries, Cambodia
- Collaborating Agency** : SEAFDEC/TD
- Funding Agency** : The Japanese Trust Fund (FCG Scheme and Special 5-year Program)
DOF Cambodia (Co-financing)
Japanese Grassroots Level Aid (Japanese Embassy)
- Proposed Budget (2007 only)** : USD 33,574 (Under the Japanese Trust Fund)
USD 11,402 (Japanese Grassroots Grant Aid)
USD ? (DOF Cambodia Input)
- Reporting period** : **July to December 2007**

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1. GENERAL ACCOUNT

In general, the project has progressed on the right track in line with the project document.

The Community Fisheries Area Management Plan (CFAMP) was submitted to the Sihanoukville Municipality for approval and the Community Fishing Ground Map was signed.

The prakas on the amended Guideline for Community Fisheries was signed.

The 2nd Local Seminar was held on 6 December 2007.

The study tour to Siem Reap Province was conducted on 15 – 18 August 2007.

The mangrove reforestation day was set on 5 December and 1,000 mangrove seedlings were planted.

Mushroom production has been perfectly commercialized using self financial management system.

The 2nd trial of mud-crab fattening commenced in November 2007.

The experimental fish culture of sea bass commenced in November 2007.

Fish landing survey has been continued.

Preparation for the establishment of *fish refugia* is under way.

The workshop on establishment of Crab Bank was held on 5th December 2007.

The 5th ICC Meeting was convened on 18 October 2007.

2. ACTIVITIES

The project has progressed on the right track as seen in the project activity monitoring sheet (Annex 1).

During the 2nd Local Seminar held at the Sub-District Office, the local authorities expressed that the project had contributed not only to the community-based fishery resources management but also to the socio-economic development in the communities to a great extent. They further requested to expand the project operational area to other communes such as in Toeuk Laok.

2.1 Baseline/monitoring survey

Fish landing data collection

The fish landing data collection exercise has been regularly conducted by designated enumerators everyday in fish landing stations. The data collected were sent to SEAFDEC/TD for analysis and compilation.

The data obtained from February 2006 through September 2007 were analyzed and compiled in December and its digest was presented during the Local Seminar held on 6 December 2007 in Sihanoukville. The findings indicated some important trends of fishery resources dynamics in 2006 and 2007, although the data collected were incomplete and thus, were insufficient. The final report will be published in early 2008.

2.2 Encourage and extend locally based fishery resources management

Trend of resources dynamics

From the findings in the abovementioned analytical data report, the resource dynamics of swimming crab, which is the major species harvested in the project operational area, is stable based on data from small-scale or medium-scale fishermen using up to 250 pcs of fishing traps, while for the larger-scale fishermen using more than 250 traps, the CPUE showed a declining trend. This condition needs to be monitored more cautiously.

As to the resource status of the marsh clams, it was observed to be still within the sustainable range. However, for the blood cockle, there was not enough data to evaluate the resource dynamics.

Community Fisheries Area Management Plan (CFAMP)

The final draft of the CFAMP and other related documents like Internal Law (I/L) and By-Law (B/L) and the Community Fisheries Zoning Map (CFZM) were endorsed by the serial ranks of the local administration offices and eventually submitted to the Governor of Sihanoukville Municipality together with the Community Fishing Area Agreement (CFAA) towards the end of 2006 for approval. These documents were signed on 17 January 2007 by H.E. Governor of Sihanoukville. This procedure was recognized as a temporary measure for the implementation of CFAMP pending an official gazette (*Prakas*) on the amended Guidelines for Community Fisheries, which was signed on 13 July 2007. Based on the *Prakas*, Municipal Fisheries Department Kampong Som (formerly called as Municipal Fisheries Office Sihanoukville) was endowed authority to sign on the entire documents.

In the wake of the movement as such, the Municipal Fisheries Department Kampong Som (MFDKS) has initiated the amendment of CFAMP and other related documents of Cf Prey Nup II in close consultation with stakeholders. Meantime, increased public awareness building among the stakeholders on the context of the new CFAMP is necessary prior to its implementation at the local level.

The formation of Community Fisheries Coordination Committee (CFCC) was discussed at the 3rd SC meeting. Consistent with the provisions in the Sub-Decree of Community Fisheries, it is bound to form a CFCC to pursue fisheries resources management matters. There was certain confusion among the SC members in the past on the expected roles of CFCC and the Community Fisheries Committee (CFC). After the clarification made by the officers of CFDO, FiA, it was understood that the timely formation of a CFCC was necessary. It was further agreed that for the time being the ICC meeting of the project would perform the functions of the CFCC instead. Preparations for the formation of the CFCC will be followed up in 2008.

Local Enforcement Unit (LEU)

The project continued supporting the voluntary activity of patrolling the project area by the Local Enforcement Unit. As a result, cases of encroachment of illegal fishers and violations against

fisheries regulations have been evidently reduced. The result of patrolling by the LEU in 2007 is shown in the following table.

Result of Patrolling by LEU in 2007

| <u>Violation</u> | <u>Cases</u> | <u>Treatment for violation</u> |
|---|--------------|--|
| - Illegal fishing gear (gillnets, fike nets, bag nets, etc.) | 4 cases | Confiscation |
| - Illegal fishing gear (Blood cockle dragger) | 3 cases | Confiscation |
| - Illegal fishing gear (Motorized push netters) | 5 cases | Confiscation |
| - Harvesting juvenile mud-crab | 2 cases | Confiscation (1,800 pcs in total) |
| - Harvesting juvenile blood cockle | 1 case | Confiscation (600 kg blood cockle) |
| - Production of charcoal from mangrove trees | 38 cases | Destroy of charcoal kilns |
| - Felling mangrove trees | 10 cases | Arrest or reporting to Police stations |

The fishermen proposed during the local seminar that the CF Chief should write letters to the police, the Fisheries Office and the local authorities for them to conduct more active intervention to the enforcement activities in order to effectively control illegal fishing in the area.

Establishment of the fish refugia

Within the coastal fishery resources management concept, it was envisaged to establish *fish refugia* in the project operational area. In this regard, a workshop to discuss the conceptual idea of fish refugia was held on 27 December 2006 and the preliminary survey to investigate the social and practical impacts from the establishment of *fish refugia* was conducted in the project operational area by a designated team on 10 June 2007. The result of the survey concluded as recommendations that *two fish refugia* for blood cockle and sea grass should be established in Khos Angkor and Khos Krous, respectively. A study to introduce fish enhancement devices developed by SEAFDEC/TD should also be conducted. The study, however, was conducted based only on the knowledge and experiences of the fishermen without scientific basis. Further, as agreed during the 5th ICC Meeting, scientific research by SEAFDEC/TD would be conducted parallel with the initial establishment of the fish refugia based on the result of the above preliminary survey.

An attempt to establish *fish refugia* was partly consorted with the regional movement led by the regional project: Establishing a Regional System of Fisheries Refugia, being deployed under the regional project of the UNEP/GEF. As envisaged, this project would establish several fish refugias in the coastal zones from Cambodia to Vietnam. The project's participation in the Regional Scientific Conference of the UNEP/GEF Project in Bangkok on 28-30 November 2007, promoted the future collaboration work with this regional project which was discussed with positive results.

Study tour/workshop

Visit to Kampong Phluk, Siem Reap Province was made on 13-15 August to observe their community based fishery resources management system. Eleven (11) leading committee members of the Prey Nup II CF and the Sangkat Chief joined the study tour. The study tour participants

observed that the main activities of the group in Kampong Phluk included controlling forest felling which was managed by the inhabitants on a rotation basis for each section of the forest, patrolling for illegal fishing and logging, and conducting extension services. However, not much activity related to community-based fishery resources management was observed.

Crab bank

In the project operational area, it is estimated that around 6,000 kg of swimming crabs are caught yearly by crab gill-net and trap fishing. As one of the most important marine species harvested from the area, the swimming crab resources has the tendency to decrease especially with the practice of crab fishing using more than 250 traps (Penchan, 2007). Aside from the declining trend, the size and quantity of the swimming crabs are also dwindling year by year as observed by the fishermen themselves and this has been their main concern. Meantime, a study tour to the project site of the Integrated Coastal Resources Management in Pathew District (ICRM-PD), Thailand was conducted by the leading members of Community Fisheries Prey Nup II in March 2006. They inspected the crab bank scheme that has been practiced for four years by the Crab Trap Fishing Sub-Group under the project ICRM-PD. This activity impressed the fishermen from CF Prey Nup II so much that they envisaged applying a similar approach to enhance their crab resources. Similarly, FiA Cambodia also expressed their keen interest in fully supporting the introduction of such a scheme in the country's coastal fisheries communities. Responding to their motivation as such, the project decided to introduce a crab bank system in the project operational area in Sihanoukville. As a first step, the project organized the 7th Fishers' Workshop on 5th December 2007 to discuss with the crab fishermen the mode of application of the crab bank in the case of Prey Nup II.

During the workshop, three possible approaches were discussed, i.e. the Japanese model, Chumphon model and Langkawi model, which were demonstrated to fishers prior to the commencement of the discussion. After the deliberation, they finally decided to employ the Chumphon model, which involves the stocking of the gravid crab in a cage during the calm seasons until the eggs are hatched, while during the monsoon seasons those are released directly into the water after being marked on their carapaces. The detailed description in this workshop is shown in Annex 5: Report to Cambodia on 4 – 8 December 2007.

With this understanding, it was planned to implement the crab bank scheme in early 2008. In this regard, the Crab Bank Group was established with 11 crab fishermen on 6th December 2007 while their leader, the sub-leader and the cashier were elected.

2.3 Promotion of local business

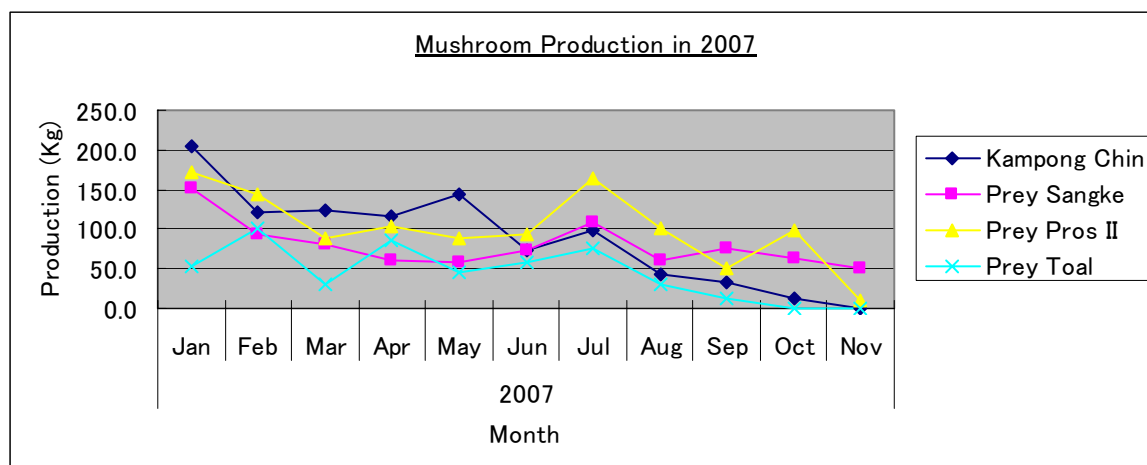
2.3.1 Women's Group Activity

Mushroom production

The cottage-scale mushroom production has been perfectly commercialized as an independently managed venture. Production has been continued using the revolving fund accumulated by themselves from their net income after one year of operation from June 2006. It is commendable that all groups have put the venture on commercial basis within the period of one year.

