



Bi-annual Project Progress Report  
of  
Integrated Coastal Resources Management in Pulau Langkawi  
(ICRM-PL)  
January - June 2007

Compiled by

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## Biannual Project Progress Report

- Project title** : **Integrated Coastal Resources Management in Pulau Langkawi (ICRM – PL)**
- Program Categories** : Programs under the ASEAN-SEAFDEC FCG Mechanism
- Program Title** : Capacity Building of Human Resources and Participation in Integrated Coastal Resources Management
- Duration of Project** : 1<sup>st</sup> Phase: 17 months (August 2003 – December 2004 under TF-1)  
2<sup>nd</sup> Phase: 24 months (January 2005 – December 2007 under TF - 4)
- Executing Agency** : The Department of Fisheries, Ministry of Agriculture, Malaysia
- Collaborating Agency** : SEAFDEC/TD
- Funding Agency** : The Japanese Trust Fund (FCG Scheme and Special 5-year Program)  
DOF Malaysia (Co-financing)
- Proposed Budget (2007 only)** : USD 25,523 (Under the Japanese Trust Fund 4)  
USD ? (DOF Malaysia Input)
- Reporting period** : **January to June 2007**

Prepared by : Sei Etoh, Project Leader  
15 August 2007

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## **1. GENERAL ACCOUNT**

The DOF Malaysia has committed to continue the project activities after the withdrawal of SEAFDEC/TD from the project beyond 2007.

The Fisheries Resources Management Plan (FRMP) was formulated and sent to DOF for refinements and consideration.

The FRI, Penang took over the marine oceanographic and marine biological surveys from SEAFDEC/TD.

The newly established Local Enforcement Unit was further strengthened with the assignment of two enforcement officers.

An attempt to establish a crab bank was initiated using the Japanese model.

A thorough investigation to scrutinize the cause of mismanagement of the women's group activities was conducted.

Based on the findings from the investigation, actions to rectify the mismanagement were undertaken. It was partly due to these efforts that the production and sale figures during this reporting period turned positive.

The premises of the new fish processing yard and the mechanical workshop were completed under the auspices of Japanese Tsunami Rehabilitation Fund, pending installation of power and water supply systems.

10 sets of FEDs were installed and a pre-installation marine biological survey was conducted.

The 5<sup>th</sup> Steering Committee meeting was held.

## **2. ACTIVITIES**

The activities of the project that have been more or less normalized in the wake of the rehabilitation from the 2004 Tsunami are described below. The progress of the project activities was monitored based on the planned work schedule shown in the annual activity monitoring sheet (Annex 1).

### **2.1 Monitoring survey**

#### Fish landing survey

The daily exercise of collecting fish landing data has been continued by the designated enumerators. The completed data sheets were sent monthly to FRI for analysis.

#### Marine resources survey

It was agreed at the meeting in Langkawi on 23 December 2006 that the FRI would conduct the marine resources survey monthly and SEAFDEC/TD would join the surveys quarterly. This is an essential step for the project phase-out process as the project is going to be terminated in

December 2007, and thereafter the project would be carried out by DOF Malaysia. However, no action was taken by FRI in January and February and the joint survey was carried out only on 19-22 March by SEAFDEC/TD and FRI. Thereafter, it was decided that the survey should be conducted by FRI every other month instead of every month due to some financial constraints. In line with this decision, the next survey was jointly conducted on 12 – 14 June by the marine biologists from SEAFDEC/TD and FRI.

#### Specific topics for the survey – FED pre-installation survey

The installation of 10 units of FEDs in the zoned area of the project was scheduled in April and the required pre-installation marine biological survey was conducted jointly by FRI and SEAFDEC/TD on 20-21 March 2007. In this survey, two proposed areas were simultaneously surveyed pending final decision at the 5<sup>th</sup> SC meeting on 22 March on the positioning of the FEDs. The factors determined during the survey are shown below, after which the samples were collected and the data were sent to FRI for analysis.

#### Physical factors:

1. Water current
2. Salinity
3. Water temperature
4. Transparency
5. Bottom sediment

#### Biological factors:

1. Adult fish and fish larvae and cephalopods abundance (species compositions, size, distribution along the water column)
2. Phytoplankton and zooplankton
3. Benthos
4. Other marine organisms (such as barnacles, oysters, shellfish, invertebrates, sea algae etc.)

## **2.2 Encouraging adoption through extension of the CBRM concept**

### CBRM approach

The fishermen had expressed their positive views in many occasions that the volume of fish landing had evidently increased since the previous year. They attributed such increase to the effectiveness of the local enforcement activity.

After the stakeholders' consultation in November 2006 in Alor Setar, the advance draft of the Fishery Resources Management Plan (FRMP) was submitted to DOF for consideration and refinements on the legal context by legal advisors. The FRMP is expected to be finalized and promulgated by the end of 2007.

### Local Enforcement Unit (LEU)

Responding to the request from the DOF, the Marine Enforcement Agency (APMM) assigned two Enforcement Officers to the project site in Kuala Teriang from 4.00 PM to 08.00 AM in September 2006. The Officers are on stand by to monitor any incoming information such as the presence of illegal fishing boats in the project area. Once they receive news from the fishermen on some encroachment by illegal fishing boats, they request for a patrol boat to be dispatched to the site. Normally, they can reach the area of the illegal boats within 30 minutes. Since this local enforcement system has been put in place and the news of such a control system has spread

widely among the industrial fishermen, no trawlers' encroachment has since then been reported based on statements by fishermen.

In a bid to reinforce the local enforcement activity, the KEN established a Local Enforcement Committee (LEC) within their organization on 12 March 2007. During its first meeting, the committee decided to put forward a proposal for the DOF to provide a patrol boat to strengthen their MCS function.

#### Crab Bank

This has been one of the activities that challenged the KEN after their study tour to Chumphon, Thailand in April 2005. They were very impressed by the successful outcome of the crab bank scheme being carried out by the ICRM-PD project as they had experienced a similar problem in their area. Immediately after returning back from the study tour, the KEN tried to locate a possible site for crab cages and negotiations with LADA had been made but without any success. Meantime, the ICRM-PD initiated the introduction of a Japanese model for the crab bank in Chumphon which involves releasing the gravid crabs to the water after marking the carapace of the crabs. This system does not require any cage hatchery. After learning of this system, it was decided at the 5<sup>th</sup> SC Meeting on 22 March 2007 that a Crab Bank using the Japanese model would be initiated. Thus, the Crab Bank sub-group was organized and a training course was conducted on 13 June 2007 with 48 participants, 32 of whom were fishermen. Among the participants, 12 voluntarily applied to be members of the crab bank. The detailed training course is described in the Prospectus on Workshop on Establishment of Crab Bank in Langkawi (Annex 2).