Table 1: Mushroom production in 2007 (in kg)

| No. | Village | 2007 | | | | | | | | | | | Total |
|-----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|----------------|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | |
| 1 | Kampong Chin | 204.8 | 121.3 | 124.7 | 117.0 | 145.0 | 72.0 | 99.5 | 42.0 | 32.5 | 12.0 | 0.0 | 970.8 |
| 2 | Prey Sangke | 151.5 | 93.5 | 80.5 | 59.9 | 56.9 | 73.9 | 109.0 | 61.3 | 76.4 | 61.9 | 49.6 | 874.4 |
| 3 | Prey Pros II | 171.5 | 143.5 | 87.5 | 102.5 | 89.0 | 94.3 | 165.3 | 102.0 | 49.6 | 99.7 | 10.3 | 1,115.2 |
| 4 | Prey Toal | 54.0 | 102.0 | 30.0 | 86.5 | 44.5 | 57.5 | 76.5 | 30.0 | 12.0 | 0.1 | 0.0 | 493.1 |
| | Total | 581.8 | 460.3 | 322.7 | 365.9 | 335.4 | 297.7 | 450.3 | 235.3 | 170.5 | 173.7 | 59.9 | 3,453.5 |



The production record in 2007 (up to November) is shown in Table 1. However, as seen from this table, the production volumes for all groups have been gradually dwindling.

The decreasing trend was partly due to a transitional period when the project stopped financing and left the operations to the initiative of the groups, and also partly due to the fall in rice harvest in October and November seasons, thus the production paces slowed down to some extent. Further, an incident happened where the culture bags were spoilt due to inferior quality of spores supplied by the Vocational Training Center in Battambang in August. The supplier admitted their irregularities and promised to replace the product. Meantime, one fisher from Shihanoukville began producing mushroom spores and the quality was tested with satisfactory result. He has voluntarily participated in the training course for mushroom production in May 2006 at the Vocational Training Center in Battambang together with the women's group and began his private business by himself after returning from the training course. The women's group agreed to purchase the spore bottles from him.

The project had purchased all the required materials for mushroom production until April 2007 and also coordinated group purchasing at the least. However, toward the end of 2007 all women's group started joint purchasing of all necessary materials for mushroom production. This was initiated under the coordination of the project extension officer. Since then, the groups have to rely on themselves for procurement of necessary production materials as well as in marketing their products. In this sense, it was considered more beneficial and practical to organize an association under which joint procurement and marketing are coordinated and this was suggested during the 2nd Local Seminar. Hence, all of them basically agreed to form a mushroom processors' association.

The detailed mushroom production report in 2007 including its financial analysis will be released in early 2008.

Other business

For the maximum utilization of the funds derived from savings from the mushroom production, the women's groups commenced diversifying to other local business ventures such as rice trading and animal raising. In addition, the group in Kampong Chin initiated a mini-credit scheme using as capital the funds from their savings and some incomes generated from the interests.

2.3.2 Mud Crab Culture Group Activity

Mud crab fattening

The mud-crab culture experiment was completed in June. The outcome was gloomy as the mortality or missing rate of the crab reached over 90%. The report of this experiment comprising an economic analysis was compiled and published in August. Based on the report, a preliminary meeting was held with the FiA and SEAFDEC on 30 August in Phnom Penh in a bid to decide the future course of action for the mud-crab culture activity. A number of identifiable concerns and problems needing remedies were presented. The meeting decided on the continuation of the mud-crab culture scheme, provided the issues and concerns related to mud crab culture are addressed. These including the following:

- ① All were in agreement to exert their utmost efforts toward the successful operation of mud-crab culture with the project of ICRM-SV.
- ② Deepening of the pond bottom up to 30-50cm should be immediately carried out by FD of SNV. Initially, pond No. 3 should be renovated as a trial and the condition should be evaluated before moving to the next ponds.
- ③ Renovation of sluice gates should be made using the funds from SEAFDEC/TD.
- ④ Since one of the crucial causes of the missing crabs in the previous experiment was due to theft, the FiA should take an effective action to prevent the crabs from being stolen.
- ⑤ The FD, SNV, should assign one officer permanently to the project site to look after the whole operation of mud-crab culture attentively.
- ⑥ Measurements and recording of DO concentration, salinity, water temperature and growth rates should be carried out regularly without fail. As to the operation of a DO meter, Mr. Hatori should train Mr. Chanthana and the newly nominated officer from FD on the use of a DO meter.
- ⑦ In order to ensure technical backstopping, a communication network should be established among the four parties; i.e. the project site, the project office in Shihanoukville, JICA Expert in Phnom Penh and SEAFDEC/TD in Bangkok. Any irregularity that would arise such as in the parameters measured and monitored in the culture ponds, the newly nominated officer in FD should report to Mr. Chanthana without delay. Then, Mr. Chanthana should contact immediately Mr. Hatori for technical advice over the telephone and to follow his instructions. Also, such incidents should at the same time be communicated to SEAFDEC/TD by e-mail.
- ⑧ Since the report of the auditor from Kusanone Grant was not properly prepared, the FiA should intervene in this matter for the auditor to rectify the report.

Further, the 6th Fishers' Workshop on Reviewing Mud-crab Culture was held on 17 October, which was aimed at reviewing the outcomes of the experimental mud-crab culture carried out from February to June 2007, and discussing countermeasures to be taken for its improvement during the next full swing production. During the workshop, the lively discussions among the 25 participants

resulted in the identification of the causes of high mortality and lost rate, and in finding out effective measures to be undertaken during the next production run. Possible solutions were concluded and listed in the table which was put up on the wall. The summary of the conclusions is shown in Table 2. Further detailed description on this workshop appears in Annex 3: Travel Report to Cambodia on 15 -18 October.

Table 2 . Remedial measures to improve the recovery rate of crab production

| Cause of low recovery rate | Physical observations and cases from the experiment | Suggested remedial measures and solutions | Responsible party(ies) |
|----------------------------|---|--|------------------------|
| (A) High mortality | | | |
| 1. High temperature | Hottest climate (March - May) | Cool season (Nov. to March) | All parties |
| | Shallow depth of ponds | Deepen ponds by 50 cm | FO/SNV |
| | Leaking water from ponds | Repair sluice gates | SEAFDEC |
| | No monitoring of the temperature | Regular monitoring of water temperature | MCCG |
| 2. High salinity | End of dry season (March/April) | Before end of dry season (Up to Feb.) | MCCG |
| 3. Low DO | No measurement of DO | Regular measurement of DO | MCCG & SEAFDEC |
| | No technical consultation | Consultation with JICA expert | FiA & SEAFDEC |
| 4. Weak juveniles | Poor acclimation practices | Proper acclimation practices | MCCG |
| | Bulk juveniles purchasing | Purchase limited number of juveniles (max. 100 pcs/day) | MCCG & SEAFDEC |
| | Purchasing juveniles from a distance | Purchase juveniles within the vicinity | MCCG & SEAFDEC |
| (B) Escaping | | | |
| 5. Feeding | Improper feeding | Measure and monitor feeding | MCCG |
| | Presence of fish in ponds | Removal of fish in ponds | MCCG |
| | No regular measurement of growth rate | Regular measurement of growth rate (every 2 weeks) | MCCG |
| (C) Theft | | | |
| 6. Protection | Free access by thief fishers | Installation of a watch hut to prevent entry of thieves | MCCG & SEAFDEC |
| | Lack of sense of common property in the community against the project | Dissemination of the project roles and peoples' participation in the community | CF & FO/SNV |
| | No representative from the authority | An officer representing FiA assigned at the project site | FiA |

Note:

MCCG: Mud-Crab Culturing Group

FiA: Fisheries Administration

FO/SNV: Fisheries Office, Sihanoukville Municipality

CF: Community Fisheries Prey Nup II

SEAFDEC: Southeast Asian Fisheries Development Center

Based on lessons and knowledge learned and experiences gained through the experimental mud-crab culture in early 2007, the second trial began on 17th November 2007 using 847 pcs of juvenile mud crabs confiscated by the Fisheries Office and brought to the project site. Later, 574 pcs of female and 698 pcs male crab were purchased from the local suppliers from 19 to 25 November 2007 and stocked in pond No. 2 and 3, respectively. It seems that the crabs have so far been growing well under the technical supervision and advice of the JICA expert. The Specific Growth Rate (SGR) of the crabs (male and female) was 2.93%/day and the Food Conversion Rate (FCR) was 42% for the initial 18 days, showing relatively higher rates. The detailed report for the 2nd trial will be released in April 2008.

Prior to the commencement of the 2nd trial, the ponds were dug deeper by 50 cm and the sluice gates were repaired as agreed during the 6th Fishers' Workshop on Reviewing Mud-crab Culturing held on 17 October. The cost of repairing and digging was shared between the Fisheries Office of Sihanoukville and SEAFDEC. With this improvement on the facilities, the environmental condition of the ponds was normal compared with the conditions in the first trial. Specifically, the water condition on 5 December 2007 was as follows, which was within the normal range.

1. Water temperature: 26.9°C (ambient temperature: 29.0°C)
2. DO : 6.02 ppm
3. Salinity : 25 ppt
4. pH : 7.0

The Japanese Grassroots Fund disbursed by the Embassy of Japan (EOJ) in Phnom Penh amounting to USD 11,402.00 was audited in July 2007 by an outsourced consultant agency and the auditing report was released on 15 August 2007. However, since the format employed by the auditor was not consistent with the requirement of the EOJ, a reformatted report was prepared by the auditor and resubmitted to the Fisheries Office of Sihanoukville Municipality on 4 December 2007. In the wake of the receipt of the auditor's report, the project completion report was prepared and submitted to the FO/SNV on 28 December 2007 for further submission to the EOJ.

Fish culture

Parallel with the abovementioned mud-crab fattening venture, fish culture experiment of sea bass commenced on 14 November 2007. Small fingerlings, about 10 cm total length, were released by 200 pcs and 400 pcs on 14 and 20 December 2007, respectively to pond No.6 which was constructed by the FO/SNV. While the cost of purchasing the fingerlings was borne by SFO, the experiment has been carried out using SEAFDEC funds.

It was proposed in the 2nd Local Seminar that the fishermen group in Kampong Chin was very remote from the mud crab culture ponds and therefore alternatively fish cage culture of grouper or sea bass should be tried out. They have earmarked the suitable land which was observed to be appropriate. This possibility should be examined in early 2008.

2.3.3 Other Local Business

A study tour to Siem Reap Province was conducted on 14 August partly to observe other approaches to local business development with community fisheries. The Community Fisheries in Kompong Phluk is well-known as a successful community in eco-tourism under the auspices of the FAO/ADB. A tourist center established in 1997 is engaged in various tourist businesses including home-stay, dining in floating houses, boat riding in traditional boats, fishing, etc. However, it seems that the application of such business venture in Prey Nup II would be difficult as very few tourists visit the area at present unlike in the Siem Reap Province.

A visit to the Community Fisheries Chi Kraeng was also conducted. This CF is well known for the introduction of organic agriculture production and small-scale aquaculture with subsidy for their initial investments from FAO/ADB. Under this scheme, 12 poor fishers and 8 CF committee members are currently engaged in such local business. During the visit, an extension officer of FiA who was knowledgeable in aquaculture and organic agriculture provided on-the-spot training to the visiting members. This approach may be applicable to the project operational area provided

that a competent extension worker is available. Further detail is described in Annex 2: Report on Study Tour.

2.4. Enhance human resources capacity and participation

Study tour

As aforementioned, the study tour to Kompong Phluk and Chi Kraeng, Siem Reap Province was conducted from 13 to 15 August. The participants included 10 leading fishermen from Prey Nup II Community Fisheries including 2 committee members, 1 Sangkat (Commune) chief, a fisheries officer of Sihnoukville Municipality, 4 national project staff and 3 SEAFDEC staff. The participants observed that the approaches adopted in these areas as regards to fishery resources management and community development were relatively different from those in the project area in Pre Nup II. Still the information was useful and the exposure of the fishermen to such groups has enhanced their knowledge on collaborative activities within the community fisheries. In the study tour area, FAO has deployed the community development project specifically within the domains of eco-tourism development and integrated farming system combining cottage-scale fish culture with eco-friendly agriculture cultivation. The detailed observations and outcomes of the study tour are described in Annex 2: Report on Study tour to Siem Reap Province.

The 5th Fishers' Workshop was conducted at the project site premises on 16 October with the major objective of reviewing the findings and observation made during the study tour, based on which discussions were made on how and what model could be applicable to the community in the project operational area. The major findings of the fishermen during the study tour included the following:

- ① No significant implementation of community-based fishery resources management was traced in the CF of Kampong Phluk.
- ② The forest management with demarcated zones which are utilized on rotation basis was very impressive. However, their case may not be necessarily applicable to the case of CF Prey Nup 2 (CFPN2) as the total area of mangrove forest is protected.
- ③ Their efforts in planting mangrove seedlings were encouraging and applicable to the CFPN2.
- ④ A cottage-scale freshwater fish aquaculture in CF Chi Kraeng can be applicable but needs more profound study as the shortage of freshwater during dry seasons is very apparent in this area unlike in the Siem Reap Province.
- ⑤ Cottage-scale vegetable production using Effective Microorganisms (EM) is attractive but for practical applications a comprehensive technical guidance is necessary.
- ⑥ All of the participants were impressed by the support from the authorities and other agencies in eco-tourism development and expressed willingness to duplicate the similar development. The number of possibilities for eco-tourism development in the project operational area was listed and discussed. Although the efforts made towards realization were appreciated, adoption may not be easy as the case of the Siem Reap Province where large number of tourists visit to see the Angkor Wat.

More detailed description is seen in Annex 3: Travel Report to Cambodia 15 – 18 October 2007.

Local seminar

In order to review the project progress taking place during the past one year, the 2nd Local Seminar

was convened on 6 December 2007 in the meeting hall of the Sub-District Office, Veal Rinh, Sihanoukville with the participation of all concerned stakeholders and representatives from the local agencies like the District (Khan) Office in Prey Nup, Sub-District (Sangkat) Office in Prey Nup II and Fisheries Office of Sihanoukville Municipality. This was also conducive in a sense, as it served as an internal project evaluation for the activities carried out since the inception of the project. In this Seminar, 50 participants including 36 fishers were present.

The Seminar was chaired by the Deputy Director General of FiA Cambodia and all project progress was presented by the fishers themselves. After the presentations, lively discussions were conducted where very constructive suggestions were proposed by concerned parties, which will certainly be incorporated in the project orientation in future. The summary of the discussions and proposals made are listed in Annex 4: Summary of the 2nd Local Seminar. Also, the proceedings of this seminar will be published in the Khmer language in early 2008.

Training

During the reporting period, more emphasis was placed on the site training especially in the improvement of bookkeeping and accounting technologies for the women's groups. Through such efforts, the preciseness of entering records in the accounting books has been noticeably improved.

2.5 Rehabilitate and enhance coastal resources

Establishment of the fish refugia

As noted in 2.2, a movement toward the establishment of *fish refugia* in the project operational area has been initiated as a test case, partly in relation to the regional approach of the UNEP/GEF project "Establishing a Regional System of Fisheries Refugia". The preliminary survey was conducted in June 2007 which recommended the establishment of two *fish refugia*, i.e. one each for blood cockle and sea grass. It was proposed that scientific survey should be carried out to verify the results of the preliminary survey.

In addition, the preliminary survey recommended the introduction of fish enhancement devices developed by SEAFDEC/TD in the zone of the fish refugia. This needs more contemplated discussions with the authorities concerned as any physical installation in the water is prohibited in accordance with the Cambodian Fisheries Law.

Mangrove reforestation

The study tour to Kampong Pluk, Siem Reap Province, was conducted on 13 – 15 August 2007 with leading CF members. Through this study tour, they learned the practical approach in forest protection and its impact to fishery resources management. Further, an attempt on mangrove reforestation was discussed at the 5th Project Implementation Coordination meeting held on 18 October 2007 where it was agreed to promote mangrove reforestation in the project operational area. Following the decision and as a first step, the mangrove plantation day was set on 5 December 2007 which included an educational session for school children who are responsible for environmental protection in the future. On that day, about 200 school students and 50 fishermen participated in the event and 1,000 mangrove seedlings were planted in Khos Angkor taking into account the environmental requirements and the inhabitants' views. All participants were provided

with T-shirts showing the campaign logo for mangrove plantation.

2.6 Fishing/fish handling technologies development

This activity has been put in lower priority and no specific activity has been pursued during this reporting period.

2.7 Project management meeting

Implementation Coordinating Committee (ICC) meeting

The 5th ICC meeting was convened on 18 October 2007 in Sihanoukville. At this meeting, the progress made since the last ICC meeting was reported and pertinent issues were raised to seek solutions at the local level. Also, the immediate action plan for the succeeding four months was discussed in detail. The major issues raised at this meeting included: conduct of scientific research for the establishment of fish refugia; mangrove reforestation program especially the detailed action plan and cost-sharing arrangement during the mangrove plantation day; women's group activities especially on how to use the saved funds; mid-term project evaluation; the 2nd trial of mud-crab culture; and the topics for discussion during the 2nd Local Seminar in December. The detailed contents of discussion at this meeting are shown in Annex 6: Minutes of the 5th ICC Meeting, prepared in both Khmer and English languages for distribution.

2.8 Other activities

Signboards showing the project title and logos of FiA and SEAFDEC in both English and Khmer languages, were put up in the project site of each women's group. Also, one signboard with the project description was put up in the project site of the mud crab culture.

Three local project staff participated in the 3-day regional seminar on Integrated Coastal Resources Management in Southeast Asian Countries held on 10-12 July 2007 in Chumphon, Thailand. They were exposed to the forum where common issues on integrated coastal resources management in the region were discussed. They also made a presentation of the project activity of ICRM-SV at the workshop.

3. OUTCOMES

The major outcomes of the project activities during this reporting period include:

Baseline/monitoring survey

- The regular fish landing data collection exercises produced monthly data.
- The data obtained in 2006 and 2007 were analyzed and compiled.

Encourage and extend locally-based fishery resources management

- The final draft of CFAMP was submitted to the Governor of Sihanoukville Municipality for approval and the Community Fishing Ground Map was signed by HE Governor of Municipality.
- The Local Enforcement Unit continued patrolling the activity area more intensely. Thus, illegal fishing and mangrove felling have been evidently reduced.
- The consensus for establishment of fish refugia has been built up among the concerned parties.
- The consensus in the establishment of the Crab Bank was made through the fishers workshop. The Crab Bank group was formed.

Promotion of local business

- The women's group activity has been further developed at commercialization stage. They are now managing the mushroom production business self-independently.
- The project continues to monitor the practices in bookkeeping and accounting monthly so that transparency in money transaction is promoted and business management reinforced.
- Mushroom production was continued yielding 3,454 kg for 11 months from January to November 2007 and earning about Riel 7,776,000 equivalent to USD 2,000.
- Diversification of business ventures has been promoted especially in two of the women's groups.
- The 2nd trial of mud-crab fattening commenced producing promising outputs.
- The experiment in fish culture for sea bass commenced.

Enhance human resources capacity and participation

- Various training courses and workshops were conducted.
- The study tour to Siem Reap Province was conducted. The participants disseminated to the community the findings and the lessons learned during the study tour during the fishers workshop.
- The 2nd Local Seminar was held, where 50 fishers and local administration officers participated.
- The sense of production and business management in a cottage-scale industry has improved among the women's groups.

Rehabilitate and enhance coastal resources

- Mangrove plantation was organized during the mangrove reforestation day with the voluntary participation of 200 school children and 50 fishers. On this occasion, 1,000 seedlings of mangroves were planted.
- The preliminary study for the establishment of fish refugia in the project operational area was conducted and it was decided to establish two fish refugia in the area.

Project management meeting

- The 5th ICC meeting was held on 23 May.

Mid-term Project Evaluation

- The planned mid-term project evaluation could not be conducted since no relevant outsourced consultant or agent could be identified in the country.

Other activity

- The project sign boards were put up.
- Three local project staff participated in the Regional Seminar on Integrated Coastal Resources Management in Southeast Asian Countries held in Chumphon, Thailand

4. MAJOR CONSTRAINTS

Conduct of the mid-term project evaluation has been long over-due. The FiA Cambodia as well as the project have exerted their maximum efforts to identify a relevant outsourced consultant or agent who can carry out the evaluation work in the country, but without any success so far. As this exercise is vital in the project management framework, the identification of a proper candidate is urgently necessary.

5. WORK PLAN FOR THE NEXT REPORTING PERIOD

The work plan covering 6 months from January to June 2008 is described as follows.

Baseline/monitoring survey

- Continue fish landing data collection

Encourage and extend locally-based fishery resources management

- Upon approval of CFAMP, the resources management measures would be implemented.
- Reinforcement of the structure and capacity of Local Enforcement Unit (LEU)

Promotion of local business

- Further promotion of mushroom production
- Promotion of savings account
- Continue mud-crab fattening practices and review its commercial viability
- Continue fish culture of sea bass in the ponds
- Examine the possibility of cage culture in Kampong Chin
- Identify and try out alternative local business ventures

Enhance human resources capacity and participation

- Reinforcement of the structure and capacity of CFPN2
- Identify the community-based volunteer work
- Publication of PR and extension materials
- Conduct various training courses

Rehabilitate and enhance coastal resources

- Realization of the concept of fish refugia
- Start the scientific survey on the establishment of *fish refugia*
- Study the possibility of installing FEDs in the project operational area

Project management meeting

- Convene the 6th ICC meeting
- Convene the 4th SC meeting

Mid-term project evaluation

- Identification of a relevant outsourced consultant
- Entering into the contract with outsourced consultant
- Conduct the mid-term project evaluation

6. REPORTS PREPARED

Reports and documents prepared under the project during this reporting period are listed below.

| <u>No.</u> | <u>Title of the report</u> | <u>Name of author</u> | <u>Date of issue</u> |
|------------|---|-----------------------|----------------------|
| 01. | Report on Experimental Mud-crab culturing | Etoh S. | Aug. 2007 |
| 02. | Travel Report to Siem Reap | Sumitra R. | Sept. 2007 |
| 03. | Report on Study tour to Community Fisheries Kampong Pluk, Siem Reap province | Chanthana Y. | Nov. 2007 |
| 04. | Fish Landing Data in Prey Nup II under the ICRM-SV | Penchan L. et-al | Dec. 2007 |
| 05. | Travel Report to Cambodia 4 – 8 December 2007 | Sumitra R. | Dec. 2007 |