### **2.3 Encouraging local businesses**

#### Women's group activity

While reviewing their monthly transactions sheet in 2006, it was found that their business incurred some deficits. This was beyond comprehension considering that the gross income in 2005 was RM 2,724.40 after deducting RM 3,590.00 which was distributed to the members. Also their production in 2005 just resumed in March after the rehabilitation from the tsunami disaster. In order to determine the causes of the deficit and formulate measures to be taken for improvement, an investigation was conducted by the team consisting of members from DOF HQ, Fisheries Training Institute (FIP) of Terengganu and SEAFDEC/TD on 20-21 March 2007. After thorough investigation, it was found that the economic returns in processing seasoned/dried anchovy was very sound, even coping with the rising commodity inflation from 2005 to 2006. Their profit margin against the direct production cost was even as high as 86%. Therefore, it was suspected that entries in the general ledger book could have been wrongly done, so the team tried to examine the Product Ledger and the Material Ledger which were introduced in June 2004 prior to the commencement of the production of fish-based products by the women's group. However, it was observed that some entries were suspended for some reasons that include difficulties in following the complicated system of bookkeeping. Therefore, further investigation could not be resumed with some entries missing. The progress of the investigation is dealt with lengthily in the report of Investigation on Women's Group Activity in Langkawi (Annex3).

To avoid having the same problem again, simplified two ledger books, i.e. "Monthly Material Procurement Record" and "Monthly Production and Sales Record", modified as "user-friendly version", were introduced to the group through a training course conducted in Langkawi on 4/5



April 2007. The description on this training course is shown in Annex 4: Follow-up Training on Introduction of Simple Bookkeeping System in Langkawi, Malaysia. Since the introduction of this new bookkeeping system, records on the production, purchasing of materials used and sales of the products have been clearly entered. Also, monthly stocktakings are conducted through physical inventory. The bookkeeping and accounting practices have been closely monitored by a DOF Extension Officer and the SEAFDEC team periodically.

The monthly transactions by the Women's Group from January to June 2007 are shown in Table 1.

**Table 1: Monthly transaction by the Women's Group in 2007 (in RM)**

Month	B/F	Credit		Debit				Gross income	Net Income	Balance
		Sales	Others	Production cost	Share for attendance	Transfer to S.Account	Other			
January	2,825.60	890.00	0.00	403.90	400.00	250.00	0.00	486.10	-163.90	2,661.70
February	2,661.70	1,513.00	0.00	288.10	400.00	250.00	0.00	1,224.90	574.90	3,236.60
March	3,236.60	984.50	0.00	691.20	0.00	250.00	0.00	293.30	43.30	3,279.90
April	3,279.90	3,182.00	0.00	911.00	0.00	0.00	0.00	2,271.00	2,271.00	5,550.90
May	5,550.90	803.50	0.00	365.90	0.00	0.00	0.00	437.60	437.60	5,988.50
June	5,988.50	1,369.50	0.00	944.60	0.00	0.00	0.00	424.90	424.90	6,413.40
<b>Total</b>		<b>8,742.50</b>	<b>0.00</b>	<b>3,604.70</b>	<b>800.00</b>	<b>750.00</b>	<b>0.00</b>	<b>5,137.80</b>	<b>3,587.80</b>	

As shown in Table 1, the KEW could save RM 3,587.80 + RM 750.00 (transferred to the Saving Account) = RM 4,337.80 during their six months operation from January to June 2007. This figure demonstrated an appreciable improvement compared with those of 2005 and 2006; e.g. RM 2,724.40 and -RM 352.90 in 2005 and 2006, respectively (Report on Investigation on Women's Group Activity in Kuala Teriang, Etoh 2007). This noticeable improvement is attributed to the increased sales as seen in Table 2, which also shows that 2,572 packets of "ikan bilis" was sold in 6 months in 2007 compared with 4,308 and 3,634 packets in 2005 and 2006, respectively, accounting for a 141.6% increase. In addition, strict bookkeeping entries that have been regularized after the training course in April also contributed to the improvement of the sales.

**Table 2: Summary - Production and Sales from January to June 2007**

Month	Ikan Bilis (100gr packet)					Maruku (100gr packet)				
	Stock	Product	Sales	Sample	Discard	Stock	Product	Sales	Sample	Discard
January	-	512	206			-				
February	-	882	409			-				
March	-	909	228			-	374			
April	370	1,129	1,012	30	120	133	0	88	20	25
May	337	416	269	64	80	0	16	0	8	0
June	340	483	448	56	30	8	12	5	7	0
<b>Total</b>		<b>4,331</b>	<b>2,572</b>	<b>150</b>	<b>230</b>		<b>402</b>	<b>93</b>	<b>35</b>	<b>25</b>

Note 1: No record on Sample and Discard before April is available.

Note 2: The sales amount of 228 packets in March is mixed with Ikan Bilis and Maruku and can not be separated.

The women's group (KEW) diversified their production line to another fish-based product called "maruku" starting in March, in addition to their major product the "ikan bilis". However, the potential marketability of this product is still not known.

It was noted however that production of these products was suspended for almost one month



between middle May to middle June due to lack of cooking oil in the market and also because of a public civil work on road construction in front of the processing yard. Thus, production and sale volumes in May and June have relatively decreased.

The construction of a new fish processing yard was completed in early 2007, however due to delayed installation of power and water supply systems by the contractor, commissioning of the yard has been dragging behind schedule.

#### Mechanical workshop

The workshop premises which were constructed under the auspices of Japanese Grassroots Tsunami Fund were completed pending installation of power and water supply systems.

### **2.4 Enhancing human resources capacity building and participation**

#### Institutional capacity building of KEN

A fuel subsidy to members of the KEN was initiated on 15<sup>th</sup> February 2007 when a controlling officer was assigned from the Langkawi Fishermen Association to take charge of the issuance of petrol coupons. The subsidized rates of fuel are 1.00 RM per liter for both petrol and diesel against the regular prices of 1.90 RM and 1.60 RM, respectively. The controller also checks the fishing activities of the fishermen who received subsidized fuel by recording their daily fish catch.

#### Training courses

A one-day training course was held on 19 March 2007 for the demonstration and actual practice in constructing the improved type of FEDs with 20 fishermen participating. The participants included 2 each from the neighboring villages, i.e. Kuala Chenan and Kuban Badan.

The training course on Crab Bank was held on 13 June with 48 participants including 12 active members of the Crab Bank.

The training course on the introduction of a simplified "user-friendly" bookkeeping and accounting system was conducted on 4/5 April for members of the KEW. Since then, regular monitoring on the proper application of this newly introduced system has been continued by SEAFDEC staff and the DOF Extension Officer.

### **2.5 Fishing gear technology improvement**

As part of the project's experimental fishing activities, the Thai model collapsible crab trap fishing was introduced in the project operational area in 2004. Since it proved to be an effective and environment friendly fishing gear, the KEN proposed to adopt this fishing gear. Responding to such a request, SEAFDEC/TD contributed 300 units of the Thai model collapsible crab traps to the KEN. This activity also supports the efforts of KEN to initiate a Crab Bank as live crabs are mainly caught by trap fishing.