Annex 1

Project Activity Implementation Chart for ICRM – SV in 2008

Revision : "0"

| Activity | 2008 | | | | | | | | | | | | Remarks | | |
|--|---------|---|---|---------|---------|---------|---|---|---|---------|---------|----|--------------------|--------------------|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | |
| 1. Baseline / monitoring survey | | | | | | | | | | | | | | | |
| <u>1.1. Fish landing survey at the project site</u> | | | | | | | | | | | | | | | |
| 1.1.1. Regular collection of fish landing data | ←.....→ | | | | | | | | | | | | Continued activity | | |
| 1.1.2. Analysis and compilation of data and information | | | | ←.....→ | | | | | | | | | | Data in 2007 | |
| 2. Encourage and extend locally-based fishery resources management | | | | | | | | | | | | | | | |
| <u>2.1. Community Fisheries Area Agreement (CFAA)</u> | | | | | | | | | | | | | | | |
| 2.1.1. Promulgation of CFAA | ←.....→ | | | | | | | | | | | | | | |
| 2.1.2. Formation of Community Fisheries Coordination Committee (CFCC) | | | | | | | | | | ←.....→ | | | | | |
| 2.1.3. Practical application of CFAMP | | | | ←.....→ | | | | | | | | | | Continued activity | |
| <u>2.2. Local enforcement unit (LEU)</u> | | | | | | | | | | | | | | | |
| 2.2.1. Strengthening the capacity of LEU | ←.....→ | | | | | | | | | | | | Continued activity | | |
| 3. Promotion of local business | | | | | | | | | | | | | | | |
| <u>3.1. Cottage scale industry by women's groups</u> | | | | | | | | | | | | | | | |
| 3.1.1. Monitoring mushroom production | ←.....→ | | | | | | | | | | | | Continued activity | | |
| 3.1.2. Identify the second local business | ←.....→ | | | | | | | | | | | | Continued activity | | |
| <u>3.2. Aquaculture business</u> | | | | | | | | | | | | | | | |
| 3.2.1. Running mud-crab culturing business | ←.....→ | | | | | | | | | ←.....→ | | | | During dry seasons | |
| 3.2.2. Running tilapia / sea-bass culturing business | ←.....→ | | | | | | | | | | | | | | |
| 3.2.3. Evaluation of the above business | | | | | ←.....→ | | | | | | ←.....→ | | | | |
| 4. Enhance human resources capacity and participation | | | | | | | | | | | | | | | |
| <u>4.1. Reinforcement of structure and capacity of existing Prey Nup II CF (PN2CF)</u> | | | | | | | | | | | | | | | |
| 4.1.1. Increase awareness on implementation of CFAMP | ←.....→ | | | | | | | | | | | | Continued activity | | |
| 4.1.2. Study tour to inspect a model case on CBRM or community Development | | | | | | ←.....→ | | | | | | | | | |
| <u>4.2. Participation in community development work</u> | | | | | | | | | | | | | | | |
| 4.2.1. Identify and implement relevant volunteer works for community development and environmental improvement | ←.....→ | | | | | | | | | | | | | | |
| <u>4.3. Local seminar</u> | | | | | | | | | | | | | | | |
| 4.3.1. Organize and conduct local or national seminar | | | | | | | | | | ←.....→ | | | | | |
| <u>4.4. Publication and PR materials</u> | | | | | | | | | | | | | | | |
| 4.4.1. Publication of reports and manuals | ←.....→ | | | | | | | | | | | | As required | | |
| 4.4.2. Distribution of PR materials | ←.....→ | | | | | | | | | | | | As required | | |

| Activity | 2007 | | | | | | | | | | | | Remarks | |
|--|------|--------|---|-------|-------|---|---|---|---|----|----|----|---------|--------------------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | |
| 5. Rehabilitate and enhance coastal resources | | | | | | | | | | | | | | |
| 5.1. Establishment of conservation area | | | | | | | | | | | | | | |
| 5.1.1. Study on establishment of conservation area | ← | | → | | | | | | | | | | | |
| 5.1.2. Establishment and maintenance of conservation area | ← | —————→ | | | | | | | | | | | | |
| | | | | ← | | → | | | | | | | | Continued activity |
| 6. Fishing / fish handling technologies improvement | | | | | | | | | | | | | | |
| 6.1. Identification of necessity on fishing and fish handling technologies improvement | ← | | → | | | | | | | | | | | Continued activity Lower priority |
| 6.2. Implementation of improving fishing or fish handling technology. | ← | | → | | | | | | | | | | | Continued activity Lower priority |
| 7. Project management meeting | | | | | | | | | | | | | | |
| 7.1. Steering Committee (SC) meeting | ↔ | | | | | | | | | | | | | |
| 7.2. Implementation Coordination Committee (ICC) meeting | | ↔ | | | | | ↔ | | | | ↔ | | | |
| | | | | ↔ | | | | | | ↔ | | | | |
| 8. Project evaluation | | | | | | | | | | | | | | |
| 8.1. Mid-term project evaluation | | | ← | | → | | | | | | | | | |

**Annex 2: Report on
Study Tour to
Community Fisheries Kampong Pluk, Siem Reap Province
(13 – 15 August 2007)**

Yos Chanthana
1 November 2007

1. General Background

Kompong Phluk is a small commune in Prasat Bakong district, Siem Reap province, about 16 km southeast of Siem Reap town. It is made up of three villages: Dey Kraham, Thnot Kambot and Kok Kdol, with a total of 437 families and 2,767 people. The villagers live within the floodplain of the Tonle Sap Lake, in permanent houses built on high stilts. During the high water season, the villages are submerged, the water comes up to the thresholds and the only way to move around is by boat. In the dry season, from November to May, many villagers migrate out onto the open lake, where they establish temporary floating housing from where they go fishing. During that time, houses on stilts are occupied mostly by elderly people. As the lake starts to rise in June, the entire population returns to the villages.

The main occupation of villagers in Kompong Phluk is fishing, mostly family scale, and involving 94 percent of all households. Some families are involved in pig farming, raising crocodiles or fish in cages or home gardening during the dry season. In 2002, fishing families of Kompong Phluk formed a Community Fisheries Organization, in order to manage their resources and improve their livelihood. They have been assisted by the United Nations' Food and Agriculture Organization (FAO) and the Provincial Department of Fisheries. Eco-tourism is part of the community's management plan and is hoped to become one of the important sources of income.

2. Tentative Time Table

13 August 2007 (Mon)

07.00 – 11.30 Participants from Sihanoukville move to Phnom Penh

11.30 – 12.30 Lunch

12.30 – 06.00 Arrive Siem Reap Town

14 August 2007 (Tue)

07.30 – 09.00 Arrive Chong Kneas port

09.00 – 09.30 Take a boat to the Community Fisheries

09.30 – 05.00pm Working in the field

05.00 – Leave the CF and proceed to Siem Reap Town

15 August 2007 (Wed)

08.00 – 11.00 Visit Angkor

11.00 – 05.00 Arrive Phnom Penh

05.00 – 10.00pm Arrive Sihanoukville

3. Participants

Cambodia Side

- 1) Yos Chanthana Project team Leader
- 2) Meas Chanda Aquaculturist
- 3) Mrs. Heng Punley Socio-economist

- 4) Mr. Nen Chamroeun Chief of Community section Sihanoukville
- 5) Sam Ritkeila Extension worker
- 6) Nos On Vice chief of Commune Toeuk Tla
- 7) Li Del village Chief of Prek Sangke
- 8) Hok Tean CF committee member
- 9) Mok Sen CF Committee member
- 10) El Sok CF from Prek Sangke
- 11) Prach Sokha Lay vice chief of CF Prey Nub2
- 12) Sok Sat CF from Prek Pros
- 13) Los Toeut CF from Prek Sangke
- 14) Sok At CF from Kampong Chin
- 15) To In CF from Prek Toal
- 16) Uk Sam An CF from Kampong Chin

SEAFDEC/TD side

1. Sei Etoh Project Leader
2. Sumitra Ruangsivakul Head, Socio-Economic Section
3. Jariya Sornkiang Researcher charged in ICRM-SV
4. Tanyalak Suasi Researcher in Socio-economy

4. Results

5.1 Meeting With CFs Committee at Kompong Phlouk

- Mr. Douk Rassy, FAO representative in Siem Reap, expressed his appreciation on the study tour from CF Prey Nup 2 and SEAFDEC. He said that he head CF Prey Nub2 but he never visited this place. He hoped that CF Kompong Phlouk would visit CF Pre Nub2 in the future. He asked CF committees to introduce themselves to CF from Prey Nub2 .
- After finishing his introduction, Mr. Douk Rassy invited Mr. Etoh, Project leader of ICRM-SV to introduce CF committee members from Prey Nub2. Mr. Etoh briefed the purposes of the study tour in which he emphasized on the implementation of CFAMP in Kompong Phlouk Community Fisheries. CFAMP in CF Prey Nub 2 was endorsed by concerned authorities, but implementation was pending; so experiences from Kompong Phlouk would be useful for implementing in Prey Nub2, he said.
- CF Kompong Phlouk presented the background of CF was established since 1999 by the Provincial Fisheries Office, Siem Reap:
 - o This year 2006, CF received funds amounting \$USA 1,152 to implement a project so called "Flooded forest Protection". The project also covered expenditure on floating hut and kitchen equipment which were used for providing tourism service. Income from the tourism services were shared to CF committee members and used for conservation purposes of natural resources.
 - o CF organized brood-stock refugia covering 4,200m² of water body.
 - o CF established wild bird conservation zone covering 35 ha of land.
 - o CFAMP including internal-law, regulation, and CF map, was finished.
- Mr. Chan Tong presented the activities of CF in the following:
 - I. Obligation of CF
 - o Protecting forest from illegal logging

- Patrolling illegal fishing
- Using Natural resources in sustainable way

II. Zoning

- Regarding to resources allocation, CF zone was divided into four specific zones. For first year, people can use zone one but zone 2, 3 and 4 were prohibited.
- Each zone was used rotationally.

III. Illegal fishing

- Some illegal fishing activities were still prevailing in CF fishing area such as electric devices, small mesh size nets and push nets with engine.
- Level of illegal fishing were reducing
- Most of the illegal activities conducted by outsiders

IV. Patrolling Unit

- Law enforcement unit consisted of 9 members who were CF committee members.
- The unit went patrolling 5-6 times per month. Patrolling was conducted with strong collaboration with Inspection Unit of Fisheries Office at Kompong Phlouk.
- In the case illegal fishing activities were small
- When fishermen saw illegal fishing, they would inform and ask patrolling unit to intervention on time.
- Illegal fishing activities were fined according to internal law of CF Kompong Phlouk. 50% of fines were kept as CF budget and the remains were transferred to the Government budget.

V. Extension

- Extension programs were conducted during traditional ceremony
- Leaflets were distributed to CF members

VI. Livelihood

- Ecotourism: Money that tourists spend at the ecotourism center was paid directly to the community and shared between its members.
- Employment of women: Women were strongly involved in this project and were responsible for cooking and boat tours.
- Fish Culture: CFs members had their own fish cages for culturing snakehead fish.

VII. Strengths of CF Kompong Phlouk

- Availability of CFAMP
- CF chief was a member of the commune council
- Received financial supports from donors
- Strong collaboration with the Provincial Fisheries Office

5.2 Visit Integrated Farming System in Ta Ream Village, Chi Kreng Commune, Chi Kreng District

In order to encourage fishermen to participate in fisheries resources management, FAO provided some funds to individual fisherman for conducting agriculture system (fish culture, vegetable growing and fruit tree cultivation). 10 fishermen received support from FAO. This approach was different from SEAFDEC/TD approach in which SEAFDEC/TD encourage

working in group rather than individual business. However, the purposes of the two organizations were to manage natural resources in sustainable way and alleviate poverty.