### **2.6 Rehabilitating and enhancing the coastal resources**

#### FEDs

Ten sets of FEDs were scheduled to be installed in August 2006 however their installation was postponed awaiting the outcome of a durability test for FEDs conducted in Chumphon in

August 2006 as there was some doubts in the FEDs' durability. The said test gave a positive result that the disappearance of 10 units of FEDs installed in Chumphon was not caused by any structural defects but was due to encroachment of trawlers. Convinced of the structural integrity of the FEDs as such, it was eventually decided to install the 10 units of FEDs in April 2007. All the necessary materials to construct these units except anchors made of half-size used oil drums filled with concrete, were transported from SEAFDEC/TD to Langkawi and a training course on the fabrication of FEDs was conducted on 19 March 2007. During the training course, construction of a unit of FED was demonstrated by the SEAFDEC/TD technical team and the other nine units were constructed by the trainees comprising 20 fishermen including 5 each from Kuala Chenang and Kuban Badang. The detailed outcome of this training is shown in the report on the Training and Demonstration on Construction of FEDs and Pre-installation Marine Biological Survey (Annex 5).

The pre-installation survey for FEDs at the two alternative proposed positions was conducted jointly by SEAFDEC/TD and FRI on 20-21 March 2007. Collection of samples and the data analysis were done by FRI. The report on the survey is dealt with lengthily in Annex 5.

Selection of the position for the FEDs was discussed at the 5<sup>th</sup> SC meeting on 22 March 2007, when it was agreed that the FEDs will be set in the surrounding area of ARs installed in 2003 by LKIM, as proposed by the KEN.

Based on the agreement among the fishermen, DOF and SEAFDEC on the location of the FEDs, 10 sets of FEDs were installed on 4-5 April by the joint team of SEAFDEC/TD and DOF Malaysia in the demarcated zone of the Kuala Teriang with a water depth of 32 meters. The detailed description of the FED installation is shown in the Report of Installation of FEDs in Kuala Teriang, Langkawi (Annex 6).

#### Mangrove reforestation

Mangrove reforestation program is one of feature activities with the KEN Kuala Teriang in conjunction with the Tsunami Rehabilitation and fishery resources enhancement. In 2006, after the experimental test planting of 60 seedlings in April, the Drainage and Irrigation Department (JPS) planted 1,500 mangrove saplings in front of the bay of Kuala Teriang towards the end of December 2006 with assistance of some volunteers from the KEN. However, the mangrove saplings died during the monsoon season.

In the meantime, it was noted that a possible financial support could be tapped for the project's mangrove reforestation activity because SIDA has certain funds to support a mangrove reforestation activity in the areas damaged by the 2004 Tsunami and the project site in Kuala Teriang was considered a possible recipient of such aid. Thus, negotiations with SIDA commenced in order to seek the possibility of obtaining some funds. Meanwhile, coordination among concerned bodies for the mangrove reforestation in the area was promoted by the project. To this end, a movement to form a coordinating body consisting of the Forest Department, JPS, DOF, FRI, LADA and SEAFDEC/TD has been initiated and preliminary discussion was made with the District DOF, Forest Dept. and FRI on 13 June. The advance draft proposal to be submitted to SIDA was prepared by FRI in consultation with the other concerned bodies but obtaining confirmation on the availability funds from SIDA has been delayed.

In Kuala Melaka, one fisherman voluntarily planted 2,100 mangrove seedlings in March 2007 using seeds obtained from Kuban Bandang which is covered with thick mangrove forest. His

action has primarily motivated a series of movements on the project's mangrove reforestation being carried out in Kuala Teriang.

## **2.7 Steering Committee Meeting**

The 5<sup>th</sup> Steering Committee meeting was held on 22<sup>nd</sup> March 2007 at the Bayview Hotel Langkawi with 22 participants. The main decisions made at this meeting were as follows:

- a). DOF will continue the project operations after the termination of SEAFDEC's involvement
- b). Close monitoring is necessary on the accounting of women's group activity
- c). A possible financial inputs from SIDA to the project for its mangrove reforestation activity to protect the area from Tsunami was discussed
- d). DOF committed to assign an extension worker from among the graduates to the project in Kuala Teriang to look after the day-to-day project activities
- e). Responding to the request by KEN, the crab bank activity should be started
- f). Strengthening the capacity of LEU in collaboration with the newly established Maritime Enforcement Agency was agreed upon
- g). Technical support from the Extension and Fish Quality Control Division of DOF to the KEW for further product diversification and standardization would be explored
- h). Being the first pilot case in co-management of coastal resources management in Malaysia, the project should exert more efforts in terms of public relations in order to disseminate the outcomes of the project

Further detailed description is shown in Annex 7: The minutes of 5<sup>th</sup> SC Meeting.

## **2.10 Project phasing-out process**

Towards the end of 2006, the responsible division to look after the ICRM-PL project within the DOF was shifted from the Planning and Development Division to the Licensing and Resources Management Division. Aimed at coordinating project management among relevant divisions, especially after the withdrawal of SEAFDEC/TD's involvement in the project, an internal Project Implementation Committee was formulated within the DOF. The first meeting of the said committee was held on 19 March 2007 in Langkawi.

The FRI has also taken over the marine resources survey component from SEAFDEC/TD step by step. The marine biological and oceanographic surveys have been carried out every two months by the FRI since April. The daily fish landing data were sent to FRI since January 2007 for analysis.

## **3. OUTCOMES**

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

### Monitoring surveys

- Regular fish landing data collection is continued
- Regular marine biological and oceanographic surveys are conducted every two months

#### Encouraging and extending locally-based fishery resources management

- The draft of the Fishery Resources Management Plan (FRMP) was formulated but is still undergoing refinements by the legal advisor
- The function of Local Enforcement Unit has been strengthened with the assignment of two enforcement officers in Kuala Teriang
- The crab bank scheme was initiated with the formation of the Crab-Bank Sub-group

#### Promotion of fish based businesses

- The thorough investigation of the financial status of the women's group was conducted
- Based on the result, a user-friendly bookkeeping and accounting system was introduced through a training course
- The production and sales of products by the KEW showed a sound progress
- The new product, *maruku* was produced and marketed as the test case
- The premises of fish processing yard were completed pending installation of power and water supply systems
- The premises of mechanical workshop were also completed but still pending installation of power and water supply systems

#### Enhancing human resources capability

- A training course on prefabrication of improved type of FED was conducted
- Training course on Crab Bank was conducted
- A training course on the user-friendly bookkeeping and accounting system was conducted for KEW members
- Regular monitoring on the group's performance based on the newly introduced systems has been continued

#### Fishing gear technology development

- 300 sets of Thai type crab traps were introduced to the KEN for promoting eco-friendly fishing

#### Rehabilitation and enhancing coastal resources

- 10 sets of FEDs were fabricated in March and installed in April
- A pre-installation marine biological survey for FEDs was conducted in March
- A possible funding from SIDA on the mangrove reforestation activity in the project operational area in relation to the Tsunami rehabilitation program has been sought
- To promote the above possibility, the ad-hoc working group was formed comprising the Forest Dept., District DOF, JPS, FRI and SEAFDEC/TD
- Test plantating of 1,500 mangrove saplings was conducted by the JPS with voluntary assistance in planting by the KEN in December 2006 and the growth of these has been monitored

#### Committee meetings

- The 5<sup>th</sup> SC meeting was held in March

### **4. MAJOR CONSTRAINTS**

The last 8<sup>th</sup> ICC meeting was held on 15 November 2006 and the 9<sup>th</sup> ICC meeting was scheduled to be convened in May. However, the proposed schedule has dragged on due to the

timing on the availability of the SEAFDEC/TD Project Team, DOF Malaysia and the project site in Langkawi. Such a delay should have been rectified one way or another, as the ICC meeting is a mechanism that coordinates and accelerates the project activity at the local level.

The project will be on its wrapping-up stage in December 2007 and the project terminal evaluation is also due during such time. However, as with the mid-term evaluation, no appropriate out-sourced consultant has been identified to conduct the evaluation, partly due to limited budget. This issue was raised during the 5<sup>th</sup> SC meeting in March and the DOF Malaysia committed to exert further efforts in order that such consultant could be hired for the purpose.

## **5. THE WORK PLAN FOR THE NEXT REPORTING PERIOD**

The work plan to be executed in the next reporting period from July to December 2007 is as follows:

### Baseline/monitoring survey

- Continue fish landing data collection
- Publication of the annual data for 2006
- Continue marine biological and oceanographic surveys by FRI in collaboration with SEAFDEC/TD
- Impact survey for the installed FEDs/ARs

### Encouraging and extending the CBRM concept

- Finalize the fishery resources management plan (FRMP)
- Promulgate the FRMP
- Workshop on implementation of the FRMP and zoning arrangement for the network of fishermen in Langkawi
- Continue crab bank scheme and evaluate its outcome
- Strengthen the functions of the Local Enforcement Unit (LEU)

### Promotion of fish-based businesses

- Diversification and standardization of the products produced by KEW using the facilities of the newly constructed fish processing yard (IPM/DOF)
- Marketing promotion (IPM/LADA)
- Monitoring the management of the processing yard

### Enhancing human resources capability and participation

- Conduct a workshop on the implementation of FRMP
- Identify participants and initiate voluntary participation in the community development work
- Preparation of the regional workshop on integrated coastal resources management in Langkawi

### Fishing gear technology improvement

- A follow-up training course in boat repair with materials from the FRP



#### Rehabilitation and enhancing coastal resources

- Conduct impact marine biological survey for FEDs
- Coordinate the possible inputs with SIDA in mangrove reforestation activity
- Promotion of mangrove reforestation activity

#### Committee meeting

- The 10<sup>th</sup> ICC meeting
- The 6<sup>th</sup> Terminal SC meeting

#### Project wrapping-up

- The final project evaluation
- The project termination ceremony

### **6. REPORTS PREPARED**

The reports and documents prepared under the project during to 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 of Investigation on Women's Group Activity in Kuala Teriang	Etoh S.	March 2007
02.	Follow-up Training on Introduction of Simple Bookkeeping System in Langkawi, Malaysia	Thanyalak S.	April 2007
03.	Report on Training and Demonstration on Construction of FEDs and Pre-installation marine biological survey for FED off Kuala Teriang	Taweekiet A.	April 2007
04.	Travel Report to Langkawi – 3/5 April	Sumitra R.	April 2007
05.	Report on the 5 <sup>th</sup> Steering Committee Meeting	Arthur B.	April 2007
06.	Report of Installation of FEDs in Kuala Teriang, Langkawi	Yuttana T.	May 2007
07.	Travel report to Langkawi – 12/14 June	Sumitra R.	June 2007

## Annex 1:

## Project Activity Monitoring Sheet for ICRM - PL in 2007

Planned: ←.....→

Revision: 0

Actual: ←.....→

As of 30 June 2007

Activity	2007												Remarks	
	1	2	3	4	5	6	7	8	9	10	11	12		
<b>1. Base line / Monitoring survey</b>														
1.1. <u>Fish landing survey at the project site</u>														
1.1.1. Regular collection of data	←.....→													Continued activity Jointly conducted with FRI
1.1.2. Analyze and compile the annual data in 2006	←.....→													
<b>1.2. Marine resources survey</b>														
1.2.1. Regular collection of data	←.....→													Continued activity Jointly conducted with FRI
1.2.2. Analyze and compile the annual data in 2006	←.....→													Combined with 1.1.2.
<b>1.3. Specific topic survey</b>														
1.3.1. Impact survey by installation of FEDs/ARs			↔			↔								March: Pre-installation survey
1.3.2. Analyze and compile the data						↔								
<b>2. Encourage and extend the CBFMR concept</b>														
2.1. <u>Zoning arrangement</u>														
2.1.1. Finalize the fishery management plan (FMP) in the demarcated zone	←.....→													Pending from 2006
2.1.2. Submission to DOF for endorsement	←.....→													Pending from 2006
2.1.3. Promulgation of FMP by the Ministerial Ordinance	←.....→													
2.1.4. Implementation of FMP						←.....→								Continued activity
2.2. <u>Local enforcement unit</u>														
2.2.1. Identify an effective approach for local enforcement	←.....→													
2.2.2. Take relevant steps for the realization (to be more specified once measures are determined).	←.....→													
2.3. <u>Crab bank scheme</u>														
2.3.1. Preparation for establishment of Crab Bank	←.....→					↔								
2.3.2. Operation of the Crab Bank			←.....→											Continued activity
<b>3. Encourage local business</b>														
3.1. <u>Diversification / standardization of products produced by women's group</u>														
3.1.1. Training in new processing technologies	←.....→													
3.1.2. Standardization of the products	←.....→													Continued activity by IPM
3.1.3. Marketing promotion	←.....→													With assistance of LADA
3.2. <u>Improvement of group management skills</u>														
3.2.1. Financial management	←.....→													Continued activity
3.2.2. Local seminar on women's participation in group activity						↔								

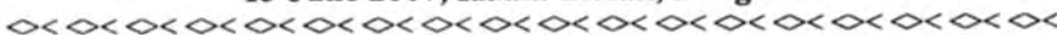


Activity	2007												Remarks	
	1	2	3	4	5	6	7	8	9	10	11	12		
<b>3.3. Expansion of fisheries related business for the community (KEN)</b>														
3.3.1. Study and identify alternative business opportunity	←	.....	→											Pending from 2006
3.3.2. Take a relevant step for realization (to be more specified once measurements are determined)				←	.....	→								Continued activity
<b>4. Enhance human resources capacity building and participation</b>														
<b>4.1. Enhance capacity building for FRMC</b>														
4.1.1. Fishers workshop on management plan						↔								
<b>4.2. Restoration of data and information to the community</b>														
4.2.1. Local seminar on research works done						↔								
4.2.2. Local seminar on impacts of project activities						↔								
<b>4.3. Encourage participation to environmental development work</b>														
4.3.1. Identify and design the community environmental developmental work	←	.....	→											
4.3.2. Organize and carry out various volunteer work (to be more specific after having a workshop)			←	.....	→									Continued activity
<b>5. Fishing gear technology improvement</b>														
<b>5.1. Training in improved fishing methods</b>														
5.1.1. Follow-up training course in boat repairing			↔											Subject to completion of workshop
5.1.2. Follow-up training course in selected fishing gear as required			←	.....	→									At request by KEN
<b>6. Rehabilitate and enhance coastal resources</b>														
<b>6.1. Fish Enhancing Devices (FEDs)</b>														
6.1.1. Installation of FEDs			↔											
6.1.2. Evaluation on effectiveness and function of FEDs						↔								Relating to 1.3.1.
<b>6.2. Installation of ARs</b>														
6.2.1. Installation of ARs			↔											By LKBM
6.2.2. Evaluation on effectiveness and function						↔								Combined efforts with 6.1.2.
<b>6.3. Mangrove reforestation</b>														
6.3.1. Formulate reforestation plan with DID	←	.....	→											
6.3.2. Implementation of reforestation plan			↔											Collaboration with DID
<b>7. Project evaluation</b>														
7.1. Final project evaluation										↔				
<b>8. Committee meeting</b>														
8.1. Steering Committee (SC)			↔											
8.2. Implementation Coordination Committee (ICC)			↔				↔				↔			