I. Fish Culture: catfish

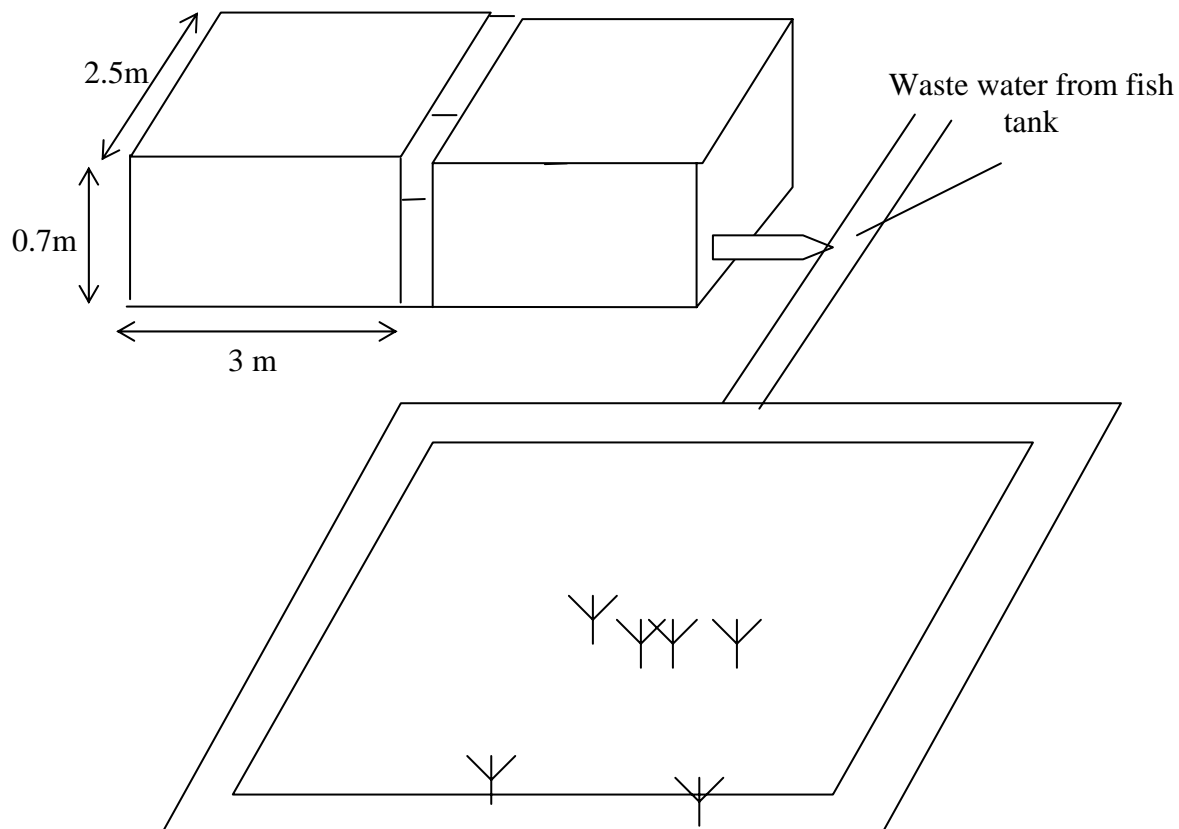
- Sources of fingerling: brought from Phnom Penh by the provincial fisheries officers without charge
- Water supply: water was pumped manually from the river nearby the farm. No costs were spent for water supply
- Fishes were cultured in cement tank: 3m x 2.5m x 0.7m. Waste water from fish tank was used for watering vegetables and fruit tree
- Stocking: 100pcs/m²
- To increase blue color in the water, farmer applied EM
- Feed: small fish with rice bran and worm
- Culture duration: 3-4 months, market price: \$USD 2 / kg

II. Vegetable Growing and Tree Seedling

Varieties of vegetables were growing. Farmers could harvest daily and income varied from 2000Reils to 5000Reils.

Farmers did not apply chemical fertilizers. EM was used to replace chemical fertilizers. There were different kinds of EM with different functions:

- EM for fish culture
- EM for vegetable
- EM for pig
- EM for cosmetics



Annex 3

TRAVEL REPORT TO CAMBODIA 15-18 OCTOBER 2007

Sumitra Ruangsivakul

26 October 2007

1. Background

The project team plans to make a duty trip to Cambodia to pursue the various activity pertinent to the project Integrated Coastal Resources Management in Sihanoukville (ICRM-SV) as listed below from 15 to 18 October 2007.

- Holding the 5th Fishers' Workshop on reviewing outcomes of study tour to Siem Reap on 16 October
- Holding the 6th Fishers Workshop on reviewing outcomes of mud-crab culturing on 17 October
- Holding the 5th ICC meeting on 18 October
- Reviewing women's activity on 15 - 17 October

2. Objectives

The objectives of the 5th Fishermen's Workshop are:

- to review findings and observations made during the study tour by individual presentation,
- to contemplate practical application of such models to their own communities,
- to lead to a consensus among community members for the future prospect in CBRM approach and community development
- to expect HRD among participants through presentation and discussion process

The major objectives of the 6th Fishers Workshop are;

- to review thoroughly the outcomes of experimental mud-crab culturing carried out from February to June 2007,
- to discuss and identify counter measures to be taken for the future full scale operation.

The 5th ICC meeting is being organized to discuss a number of tactical issues at local level with the representatives of various institutions, agencies and groups pertinent to the project implementation. Particularly, the meeting is convened in order to:

- monitor the project progress since the last ICC meeting;
- discuss the proposed project immediate action plan for the next 3 months, from the point of view of practical implementation;
- identify the constraints in the project implementation at local level and suggest possible solutions; and
- discuss the outline of the work plan for 2008

3. Travelers

- | | |
|-----------------------------|-----------------------------|
| 1. Mr. Seiichi Etoh | Project Leader |
| 2. Ms. Sumitra Ruangsivakul | Socio-economic Section Head |
| 3. Ms. Jariya Sornkliang | Socio-economist |

4. Work schedule

15 October 2007 (Monday)

- 07.50 – 09.05 - Flight from Bangkok to Phnom Penh
- 10.00 – 13.00 - Move to the Project site in Tuek Tla Commune
- 13.00 – 14.00 - Lunch
- 14.00 – 15.00 - Inspection of the project site
- 15.00 – 16.00 - Internal discussion among project staff
- 16.00 – 18.00 - Move to Sihanoukville

16 October 2007 (Tuesday)

- 07.30 – 08.30 - Move from Sihanoukville to the project site
- 09.00 – 12.10 - The 5th Fishers Workshop
- 12.10 – 13.30 - Lunch
- 13.30 – 15.00 - Visited ell culture, near project site
- 15.00 – 17.00 - Reviewing women's activities
- 17.00 – 18.00 - Move to Sihanoukville

17 October 2007 (Wednesday)

- 07.30 – 08.30 - Move from Sihanoukville to the project site
- 09.00 – 12.00 - The 6th Fishers Workshop
- 12.00 – 13.30 - Lunch
- 13.30 – 17.00 - Reviewing women's activities
- 17.00 – 18.00 - Move to Sihanoukville

18 October 2007 (Thursday)

- 08.30 – 12.10 - The 5th Project ICC Meeting (ref. to the attached prospectus)
- 12.10 – 13.30 - Lunch
- 13.30 – 15.00 - Follow-up discussion with FD, SHV and JICA Expert
- 15.00 – 18.30 - Move to Phnom Penh Airport
- 20.25 – 21.30 - Move to BKK

5. The result

5.1 Fisher's workshop on finding the outcome of study tour

- The study tour to Siem Reap Province was taken place, to inspect the activities of CBRM approach in line with CFAA (Community Fishing Area Management Agreement) of the Community Fisheries Kampong Phlout and Community Fisheries Chi Kraeng on 13 – 15 August 2007.
- The total of participants was 22, 16 of local people, 4 of local project staff and 2 of SEAFDEC/TD.
- Mr. Etoh explained the objectives of this workshop that, project would like proposed the participants to review their findings during this study tour and identify the possibility in application of such approaches to their communities in the way that each participant presents his/her findings and views to the workshop. Also, this presentation will benefit to the other members of communities who did not participate in the study in the way of sharing information and knowledge to get the result of study tour at Siem Reap.
- Mr. Doung Samart, Chief of Fisheries Office, Sihanoukville was opening address that, this workshop will be developed Community Fisheries and improved Fisheries Management Plan, please given the results, to identified the possible way of business of Community Fisheries to SEAFDEC.
- Mr. Etoh informed more that, this workshop will review on what kind of activity will be learned, and how to implement and adjust the good case like Kampong Phlout, what we can learn from this community, project will be assisted you to create, only you make plan of future program. Please each group presented the observation and impression of study trip.

Sangkat

- Representative of Sangkat given the outcome and impression that;
 - 1) The experience of forest conservation from fishermen, by divided the area and make the map of fisheries resources, and make understand for fishermen to protect.
 - 2) The experience of EM solution (Effective Micro-organism) from Chi Kraeng Community Fisheries, EM solution can be used for fish culture and agriculture. The idea of implementation of this program, by divided each family to operation, not divided to group.
 - 3) He can understand the important of forest, for fish habitat.

Prey Pross

- Representative of Prey Pross village given his impression that;
 - 1) Angkor Wat, Kampong Phlouk Community and Chi Kraeng Community
 - 2) He was interesting fish culture by each family, like snake culture.
- Mr. Meas Chanda, local project staff, given comment that, each your motivation can be done by project.
- Mr. Etoh given more information of fish culture and agriculture that, SEAFDEC can not support budget to each family, support only group.

Prey Sangke

- Representative of Prey Sangke got experience that;
 - 1) After discussion with Kampong Phlouk Committee, we can understand the forest conservation plan.
 - 2) EM solution can used in fish culture and worm culture, not only planting.
 - 3) Echo-tourism development, by develop house for home stay, the profit of this activity will be used for patrolling boat.
 - 4) Fish culture, like ell culture (fresh water)
- Prey Sangke will be formed group to implementing the fish culture (ell), by collecting fingerling from nature canal.
- In the afternoon, Chief of CF and project staff visited private ell culture, and discuss on the technical and necessary information with farm owner.
- In case of echo-tourism, it is impossible to implement in this area, because this area has not special area to visiting.

Kampong Chin

- Representative of Kampong Chin given the interesting activity of study trip that;
 - 1) Fish culture at Kampong Phlouk, and forest conservation plan, for fish culture will be divided each family, not group.
 - 2) EM solution, she was sure to produce EM, but project must arrange the training course at site.

Prey Toal

- Representative of Prey Toal given his impression that;
 - 1) Angkor Wat
 - 2) Forest Conservation Plan at Kampong Phlouk Community,
 - 3) He interesting on cat fish culture in concrete tank.

Staff of FiA, Sihanoukville

- Mr. Jamneon, he was thanks to SEAFDEC to invited staff of FiA, Sihanoukville to study trip at Siem Reap, the outcomes of this trip was that;

- 1) He focused on fish culture that, all representative was interesting on fish culture by each family, please thinking on how to collect fingerling, management and marketing.
 - 2) In case of forest conservation, following this conservation, we divided 3 zones, in the sea (now FiA try to implementing fish refugia), mangrove forest and landing, and the project will be successful depend on our management plan.
- Mr. Etoh comment on fish culture that, the pond must be design, will be big pond for group or small pond for family. For EM solution may be used rice bran, and vegetable agriculture was supported by Provincial (Health project), by provide fertilizer.

Summary outcomes of study trip

- CFAMP (Community Fishing Area Management Plan) application will be divided 3 blocks to conservation, mangrove forest, fish refugia and family used area. This issue will discuss with Community Fisheries Committee and Conservation Authority. The education on protection will be dissemination to community.
- The conclusion of fish culture will be culture in each family by collect member and select size of pond (may be 3m x 5m), this information will be investigation more.
- Vegetable agriculture will be planting around fish pond.
- Echo-tourism will be study more
- Mr. Etoh finalized more that, fish culture will be study more information and organize group. Vegetable agriculture will be more study on EM solution. Echo-tourism activity was used big budget, please should study more. SEAFDEC will collect these idea to manage available budget to you.