## Annex 2

# PROSPECTUS ON WORKSHOP ON ESTABLISHMENT OF CRAB BANK IN LANGKAWI

13 June 2007, Kuala Terian, Langkawi



### 1. Background

In the project operational area in Langkawi, it was estimated that 3,494Kg swimming crab were harvested from April to December 2004 predominantly by crab gill-netters (Penchan 2005), which constitutes one of the most important species of fish harvested in this area. As commonly observed in most Southeast Asian countries, the trend of dwindling sizes and quantity of crab caught in this area was witnessed by fishermen themselves and it has been a central concern for them.

Meantime, the study tour to the sister project, Integrated Coastal Resources Management in Pathew District (ICRM-PD), Thailand, was conducted by the leading members of KEN in April 2005. They inspected the crab bank scheme having been practiced since last 3 years by the Crab Trap Fishing Sub-Group under the project ICRM-PD in a way that gravid crab were collected from crab-trap fishermen and stocked in a cage for a month or so until eggs were discharged. This activity was so impressed by the fishermen in Kuala Terian that they were envisaged applying a similar approach to enhance their crab resources and an effort to get a suitable site allocated by LADA was exerted in Langkawi. The site, however, had not been available over one year and the project then suggested introduction of the Japanese model Crab Bank which had been successfully introduced in the project in Chumphon in 2006/7 as well. In the Japanese way, no stock cages are necessary to spore eggs but just discharging gravid crabs back to the water after marking. This method has been prevailing in Hyogo Prefecture in Japan since last 20 years with tangible outcomes. The preliminary discussion was made with fishermen at the 5<sup>th</sup> Steering Committee meeting held on 22 March 2007 and decided to try out the Japanese crab bank scheme.

In the project operational area in Langkawi, swimming crabs were predominantly harvested by crab gill-netting and to a minor extent by crab-trap fishing. In early 2005, SEAFDEC/TD carried out experimental crab fishing in use of Thai model rectangle crab traps and obtained a positive result. At that time, however, KEN was reluctant to introduce this new fishing gear as it might encounter a conflict against crab gill-net fishing. After consideration and argument among them for one year over catching swimming crab by traps, it was decided to try out using rectangle crab traps as an experiment together with introduction of Japanese model Crab Bank system. In conjunction with this attempt, the project donated 300 sets of rectangle crab trap to KEN in April 2007 so as to test its applicability in the area.

### 2. Initiation of Crab bank with Japanese System

When considering introduction of the Japanese style Crab Bank system, the major difficulty would be the operational fund. In case of Japan, the gravid crabs were purchased by the fund donated by a few thousand volunteers; a half from fishery people and a half from other

ordinary volunteers. In the project site, the same can be unlikely applicable, and until such time comes when crab fishermen would begin to discharge gravid crab voluntarily, some measures to provide incentives in one way or another have to be considered. Taking the above factor into account, the following approach could be made.

- a. Participants of the scheme: Crab trap and crab gillnet fishermen
- b. Collection of gravid crab: Live Crabs bearing eggs are collected at a certain point and marked X on carapaces after being dried and released them to the off shore where they live. The number of crab collected by each member should be recorded. This work should be done voluntarily among the members. Thereafter, no fishermen are allowed to harvest X marked crab.
- c. The fishing area of crab trap fishermen should be demarcated from the one of crab gill-net fishermen.
- d. Duration: This exercise should be continued especially during spawning seasons until December 2007 as an experimental practice.
- e. Incentives: Some incentives are awarded by SEAFDEC/TD for the fishermen whose contributions in the releasing of gravid crab are prominent compared with others.
- f. Material required: The project provides a set of equipment to participating members; special oil markers, drying towels, logbooks etc.
- g. Recording: A logbook is provided to each member by the project. The member is bound to record the number of released gravid crabs on this logbook. This logbook is collected by the extension officer of District DOF Office periodically.
- h. Award giving: At the end of December 2007, the logbooks are summarized and the reasonable awards are provided by SEAFDEC/TD to the winners.
- i. Evaluation: The whole operation is jointly evaluated by the concerning fishers and the project and its continuation is decided. Based on the decision, the project will determine the future continuation in the approach of crab bank.

### **3. Purpose of Workshop**

A workshop is to be organized on 18 June 2007 (Monday) for the purpose listed below.

- a. To organize the sub-group of Crab Bank within KEN
- b. To disseminate the whole concept of the crab bank scheme and its procedure
- c. To explain how to apply the methodology and how to record the logbook
- d. To discuss among members the appropriate way of releasing crabs

### **4. Outcomes of Workshop**

The workshop is expected to produce the following outcomes.

- a. The sub-group of Crab Bank is organized.
- b. The participants are fully acquainted with the concept and function of the Crab Bank.
- c. The participants master the day-to-day's application of the Crab Bank.
- d. The mutual cooperation and understanding among members are ensured.

### **5. Venue and timetable**

The venue will be the office and common building of KEN Kuala Teriang. The timetable is as follows.

### 18 June 2007 (Monday)

09.00 – 09.10	Opening of the workshop
09.10 – 09.30	Basic concept in establishment of Crab Bank
09.30 – 10.00	Crab Bank in Thailand and Japan
10.00 – 10.30	Application and methodology of Crab Bank in Langkawi
10.30 – 10.50	Coffee break
10.50 – 11.30	Practices in marking and logbook recording
11.30 – 11.50	Any other related issues
11.50 – 12.00	Closing Workshop

### **6. Participants**

10 fishermen who have been or to be engaged in crab trap fishing and 2 leading members of KEN.

### **7. Required equipment and materials**

The following equipment and materials necessary for carrying out the gravid crab releasing are to be provided by SEAFDEC/TD each member).

- Markers (special oil felt pen)
- Towel (for drying carapaces of crab before applying marks)
- Log books (for recording the number of released crabs by each member)
- Recording pen

### **8. Funding**

The funding for conducting the workshop will be drawn from the collaborative project arrangement with SEAFDEC/TD and DOF Malaysia. SEAFDEC/TD will bear the cost of traveling for their own staff and training equipment and materials, while the DOF Malaysia will contribute all other training and incidental expenses incurred locally.

**Annex 3**

**REPORT OF INVESTIGATION  
ON  
WOMEN'S GROUP (KEW) ACTIVITY IN KUALA TERIANG**

**Integrated Coastal Resources Management in Pulau Langkawi (ICRM-PL)**

Sei Etoh  
Project Leader  
SEAFDEC/TD  
26 March 2007



**1. Back ground**

The Women's Group (KEW) in Kuala Teriang was established in February 2004 and snack type products were started to be produced toward the end of 2004 after various training courses and study tours being conducted in Thailand and Malaysia. This local business was initiated with the women's group of fishers' folks in the project operational area. This business, however, was suspended for a while after the tsunami assault on 26 December 2004. The women's group was so energetic to rehabilitate damaged facilities and as earlier as in March 2005 they could resume production of snack-type products in their yard. Meantime, a training course in introduction of bookkeeping and accounting system was held aimed at maintaining the transparency of money transaction and assessing economic feasibility in business. So as to improve the book-entering accuracy, the project provided FEW with a computer in June 2005 and the training course in software was followed by the supplier. Thereafter, the computerized money transaction record has been maintained by them.

As a result, the transaction record in 2005 showed credit as seem in the following Table 1.

Table 1: Monthly transaction by Women's Group in 2005

Month	B/F	Sale	Material	Share for attendance	Gross income	Balance
January	454.10					454.10
February	454.10	0.00	271.10	-	-271.10	183.00
March	183.00	186.50	270.00	0.00	-83.50	99.50
April	99.50	4,976.50	253.00	750.00	3,973.50	4,073.00
May	4,073.00	603.00	731.90	0.00	-128.90	3,944.10
June	3,944.10	1,559.00	862.90	0.00	696.10	4,640.20
July	4,640.20	2,129.50	1,479.00	0.00	650.50	5,290.70
August	5,290.70	771.00	618.40	0.00	152.60	5,443.30
September	5,443.30	1,156.00	294.50	2,840.00	-1,978.50	3,464.80
October	3,464.80	325.50	79.50	0.00	246.00	3,710.80
November	3,710.80	322.50	965.20	0.00	-642.70	3,068.10
December	3,068.10	894.00	783.60	0.00	110.40	3,178.50
<b>Total</b>		<b>12,923.50</b>	<b>6,609.10</b>	<b>3,590.00</b>	<b>2,724.40</b>	<b>3,178.50</b>



They produced a satisfied result in business despite the fact that the KEW had just resumed their activity in March 2005 after the tsunami disaster, to which the project was so satisfied. It was expected that the trend would be further progressed in 2006 as the activity had been in expansion. However, contrary to the expectation, the transaction sheet in 2006 surprisingly showed deficit as seen in the following Table 2.

Table 2: Monthly transaction by Women's Group in 2006

Month	B/F	Sale	Material	Share for attendance	Gross income	Balance
January	3,178.50	611.50	533.30	0.00	78.20	3,256.70
February	3,256.70	2,248.00	711.45	0.00	1,537.05	4,793.75
March	4,793.75	795.00	103.20	0.00	691.80	5,485.55
April	5,485.55	102.00	3,004.35	0.00	-2,902.35	2,583.20
May	2,583.20	651.00	285.90	0.00	365.10	2,948.30
June	2,948.30	1,226.00	755.00	0.00	471.00	3,419.30
July	3,419.30	882.00	1,352.00	0.00	-470.00	2,949.30
August	2,949.30	882.00	611.00	0.00	271.00	3,220.30
September	3,220.30	495.00	440.00	0.00	55.00	3,275.30
October	3,275.30	291.00	144.70	1,272.00	-1,125.70	2,149.60
November	2,149.60	1,167.00	1,310.00	0.00	-143.00	2,006.60
December	2,006.60	1,550.00	731.00	0.00	819.00	2,825.60
<b>Total</b>		<b>10,900.50</b>	<b>9,981.90</b>	<b>1,272.00</b>	<b>-352.90</b>	<b>2,825.60</b>

This course of development is incredible for the project and an investigation to clarify causes of this mal- transaction has to be carried so as to ensure remedial measures to be taken in 2007.

Hence, an investigation with the KEW Kuala Teriang was taken place on 20-21 March 2007 with the team composed of SEAFDEC/TD and DOF Malaysia.

## 2. Investigation

### Investigation team

The investigation team was composed of the following members.

- Mr. A. Krishnasamy                      Extension Div., DOF, Kuala Lumpur
- Mr. Anfin Bin Salim                      Fish Processing in Charge, IPM, Terengganu
- Ms. Sabidah Binti Salleh                Extension Officer, DOF, Langkawi
- Mr. Sei Etoh                                Project Leader, SEAFDEC/TD
- Ms. Sumitra Ruangshivakul              Socio-economic Section Head, SEAFDEC/TD

### Methodology

The investigation was carried out through questioning the committee members of KEW for clarification on some odd figures in the transaction sheet in 2006 on 20 March 2007. Then, the observation of whole production process was made on 21 March 2007 so as to measure the duration of process and the actual volume of each ingredient used. It was suspected that reckless amounts of ingredient could be used for production judging from the fact that the material cost accounted for 51.1% out of sales in 2005 while the one in 2006 was as much as 91.6%.

### 3. Findings and discussion

During the first day's questioning, all members consistently complained about the price hike for most commodities from 2005 to 2006 which caused deficit accounting in transaction in 2006, they claimed. The price increases between 2005 and 2006 are as follows according to their list..

Table 3: Price inflation of commodities

Item	Unit	Price per unit (RM)		Inflation rate (%)	Remarks
		2005	2006		
1. Anchovy	kg	6.50	10.50	61.5%	
2. Peanut	kg	3.50	4.50	28.6%	
3. Egg	Pc	0.18	0.20	11.1%	
4. Sesame	kg	6.00	7.60	26.7%	
5. Chili	kg	8.00	10.00	25.0%	
6. Brown sugar	kg	2.50	2.50	0.0%	Controlled by gvmnt
7. White sugar	kg	1.50	1.50	0.0%	
8. Soda	Bot.	0.50	0.50	0.0%	
9. Oil	kg	1.60	2.60	62.5%	
10. Gas	Bot.	16.00	21.50	34.4%	

As seen in the above, the prices of some commodities were evidently boosted. In order to cope with the price hike, KEW reduced the net weight of a packet from 120gr to 100gr.

Taking the above factor into account, it was initially suspected that material costs boosted up the total production cost and therefore the whole processing sequence was physically observed on 21 March 2007 particularly for the purpose to measure amounts of ingredient and electricity and heating expenses used. The following table shows those requirements for producing the final product (dried and seasoned anchovy) with an average weight of 6.4kg or with 3.0kg anchovy raw material in a form of gilled/ gutted headless.

Table 4: Amounts of ingredient and electricity and heating expenses necessary

Item	Unit	Quantity	Remarks
1. Anchovy(dry/round)	kg	4.00	Y.R 75% to G & G headless
2. Peanut	kg	1.50	
3. Egg	pc	1.00	
4. Sesame	kg	0.70	
5. Chili	kg	0.20	Used in seedless
6. Brown sugar	kg	0.20	
7. White sugar	kg	1.00	
8. Soda powder	bot	1.00	Sodium Bicarbonate
9. Vegetable Oil	kg	3.00	
10. Gas	bot	0.16	4 bot. per month
11. Electricity	RM	1.60	RM46.00 per month
12. Water	RM	0.50	RM12.60 per month
13. Packet	RM	0.20	Laminated pack with alumi.
14. Label	RM	0.26	Colour print



On the ground of required quantity and prevailing prices as above, the production costs in 2005 and 2006 were reckoned as shown in the following table 5.