5.2 Fisher's Workshop on Mud Crab Culturing

- Mr. Etoh explained the objective of this workshop that, to concentrate the mud crab culture, outcomes are thoroughly reviewed and solutions for tackling problems are identified for future implementation by the MCCG (Mud Crab Culture Group).
- Mr. Etoh informed more on operating that, we were pond digging on October 2006, and started to culture on February 2007, this culture involved by Japanese Embassy, SEAFDEC and FiA Cambodia, all donor would like to see the project was successful on practical and technical. This experiment did not get profit, but can get the experience for the next culture, and the next experiment can not get profit, SEAFDEC will be stopped this activity. This culture can not compare with mushroom production, because the technical of mud crab culture was difficult than mushroom production, but we should do successful, especially Japanese Embassy. The workshop will showed the results, what wrong, and what to do, the knowledge grain will be used in the next experiment.
- Chief of MCCG, Mr. Mok Sen, presented the results of last experiment of mud crab culture that;
 - 1) We released small mud crab with low tide and high temperature (35° – 36° C), the duration of releasing will be early to release, may be November or December.
 - 2) Some small mud crab were not strong, the next experiment will be order mud crab near community, not far from project site.
 - 3) Feed (Trash fish) for mud crab is not good quality, which fixed by salt, the next experiment may be used ice for freezing.
- Mr. Yos Chantana given more information on beginning until harvesting of crab culture that,
 - 1) The number of ponds was 5 ponds, two ponds of pond no. 2 and no. 3, started on February, released male and female separately, given 2 times of feed, 10 kg/time.
 - 2) MCCG have 12 members, 2 members worked per day, by reported the condition of crab, situation of water in each pond, given feeding.
 - 3) After harvesting on June, the remaining of small crab have moved to pond no. 5

- 4) The physical results of mud crab culture was reporting that; the salinity was 32-36 ppt., temperature was 32° C -33° C, DO (Dissolved Oxygen) was not report.
- 5) The number of crab releasing in each pond;

| Pond No | 1 | 2 | 3 | 4 | 5 | Total |
|---------------------------|-------|-------|-------|-------|-------|-------|
| 1. Stock (pc) | 405 | 395 | 733 | 617 | 0 | 2,150 |
| 2. Transferred (pc) | 70 | 23 | 45 | 24 | 0 | 162 |
| 3. Remained (pc) | 335 | 372 | 688 | 593 | 162 | 2,150 |
| 4. Sold (pc) | 19 | 34 | 35 | 15 | 35 | 138 |
| 5. Dead (pc) | 265 | 261 | 286 | 265 | 0 | 1,077 |
| 6. Missing (pc) | 51 | 77 | 367 | 313 | 127 | 935 |
| 7. Lost total (pc) | 316 | 338 | 653 | 578 | 127 | 2,012 |
| 8. Ratio of lost crab (%) | 78.0% | 85.6% | 89.1% | 93.7% | 78.4% | 93.6% |

- 6) Economic viability; The total operational expenses incurred in this experiment amount to Riel 5,068,000 (USD 1,267), disbursed by SEAFDEC/TD. The profit and loss calculations showed a deficit in the amount of Riel 4,666,350, the main cause of deficit is attributed to the extreme low survival rate.
 - 7) Expected income; by improved survival rates.
 - 8) Conclusion and Recommendation; the experiment gave the project useful lessons and experiences.
- Everyone agreed on presentation, Mr. Etoh given more economic table that, MCCG was lucky, because the 2nd time of mud crab releasing provided by government (FiA), 56 kg of small mud crab, if we paid these mud crab, will be loss more. How we can improve mortality rate and problem?
 - 1) Re-construction pond, because original size was lower than common size (more than 0.5 m)
 - 2) The dike of pond must repair,
 - 3) The next experiment will be started early, because the last experiment started too late (on February), the temperature was high and pond was shallow, the next experiment must deep pond and start on November, harvesting on March, which good duration for culture.
 - Mr. Etoh mentioned crab missing that, there are three cases of missing, died, run away and thief, please reply which one of missing, and please clear the reason to prevent for the next experiment.
 - Mr. Mok Sen, Leader of MCCG replied that, member may be loss recording, but we believed that, crab eat together, and requested small hut at the opposite site of old house.
 - Mr. Etoh informed that, this project was belong Community Fisheries, not belong SEAFDEC or FiA, please work active and good management, and SEAFDEC will support small hut. For the next experiment, indicator of salinity and temperature must be recorded everyday, and DO (Dissolve Oxygen) may be measure 1-2 time per week, this measurement must be done. The growth rate measure every two weeks by weight, this data will be calculated sufficient food of mud crab. For feeding, please be careful fishes in culture pond, because fishes can eat feed quickly than crab, how to remove fishes?
 - Mr. Mok Sen replied that, we will be used net 3 layers protect at gate of pond, and still meet fishes at pond will used scoop net or gill net. The next experiment, we will use ice replace salt to fix trash fish, the price of ice is 11,000 Riels per 50kg. SEAFDEC will provide the ice box to MCCG. For the small mud crab was not strong at the last experiment, but the next experiment will buy mud crab at community, not buy far from project site.
 - Mr. Etoh mentioned more that, please spray water to mud crab before release, or put water to mud crab 1-2 hrs before release to pond, don't release directly to pond before rest or

adjust the condition of mud crab. The number of small number of crab to release, may be 100-200 crabs, not big amount like last experiment. Now we have one JICA Expert, the system to contact him that,
Member of MCCG → Mr. Kiehla → Mr. Chantana → JICA Expert (Mr. Hatori)

5.3 *The 5th ICC meeting*

- Mr. Ing Try, Deputy General of FiA, Cambodia, Chairman of the 5th ICC meeting, informed that, this meeting composed local people of community and the main objective was solution the problem of last activities, and introduced new participant, Mr. Hatori Tatsuya, JICA Expert on Aquaculture.
- Mr. Chantana reported the last ICC meeting (the 4th ICC meeting)
- Mr. Etoh have comment that,
 - 1) SEAFDEC didn't receive any progress report from Cambodia site, after last ICC Meeting.
 - 2) The information of fish refugia, SEAFDEC have received the 1st report from Mr. Va Long Dy, and the 2nd report from Mr. Meas Chanda, FiA may be conducted the Scientific research in fish refugia.
- Mr. Ing Try replied that, Mr. Chantana was very busy, can not prepare the progress report to SEAFDEC in time, but after this meeting he will report to SEAFDEC every month by e-mail, and every last progress report will finish before 10th December 2007. For fish refugia, FiA don't have budget to carry scientific research, because this research will taken long time and big budget.
- Mr. Etoh mentioned that, after go back to SEAFDEC, we will discuss with staff's concern, please provide boat and fishing gear for us.
- Mr. Ing Try mentioned on mangrove reforestation that, the duration of this activity will be held the same time of local seminar, 5-7 December 2007, and SEAFDEC will support 500 of notebooks and 150 of T-shirt.
- Mr. Doung Samart comment income of women's group that, the credit scheme did not assist CF, because women's group get high interest, so did not fare for Community.
- Mr. Ing Try mentioned that, this criteria will be discuss at the local seminar on December.
- Mr. Etoh informed the work plan of ICRM-SV from October to December 2007 that,
 - 1) Mid term Evaluation may be used Angkor's Company for consultant, please identify this case, and SEAFDEC will be prepared TOR.
 - 2) Mud Crab Culture in the next experiment, SEAFDEC will support budget for small hut (about 50 USD).
 - 3) Local Seminar and mangrove reforestation will be held on 5-7 December 2007.
- Mr. Ing Try informed on mud crab culture that, the FiA's pond will be opened and add together with project's pond. For Crab Bank activity will be presented at the local seminar.
- Mr. Etoh mentioned the outcomes of finding's study tour to Siem Reap that, CF would like to create the 2nd business of Community, conducted small culture (like fish culture, ell culture) in each family, echo-tourism and vegetable farm by EM solution.

(The minute of the 5th ICC Meeting will be reported by Mr. Yos Chantana, FiA Cambodia)

Annex 4

Summary of the 2nd Local Seminar on 6th December 2007

Yos Chanthana
7 December 2007

How Do We Think About Mushroom Cultivation?

- Mushroom cultivation provided alternative job for CFs especially women
- Money in saving account of mushroom should be used as credit scheme but we should not provide loan those who are not CFs member. Borrower should organize a group and the group has to be responsible for repaying.
- Women group should continue mushroom production. Now they should not look at other business. In the case mushroom can not provide economic profit, the group should find other businesses.
- Mushroom cultivation provided skill to the group and they can disseminate the experiences to other CFs members.
- Women groups should try their best to produce mushroom with economic viability. Each group should find the solution to increase mushroom productivity.
- Money in the saving account should be used for other business for example, purchasing rice, animal raising...

How Do We Think About Patrolling Unit?

- Patrolling unit is very effective because many illegal fishing were cracked down. However, CFs should be careful when arresting offenders, because some offenders may beat CFs.
- Patrolling activity is very necessary
- Police should participate in patrolling if requested by CFs
- Not only police should be invited but people can organize in a group and they can organize patrolling.
- CFs leader should write the request local authorities, police and fisheries officers to interven in cracking down illegal fishing. We should not inform verbally

How Do We Think About Mud Crab Culture?

- For experiment case, the culture was not success, but the mud crab group should struggle for success. The experiences for Prey Nub 2 can be applied to other communes in Prey Nub District.
- The group should not be pessimistic on the failure. We should not give up because SEAFDEC spent a lot of money to invest in mud crab culture.
- We should use the experiences for the experiment case for improving future operation.
- In the case mud crab culture is not success, we can culture sea bass, grouper or tilapia.
- Mud crab culture should be encouraged because crab caught from nature mostly are small size.
- We cannot release mud crab in the pond from Jan to March because of high temperature and high salinity

- The 2nd crab culture, for two weeks ago the mortality rate is low. We culture with technical assistant from JICA
- The mud crab culture group promised to do all their best in culturing mud crab.
- Culturing mud crab is very costly. It is not necessary to culture because if we strengthen law enforcement mud crab may be abundant and fishermen can get more catch. Crab bank is very good option for increasing crab stock in nature.

How Do We Think About CFAMP?

- We should make some amendments according to the guideline from the Ministry of Agriculture, Forestry and Fisheries. The Fisheries office should coordinate on this change and should find some budgets for conducting this work.
- The draft of amendment should be disseminated to the public (CF and non-CF member)
- We should organize assembly
- The Community Fishing Ground map, already signed by HE. Governor of Sihanoukville, should be sent to the Ministry of Agriculture for sealing.
- We have CFAMP, fisheries law and some prakas but we have not yet implement it fully. For example, small crab still be caught and trading.

Organizing Crab Bank

- 11 fishermen informed to participate in crab bank scheme voluntarily in which:
 - Mr. Prach Sokhaly is responsible as the leader
 - Mr. Deap Yunos will serve as deputy leader
 - and Mr. Sim San will serve as cashier

Suggestions from the Participants

- SEAFDEC/TD should expand to other Commune especially Toeuk Laok commune which join border with Toeuk Tla
- SEAFDEC/TD should support cage culture, sea bass or grouper, in Kampong Chin village. CFs members in this village are very difficult to join mud crab culture because it is far from the crab ponds.
- Fisheries office and other organization should put more effort in fisheries resources management. Now we have law, but we have not yet implemented fully
- Fishermen must follow fisheries law
- Experiences from mud crab culture in Prey Nub 2 should be disseminated to other communes
- For mushroom, the project should find market for women group.s

Annex 5

TRAVEL REPORT TO CAMBODIA 4-8 December 2007

Sumitra Ruangsivakul
14 December 2007

1. Objectives

The project team plans to visit the project site in Sihanoukville, Cambodia, on 4 – 8 December 2007 to pursue various activities as listed below.

1. Holding the 7th Fishers Workshop on Establishment of Crab Bank
2. Holding the 2nd Local Seminar on Project Progress and Local Participation
3. Carrying out mangrove plantation with voluntary participation of school students and fishermen's families
4. Monitoring the mushroom production
5. Monitoring mud crab and sea-bass culturing

The 7th Fishers' Workshop

The purpose of the 7th Fishers' workshop on Establish of Crab Bank, there are a few practically conceivable ways in promotion of the crab bank in Sihanoukville learning after the prevailing models in Japan, Chumphon (Thailand) and Langkawi (Malaysia). Each approach has its own characteristic advantages as well as disadvantages. Therefore, the pictorial descriptions in each approach are presented in this workshop so as for concerning fishermen to fully realize the concept of the Crab Bank scheme, and based on that they will decide the most suitable approach among others through thorough deliberation.