Table 5 : Production cost for processing seasoned dry anchovy in 2005/6

Item	Unit	Required quantity	2005		2006	
			Unit price (RM)	Amount (RM)	Unit price (RM)	Amount (RM)
<b>Ingredient</b>						
- Anchovy	Kg	4.0	6.50	26.00	10.50	42.00
- Peanut	Kg	1.5	3.50	5.25	4.50	6.75
- Egg	pc	1.0	0.18	0.18	0.20	0.20
- Sesame	Kg	0.7	6.00	4.20	7.60	5.32
- Chili	Kg	0.2	8.00	1.60	10.00	2.00
- Brown sugar	Kg	0.2	2.50	0.50	2.50	0.50
- White sugar	Kg	1.0	1.50	1.50	1.50	1.50
- Soda	Bot.	1.0	0.50	0.50	0.50	0.50
- Misc.				0.20		0.20
Sub-Total:				39.93		58.97
<b>Cooking</b>						
- Oil	Kg	3	1.60	4.80	2.60	7.80
- Gas	Cyl	0.16	16.00	2.56	21.50	3.44
- Water				0.50		0.50
- Electricity				1.60		1.84
Sub-total:				9.46		13.58
<b>Packaging</b>						
- Packet	Pc	52.63	0.20	10.60	0.20	12.80
- Label	Pc	52.63	0.26	13.78	0.26	16.64
Sub-total:				24.38		29.44
<b>Labour cost as share</b>				11.97		4.24
<b>Production cost</b>						
- Total final product	Kg	6.42				
- Net weight of packet	gr			120		100
- No. of packets	Pack			53		64
- Total production cost				85.74		106.23
- Production cost/Pack				1.62		1.66
- Whole sale price/pack				3.0		3.0
- Marketing margin per packet against direct cost	RM			1.38		1.34
- Profit margin against direct production cost				85.7		80.7

As seen in the above, the production costs per packet are RM1.62 and RM1.66 for the year of 2005 and 2006 respectively. This evidently demonstrates that only the production cost increase caused by the commodity inflation factor is limited to only RM.0.04 or 2.4%. In fact, the total production cost increased from RM85.74 to RM106.23 amounting to 19.3% from 2005 to 2006. To cope with this production cost increase, KEW adopted a counter measure by

reduction of the net weight from 120gr to 100gr, which was corresponding to 20% reduction of the production cost. This will be a very sound commercial tactics if this reduction of net weight would not result in dwindling sales volume. In any case, it is obvious that the mal-transaction in 2006 is not attributed to the commodity price inflation as the group has insisted.

If so the case, a through scrutiny in the whole account books is inevitable as the next step. Otherwise, the total material costs amounting to RM9,981.90 in 2006 against the total sales amount of RM10,901.00 could not be explained. This occupies 91.6% out of the total sales while the calculated figure in Table 5 indicates only 53.0%. This means that a suspicion on wrong entry into the account books certainly exists. However, it was disclosed that the accounting system which was introduced to the KEN in June 2006 through the training course on Bookkeeping and Accounting was not properly followed for the reason that they were so complicated to practice. In the above training course, the following basic 4 accounting books were introduced.

1. General Ledger
2. Labour Ledger
3. Material Ledger
4. Production and Sales Ledger

Of the above 4 books, it is apparent that only the General Ledger has been properly recorded. The labour Ledger has been recorded in a form of attendance record. Under these circumstances, there was no way to scrutiny the detailed entries in transaction and detect the cause of negative economic result.

Further, it was disclosed through the dialogue with the leading committee members that there were some money which were not recorded in the sales and accommodated to the saving fund. This deal was started in October 2006 in attempt to save some fund for the purpose of initiating a saving account, they explained. Only a few members of the committee were aware of this attempt. They normally deducted RM250 from the monthly sales and this amount was not entered into the general ledger. This may be one of the causes of mal-transaction but not the major cause.

#### **4. Conclusion**

Based on the above findings and discussion, the following conclusions are derived.

1. It is reiteratively stressed that the proper and sound financial management in the group activity is one of the most important elements so as to expect long lasting group participation in the harmonized way. In this sense, it is the critical stage where the KEN Kuala Teriang is facing to and needs remedial measures imminently.
2. It should be mentioned that the business sense of the women's group was proved satisfactory judging from the result of this investigation. But, they needs a more legitimate approach in business transaction.
3. The inflation factor in commodity prices in 2006 is not attributed to the mal-transaction as they insisted.

4. A part of sales was not entered correctly to the account book and accommodated to the saving account. This practice began in October 2006 with a few members being aware. This saving transaction should be legitimately treated with transparency. This may be one of minor causes for the mal-transaction in 2006.
5. It is certainly true that there have been wrong entries in the accounting book, but no further tracing is possible as no supporting documents in bookkeeping and accounting have been maintained as instructed.

## **5. Recommendations**

Following to the above conclusion, it should be recommended to take remedial measures as listed below immediately.

1. The more simplified and users-friendly accounting and bookkeeping system should be developed.
2. KEW along with the Extension Officer should carry out the stocktaking at the end of March 2007 and the above new bookkeeping system should be initiated.
3. To do the above, SEAFDEC/TD along with DOF Malaysia conducts a training course for the leading KEN members to master the new accounting system in the first week of April 2007. In this training, both instructions should be made in bookkeeping and entering into the format in computer.
4. All the account sheets have to be sent to SEAFDEC/TD every end of the month for verification for the time being.
5. As to the Saving Account Record, it should be started now to make all the transaction transparent and clear. Some amounts of money were already left unclear.

## **6. Follow-up action**

To pursue the above recommendations, the project has developed the following simplified accounting books.

1. General Ledger (Annex 1)
2. Daily Material Procurement Record (Annex 2)
3. Daily Production and Sales Record (Annex3)
4. Saving Account Record (Annex 4)

In addition, the following accounting sheets are prepared for the purpose of summarizing monthly or annual transactions.

1. Summary of Monthly General Account Sheets (Annex 5)
2. Summary of Monthly Saving Account Record (Annex6)

The above accounting books and sheets should be introduced to the leading women's group members by the site training with full utilization of a computer and the regular monitoring for those entries should be made by the project.

Annex 1

**General Ledger**

Month: April 2007

No.	Date	Item	In - Credit (RM)	Out - Debt (RM)	Balance (RM)	Remarks
00		B/F				
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
Total						
C/F						











**Annex 5 Summary of Account sheet for Women's Economic Group (KEW)**

(in RM)

Year: 2007

Month	B/F	Credit		Debit			Gross income	Net income	Balance	Remarks
		Sales	Other	Material	Share for attendance	Other				
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										
<b>Total</b>										

Annex 6  
For 2007

Summary of Annual Saving Account Record

Month	B/F	Credit		Debit		Transaction	Balance	Remarks
		Income/ Dividend	Other	Lending	Other			
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
<b>Total</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		

## Annex 4

### Follow-up Training on Introduction of Simple Bookkeeping System in Langkawi, Malaysia April 4-5, 2007

Thanyalak Suasi  
10 April 2007

The project plans to retrain the women's group in the simplified bookkeeping and accounting system which incorporates user-friendly versions on 4-5 April 2007.