The workshop is expected to produce the following outcomes.

- 1) The sub-group of Crab Bank is organized with participating members
- 2) The participants are fully acquainted with the concept and function of the Crab Bank.
- 3) The most suitable approach meeting the local requirement is identified.
- 4) The preparatory work for initiation of Crab Bank is scheduled.
- 5) The mutual cooperation and understanding among members are ensured.

The 2nd Local Seminar

The objectives of the local seminar are:

- 1) To disseminate the current project achievement and status to all beneficiaries and concerning local institutions and agencies
- 2) To expect feed-backs on project orientation and impacts from beneficiaries and concerning institutions and agencies
- 3) To summarize the project achievement for the last one year and internally review its progress with beneficiaries
- 4) To reflect findings and outcomes of the seminar into the future project operation
- 5) To stimulate participations by all beneficiaries to the project operation more positively through such an event.

The 2nd Local Seminar is anticipated to produce the following outcomes:

- 1) All beneficiaries understand more evidently and correctly the project orientation and its impacts particularly given during the year of 2007.
- 2) The project receives fresh and firsthand remarks on the project operation from the beneficiaries, which are very useful and conducive in reviewing the future project

orientation.

- 3) The project summarizes the project activity for the last one year and publicly monitor and evaluate its approach and outputs.
- 4) More beneficiaries who realize the real spirit and approach of the project orientation tend to participate positively in the project operation.
- 5) The local administrative authorities verify the extent of the project impacts and its needs from the socio-economic aspects.

Mangrove Reforestation

The objectives in Mangrove Plantation Day lie in;

- 1) Awareness building in the community, including children, for mangrove reforestation,
- 2) Thereby, preventing illegal logging of mangrove,
- 3) Planting 1,000 mangrove seedlings and
- 4) Fostering the voluntary participation among community members in environmental protection activity

The expected outcomes to be produced in the wake of implementation of Mangrove Plantation Day are as follow.

- 1) Awareness on importance of mangrove reforestation is increased among fishermen and their children.
- 2) Illegal logging is discouraged.
- 3) 1,000 mangrove seedlings are planted.
- 4) The motivation toward voluntary participation among community members is encouraged.

2. Travelers

- | | |
|-----------------------------|-----------------------------|
| 1. Mr. Seiichi Etoh | Project Leader |
| 2. Ms. Sumitra Ruangsivakul | Socio-economic Section Head |
| 3. Ms. Jariya Sornkliang | Researcher |
| 4. Ms. Thanyalak Suasi | Researcher |

3. Work schedule

4 Dec. 2007 (Tuesday)

- 0740-0850 - Leave Bangkok for Phnom Penh
0930-1100 - Visited FiA Phnom Penh
- Discuss with Mr. Ing Try, Deputy Director FiA,
- Pick-up JICA Expert, Mr. Hatori
1100-1500 - Leave Phnom Penh for Sihanoukville
- Monitoring mud-crab culturing and sea-bass culturing

5 Dec. 2007 (Wednesday)

- 0730-0830 - Leave Sihanoukville for project site
0900-1200 - The 7th Fishers' Workshop on Crab Bank
1430-1700 - Mangrove Reforestation

6 Dec. 2007 (Thursday)

- 0830-1700 - The 2nd Local Seminar

7 Dec. 2007 (Friday)

- 0900-1400 - Monitoring the bookkeeping and accounting of mushroom product
(4 Women's Groups)

- Monitoring mud crab culture by weight and measurement size of mud crab
- 1500-1900 - Leave Sihanoukville for Phnom Penh
- 8 Dec. 2007 (Saturday)
- 0955-1100 - Leave PNH for BKK

4. The results

4.1 Mud crab culture

- Mud Crab culture started on 19 November 2007, continued releasing 5 days respectively;

| Date | Total weight (Kg) | No.of crab | Male(No.) | Female(No.) | Average per crab (gm) |
|--------------|-------------------|-------------|------------|-------------|-----------------------|
| 19 Nov. 2007 | 18.5 | 209 | 117 | 92 | 88.52 |
| 20 Nov. 2007 | 17.7 | 232 | 130 | 102 | 76.29 |
| 21 Nov. 2007 | 20 | 228 | 144 | 84 | 87.72 |
| 22 Nov. 2007 | 14 | 186 | 92 | 94 | 75.27 |
| 23 Nov. 2007 | 13 | 174 | 97 | 77 | 74.71 |
| 24 Nov. 2007 | 12 | 143 | 71 | 72 | 83.92 |
| 25 Nov. 2007 | 8 | 100 | 47 | 53 | 80 |
| Total | 103.2 | 1272 | 698 | 574 | 80.92 |

- Project separated male and female to release in each pond, and received mud crab from FiA, which confiscated from illegal fishing, as follow;

| Pond no. / no.of crab | Male | Female | Male & Female | Remarks |
|-----------------------|------|--------|---------------|----------------------------------|
| 1 | | | 847 | Mud crab from confiscated by FiA |
| 2 | | 574 | | |
| 3 | 698 | | | |

4.2 Fisher's Workshop on Crab Bank Approach

- The total of participants was 48, 34 participants were leader of commune, leader of village and member of Fisheries Community, 14 participants were FiA, JICA and SEAFDEC/TD.
- Vice Chief of Thuk Thla Commune, welcome FiA and SEAFDEC to held this workshop, this activity will be increasing crab resources for fisheries community.
- Fishers' Workshop was opening by Mr. Ing Try, this workshop will be make community to development on crab bank activity, this knowledge will be informed to other fishermen and other community, and FiA would like to extent this activity to other area.
- Mr. Ing Try informed more that, this workshop will be presented three models, Chumphon model, Langkawi model and Japanese model. Crab Bank activity was important and special model in each area, please consider which model is the best for

Sihanoukville. After the explanation of each model finished, please let the idea to share for our site, especially this activity will be advantage for echo-tourism, because the customer will come to visit crab bank and crab culture in our site. Crab Bank activity may be started on May-July 2008.

- Mr. Muza, Chief of Fisheries Community, informed on land that, the land where near mud crab culture was belong Government, but community used this land for house and rice field, it is difficult to extent activity by project.
- Mr. Ing Try explained that, this land was belong government, please take care this area together, especially Chief of Commune and Chief of Village.
- Mr. Etoh explained more that, the size of swimming crab in Sihanoukville is smaller than Chumphon and Langkawi, so 100% of crab resources will be destroy, and the next generation will be smaller and smaller. Each model was explained by Mr. Etoh.

Chumphon model

- The crab-bank was introduced in 2002 to Crab Sub-group of Pakklong Fishermen's Broup (CSG-PFG) by one of the NGOs and the activity was taken over by the project ICRM-PD. Initially, they applied the method as follows.
 - a). Any gravid crabs caught by the member of CSG-PFG are brought to the Chairman and the weight and the number are recorded in a logbook.
 - b). These crabs are put into a cage with dimension of 3x3x3m (LxWxH) for hatching.
(The dimensions of cage is changed to 90x90x75cm (LxWxH) with 10 units from April 2007.)
 - c). The Chairman feed them daily and he picks up hatched crab once a week and sell them in the market.
 - d). Sales of these crab are used for maintenance of the cage and feeds cost, and any remaining money are accumulated for the mini-credit scheme. As such, no payment is effected directly to the fishermen who bring gravid crabs to CSG-PFG but only by the motivation toward crab-resources enhancement.
- Chumphon model started 6 years ago, there were two special regulation, the first regulation, the mesh size of bottom of crab trap change from 1 inch to 2.5 inch, the second, agreement of two fishing gears, crab gill net and crab trap, crab trap will be operated in shallow water, and crab gill net will be operated in deep water. After six years, the size and total catch data is increasing every year.
- This model can get income, to supported material and feed, pay back to member in equipment (crab trap), and fuel for patrol boat (in case of Sihanoukville). Advantage of Chumphon model can see by visitors.

Japanese model

- The crab-bank in Hyogo Prefecture, Japan, was initiated in December 1986, and since then it has been in operational by the Swimming Crab Resources Enhancement Association (SCREA) with the following manner.
 - a). The SCREA purchases gravid crabs from fishermen at the fixed price and record them in the log book by a member of SCREA.
 - b). The gravid crabs are released back to the water after being marked "X" on their carapaces.
 - c). Payment of these released crab are made to fishermen at the end of year.
 - d). When a fisherman catches crabs with the "X" marks on their carapaces, those have to be returned to the water.
 - e). The fund of payment to fishermen for purchasing gravid crabs is made available by voluntary contribution by the public fund-raising and also from the members.

- The special of this model, crab can spawning 3 times, but Chumphon model can spawning only one time.

Langkawi model

- The crab bank scheme was initiated with the project Integrated Coastal Resources Management in Pulau Langkawi in June 2007 following to the Japanese model as follows.
 - a). Gravid crabs caught are marked on carapaces on board by fishermen and released to the water.
 - b). Numbers of released crab are recorded in the logbook by the fishermen.
 - c). Numbers in logbooks are totaled in December and some prizes are given by SEAFDEC for the best five fishermen as incentives.
- Mr. Etoh mentioned more that, he would like to get motivation and understand on approach crab bank on this area from fishermen, and the number of member of crab bank group.

Opinion from fishermen

- Mr. Muza, Chief of FC, given his opinion that, Chumphon model is the best for this area. For Japanese and Langkawi model will be problem in this area, because fishermen from outside did not know the information on crab bank. He agreed Chumphon model, because this model can bring income back to member. Almost of participants chose Chumphon model.
- Mr. Etoh explained more that, Chumphon model must have strong and active leader to operating crab bank, especially he must be volunteer work. This presentation was only sample to show you, please give your idea to operating in your site.
- Mr. Muza informed more that, Prey Pross village was available to establish Chumphon model, because the location of this village is near community, member can be work and control illegal fishing.
- There are two locations for crab bank construction, Koh Angkor (fish refugia area) and Koh Krou (300 meter far from crab culture).
- The second workshop on crab bank will be organized on January 2008, the list of member and committee will complete before the second workshop organize. Next workshop will discuss on cage construction and group regulation. SEAFDEC will prepare some material to build cage, and FiA will provide some facility for this activity.

4.3 The second Local Seminar

- The Local Seminar started at 0900 on 6 December, opening by Vice Chief Governor of Sihanoukville, the total of participants was about 50 participants as FiA (HQ Phnom Penh, Shihanoukville), Pery Nup Khan Office, Community, Project staff, SEAFDEC/TD and JICA.
- The following reports are prepared timely in Khmer and presented at the seminar. Each report should describe precisely and concisely (1) the progress made for the last one year, (2) any impacts given to the communities, (3) the immediate future plan and (4) any constraints and how to tackle such problems for respective activity.
- Full report of the second local seminar will be reported by Team Leader Cambodia.

4.4 Mangrove Reforestation

- This activity was collaborative between FiA, Sihanoukville Governor, Fisheries Community, School and SEAFDEC/TD. FiA provided 100 T-shirt for student, snack and water, SEAFDEC provided 150 T-Shirt for adult and 150 ball pen. The total of participants was about 250, the area on mangrove reforestation was Koh Krou.
- Mangrove reforestation was opening by Mr. Ing Try, Deputy General Director of FiA.
- Mr. Sutharat, Vice Chief Fisheries of Sihanoukville, explained the objectives and usefulness of mangrove reforestation, before mangrove reforestation started.



ANNEX 6

MINUTES OF THE 5TH IMPLEMENTATION COORDINATION COMMITTEE (ICC) MEETING

Integrated Coastal Resources Management in Sihanoukville (ICRM-SV)

- Venue: Fishery Office, Sihanoukville
- Date: 18 October 2007

List to participants

DOF Cambodia & Fisheries Office Sihanoukville

- | | |
|----------------------|---|
| 1. Mr. Ing Try | Deputy Director General, FiA, PP |
| 2. Mr. Ke Dha | Deputy Director, Agriculture Dept., SV |
| 3. Mr. Duong Samath | Chief of Fishery Office, SV |
| 4. Ros Vuthy | Vice chief of administration office, DOF |
| 5. Mr. Pich Bunna | Vice chief CFDO, DOF, PP |
| 6. Mr. Sin Satharath | Vice Chief of Fishery Office, SV |
| 7. Mr. Hoc Laim | Vice Chief of Fishery Office, SV |
| 8. Mr. Yos Chanthana | Team leader |
| 9. Mr. Heng Punley | Socio-economist |
| 10. Meas Chanda | Aquaculturist |
| 11. Nen Chamroeun | Chief of Community Fisheries Section, SHV |
| 12. Sam RithKeila | extension worker |

CFs

- | | |
|------------------|-------------------------------|
| 13. Phoun Nam | Chief of Sangkat Toeuk Tla |
| 14. Ly Deal | Village chief of Prek Sangke |
| 15. Soeur Yob | Village chief of Prek Toal |
| 16. San Phat | Village chief of Kampong Chin |
| 17. Nhim Neng | Village chief of Prek Pros |
| 18. Rim Mousoeur | CFs leader |
| 19. 18. Tes sos | CF committee |
| 20. Hoc Tean | Women group representative |

SEAFDEC/TD

- | | |
|------------------------------|-----------------------------|
| 21. Mr. Sei Etoh | Project leader |
| 22. Ms. Sumitra Ruangsivakul | Socio-economic Section Head |
| 23. Ms. Jariya Sornkliang | Assistant Researcher |
| 24. Mr. Tatsuya Hatori | JICA adviser to FiA |

Meeting proceedings

2.1 Endorsing Minute of the 4th ICC Meeting

- In the welcome speech, Mr. Ing Try expressed sincerely thank to all participants including Department Agriculture, SEAFDEC/TD, Fisheries Office and Local Authorities and CF Prey Nub 2. He stressed that, without full collaboration from these institutions, the project could not have achieved the action plans. He suggested all participants to raise the problems happened from the 4th ICC meeting in order to find common solutions.
- Mr. Ing Try invited Mr. Yos Chanthana to present the 4th ICC meeting minute and project progress since the last ICC meeting. Mr. Yos Chanthana went through the 4th ICC meeting minute. Mr. Ing Try suggested all participants to comment and endorse each line of the

minute. He also reminded the participants to verify “whether the commitments in the 4th ICC meeting could be achieved?”

- Mr Etoh asked Mr. Yos Chanthana, the team leader, to compile quarterly reports and send to him. Mr. Ing Try asked Mr. Yos Chanthana to explain the reason behind the absence of quarter report.

- Mr. Yos Chanthana acknowledged that he was unable to fulfill the obligation mentioned above; however, he reported all project activities to the Project Leader almost everyday. Mr. Ing Try suggested Mr. Yos Chanthana to write and send quarterly reports to the Project Leader and Fisheries Administration by 10.12.2007.

- Mr. Etoh admitted that Mr. Yos Chanthana reported him through email, but wanted Mr. Yos Chanthana to write in the form of monthly or quarterly report.

- Regarding to fish refugia, Mr. Ing Try asked Mr. Etoh to comment on fish refugia report prepared by Mr. Valundy. He explained about the concept of fish refugia. He said that CFs might confuse between fish refugia and conservation area. Fish refugia could be allowed fishing in specific time, specific gear or specific species, which MPAs are areas that are closed to fishing. He asked Mr. Etoh to start developing fish refugia in 2008 according to our commitment in the 4th ICC meeting.

- Mr. Etoh reminded that, establishing fish refugia need to study carefully. Critical parameters should be identified such as coverage zone, spawning ground, spawning season etc. He asked Fisheries Office draft refugia design and estimate the cost. He presented the experiences of refugia from Japan. In Japan, fishermen have to collect only market size blood cockle only by using sieves for screening.

- With regards to mangrove plantation, Mr. Etoh emphasized the importance of mangrove plantation to community livelihood. He was informed that children pull out small mangrove trees planted by CFs. So we need to educate school children not to destroy mangrove, he said. He suggested Mr. Doung Sam Ath to choose the best location for plantation.

- Mr. Doung Sam Ath said that his office chose Khos Angkrong for planting mangrove and he asked Mr. Ing Try and Etoh to decide date for plantation. He reported that, Fisheries Office and CFs collected 1,000 mangrove seeds (kept for 3 months).

- Mr. Ing Try asked Mr. Etoh on SEAFDEC/TD’s contribution to mangrove plantation. On SEAFDEC/TD site, Mr. Etoh replied, SEAFDEC/TD would provide 150 T-Shirt for adults, 100 pens. Mr. Ing Try suggested Mrs. Sumitra to contact with Mr. Valundy on logo design.

- For FiA side, Mr. Ing Try said, Fia will provide 100 T-shirts for school children. He asked Mr. Pich Bunna to be responsible on preparation of T-shirts.

- Finally, all participants endorsed the minute with some amendments and comments.

2.2 Project Achievement

- After endorsing 4th ICC meeting minute, Mr. Yos Chanthana reported the achievement on project activity made since the last ICC meeting is described as follows in line with the immediate action plan from June to September 2007.

| Proposed activity | Achievement |
|--|---|
| <p>1. <u>Baseline / monitoring survey</u></p> <ul style="list-style-type: none"> - Continue fish landing data collection - Analysis of the fish landing data in 2006 | <ul style="list-style-type: none"> - Fish landing data are regularly collected. - Under process |
| <p>2. <u>Encourage and extend locally-based fishery resources management</u></p> <ul style="list-style-type: none"> - Upon approval of CFAMP, the resources management measures are to be implemented - Reinforcement of the structure and capacity of Local Enforcement Unit (LEU) | <ul style="list-style-type: none"> - No noticeable progress in implementation of CFAMP has been made. Study tour to inspect the success case in Siem Reap Province was conducted. - Establishment of the crab bank is studied. - The Voluntary Patrolling by LEU has been continued by LEU. |
| <p>3. <u>Promotion of local business</u></p> <ul style="list-style-type: none"> - Further promotion of mushroom production - Promotion of Saving account: - Continued mud-crab culturing ponds - Finalization on the financial report of Grassroots Fund to be submitted to the Japanese Embassy - Review of mud-crab culturing business - Commencement of alternative fish culturing during rainy seasons | <ul style="list-style-type: none"> - Mushroom production has been progressing. The project has monitored their monthly production. - Diversification in business in use of saving account in some groups - credit scheme should be introduced in Local Seminar - Mud crab culturing was continued until June on experimental base. - Submission of the final report to the Japanese Embassy is still pending although efforts for doing so have been exerted. - Review on the mud-crab culturing has been made and the report was compiled. The Fishers' Workshop on reviewing the activity was held. - Alternative fish culturing is pending due to renovation of the pond structure. |
| <p>4. <u>Enhance human resources capacity and participation</u></p> <ul style="list-style-type: none"> - Study tour to inspect the community base resources management exercise in the country - Reinforcement of the structure and capacity of CFPN2 - Identify the community base volunteer work - Publication of reports, PR materials and putting up the project signboard | <ul style="list-style-type: none"> - The proposed study tour was conducted. - The effort was continued in many ways. - So far, mangrove reforestation program is identified. - The project sign boards were put up at the project site. The Bi-annual Project Progress Report and other technical reports are published. |

| | |
|--|---|
| <p>5. <u>Rehabilitate and enhance coastal resources</u></p> <ul style="list-style-type: none"> - Study and promotion for establishment of the <i>fish refugia</i> | <ul style="list-style-type: none"> - The preliminary survey for establishment of fish refugia was conducted. |
| <p>6. <u>Project management meeting</u></p> <ul style="list-style-type: none"> - Preparation of the 5th ICC meeting to be held in September 2007 | <ul style="list-style-type: none"> - The 5th ICC meeting is held on 18 October 2007 |
| <p>7. <u>Mid-term project evaluation</u></p> <ul style="list-style-type: none"> - Identification of a relevant outsourced consultant - Entering into the contract - Conduct the mid-term project evaluation | <ul style="list-style-type: none"> - An appropriate outsourced consultant is being yet identified. |
| <p>8. <u>Other activity</u></p> <ul style="list-style-type: none"> - Participation in the Regional Seminar on Integrated Coastal Resources Management in Southeast Asia to be held in Chumphon, Thailand | <ul style="list-style-type: none"> - 3 National project staff participated in the regional seminar in July 2007. |

- Regarding to mud crab culture, the meeting agreed on the following points:
 - o High temperature during culturing period
 - o Shallow water need to dig more
 - o Water leakage from the ponds need to renovate water gate
 - o Daily Measuring water quality
 - o Mr. Yos Chanthana will contact Mr. Hatori for technical assistance
 - o Small crabs need to buy in a suitable amount(around 150 crabs/day)
 - o Inappropriate feed management
 - o Many fishes in the culturing ponds need to be drained out
 - o No measuring growth rate. The growth rate has to be measured for the next step
 - o All participants agreed on stolen issues
 - o Fisheries office will assign one person to stay permanently at crab ponds with crab culturing group.

- For mushroom production, Mr. Ing Try expressed hi appreciation on the success of the production but he disagreed on using saving account for loan scheme. He suggested using this account for expanding the number of group or helps the poor people.

- Mr. Etoh agreed on Mr. Ing Try's idea, but he explained that mushroom group just starting their business; they were not strong enough yet. Loan scheme will generate more income for the groups, so we should encourage them, he said.

- Mr. Doung Sam Ath agreed with Mr. Ing Try on loan schem and suggested the team leader to develop internal rule for mushroom group in order to manage the business without any internal conflicts.

- Mr. Ing Try suggested the meeting that the matter of mini-credit scheme should be raised at the forthcoming Local Seminar for discussion with relevant stakeholders. The meeting agreed the suggestion.

2.3 Endorsing future work-plan

Mr. Etoh presented immediate workplan as follows.

Baseline / monitoring survey

- Continue fish landing data collection
- Analysis of the fish landing data in 2006

Encourage and extend locally-based fishery resources management

- Upon approval of CFAMP, the resources management measures are to be implemented.
- Reinforcement of the structure and capacity of Local Enforcement Unit (LEU)
- Establishment of Crab Bank

Promotion of local business

- Further promotion and monitoring of mushroom production
- Promotion of Saving account
- Completion of mud-crab culturing ponds' renovation
- Commencement of mud-crab culturing in full scale
- Finalization on the financial report of Grassroots Fund to be submitted to the Japanese Embassy
- Identify other potential local business

Enhance human resources capacity and participation

- Reinforcement of the structure and capacity of CFPN2
- Identify the community base volunteer work
- Publication of reports, manuals and PR materials
- Organizing the 2nd National workshop
- Organizing training courses as required

Rehabilitate and enhance coastal resources

- Study and promotion for establishment of the *fish refugia*
- Implement mangrove reforestation through voluntary participation

Project management meeting

- Preparation of the 4th SC meeting to be held in January 2008

Mid-term project evaluation

- Identification of a relevant outsourced consultant
- Entering into the contract
- Conduct the mid-term project evaluation
- All participants endorsed immediate work plan presented by Mr. Etoh

Closing the meeting

At the end of the meeting, Mr. Ing Try thanked to all participants for their time and efforts to participate in ICC meeting. After that he declared closing the meeting.

Draft by Yos Chanthana

Date: 30 October 2007

Andorsed by Sei Etoh

Date: 5 November 2007