#### Participant

- Mr. Khrishanasame                      Extension officer, KL
- Ms. Sabidah binti Saleh              Extension officer, Langkawi
- Ms. Sumitra Ruangsivakul          SEAFDEC/TD
- Ms. Thanyalak Suasi SEAFDEC/TD
- 5 of KEW's members

#### The result

- The training started at 0900 at women's group office, and that day all women's group were very busy with preparing productions, because Wangbadan's community ordered a lot of products to used in water's day festival, the water's festival will be started on 6-12 April 2007. This training was held on morning session, because women's group would like to produced products in afternoon.
- SEAFDEC's staff explained on the objective of new booking and accounting to KEW's member, and Mr. Khrishana translated to them.
- KEW's member understood on objectives to training and agreement to started new booking and accounting. This training course had 6 bookkeeping, 3 bookkeeping will be recorded by KEW's member, and 3 bookkeeping will be recorded by extension officer, list of bookkeeping and accounting was as that;
  1. Daily material procurement record, was recorded only material buying, not including material used. We explained more that, material in each item (English and Malaysia language) and add flour and plastic bag in material item. For material of anchovy was including weight of head and bone. At the end of month, KEW should be concluded accounting and checking material for transfer to next month. The bookkeeping with recording was seen as appendix 1.
  2. Daily production and sale record, we make understanding in all KEW's products and stocking. There are 3 products (Dry anchovy, Maruku and Rempeyak). KEW should checked the stock of products at the end of March, and transfer to April, because the new bookkeeping will be started in April 2007. The bookkeeping with recording was seen as appendix 2.
  3. General ledger Book, this bookkeeping will be recorded the occurring income and expenditure in everyday, including share for attendance and saving.
  4. Saving account record
  5. Summary of annual account, this recording was seen as appendix 3.
  6. Summary of saving account
- Bookkeeping no. 4, 5 and 6 will be recorded by Ms. Sabidah, extension officer. We explained in detail of summary of annual account covering gross income and net income, all of bookkeeping was seen as appendix 4, 5 and 6.

- Project' leader (Mr. Etoh) would like to checking the cost of Maruku's production, so KEW's member explained the cost of Maruku's product that, they will be produced 15 packets per time, 200 gm/packet, and sale 3 RM/packet.

The cost of producing 15 packets of Maruku's product

- flour (sticky rice) (1kgx3.1RM)	= 3.10 RM
- flour (rice) (1kgx2.00RM)	= 2.00 RM
- Red onion (0.2kgx5.00RM)	= 1.00 RM
- Chili (0.15kgx10.00RM)	= 1.50 RM
- Anchovy (0.20kgx6.50RM)	= 1.30 RM
- oil (2kgx1.60RM)	= 3.20 RM
- Salt 5 gm.	
- Monosodium glutamate 5 gm.	
- Lemon grass (0.15kgx 10.00RM)	= 1.50 RM
- Gas	= 5.00 RM/time
- Eggs (5 ps.x 0.18RM)	= 0.90 RM
- Plastic bags (15 x 0.09 RM/bag)	= 1.35 RM
<b>Total production cost:</b>	<b>= 20.85 RM</b>
<b>Production cost per packet:</b>	<b>= 1.39 RM</b>

Appendix  
1

Daily Material Procurement Record

Month: April 2007

Date	Flour		Anchovy		Peanut		Sesame		Chili		Oil		Brown sugar		White sugar		Soda		Eggs		Vinegar		Salt		Others		Total RM	
	Kg	RM	Kg	RM	Kg	RM	Kg	RM	Kg	RM	Kg	RM	Kg	RM	Kg	RM	Bottle	RM	Pc	RM	Bot	RM	KG	RM	KG	RM		
Stock			16.00		6.00		1.90		0.40		8.00		0.50		3.00		3.00		2.00		2.00							
5.4.2007	4.00	9.80							0.30	3.00	4.00	10.00		3.00	4.50		3.00		10.00									
Month																												
Total																												



Appendix 3

Summary of Account sheet for Women's Economic Group (KEW)  
(in RM)

Year: 2007

Month	B/F	Credit		Debit			Gross income	Net income	Balance	Remarks
		Sales	Others	Production cost	Share for attendance	Transfer to S.Account				
January	2,825.60	890.00	0.00	403.90	400.00	250.00	86.10	-163.90	2,661.70	
February	2,661.70	1,513.00	0.00	288.10	400.00	250.00	824.90	574.90	3,236.60	
March	3,236.60	984.50	0.00	691.20	0.00	250.00	293.30	43.30	3,279.90	
April	3,279.90									
May										
June										
July										
August										
September										
October										
November										
December										
<b>Total</b>		<b>3,387.50</b>	<b>0.00</b>	<b>1,383.20</b>	<b>800.00</b>	<b>750.00</b>	<b>1,204.30</b>	<b>454.30</b>		



## Annex 5

### **Report on the training and demonstration on the construction of FEDs (Fish Enhancing Devices) and pre-installation marine biological survey for FEDs, Off Kuala Teriang, Langkawi, Malaysia during 17-22 March 2007**

Dr. Taweekiet Amornpiyakrit  
3 April 2007

#### **1. Training and demonstration on the construction of FEDs**

Upon a request from KEN Kuala Teriang fisher-folks for an installation of FEDs (Fish Enhancing Devices) in 2006, SEAFDEC-TD under the LBCRM-PL project has however delayed this activity due to an improvement of the design of the FEDs. The follow up survey from Chumporn province, Thailand have shown that all of the FEDs installed in June, 2006 had some weak points and must be improved for more durability and effectiveness. Many points were considered and improved on its construction such as replacing steel structures with rust-proof material as stainless steel, adding another cement sinker to secure the unit in place not to be taken away easily, enhancing its attracting performance by providing fine mesh netting panels under the supporting floats and avoiding from incidental damages by the fishing boat by using only a pipe to mark its position at the surface (instead of using an expensive foam-inserted buoy as the previous one). This design will be effective for pelagic species and shallow water and proved itself to last at least 6 months (Fig.1). All materials were procured, prepared, partly assembled and transported to Kuala Teriang, Langkawi, Malaysia by a boat from Thailand border (Satun Province).

The training and demonstration was carried out to the KEN Kuala Teriang fisher-folks under the technical guidance of the SEAFDEC-TD team, assisted by a local fishery officer for an interpretation between English-Malaysian on 19<sup>th</sup> March 2007. There were around 20 KEN's fisher-folks participating in this activity. Some of them had experience on this training and installation in 2004 when the SEAFDEC team firstly introduced this device to them.

A sample of partly finished FEDs (Fig 2) has been assembled (except 2 cement sinkers). It took around 6 hrs to complete a set of FEDs. Then, the fisher-folks were requested to complete all 10 units of FEDs by themselves within one month and all units were proposed to be installed in the demarcated zone of Kuala Teriang in May 2007 (Fig 3).

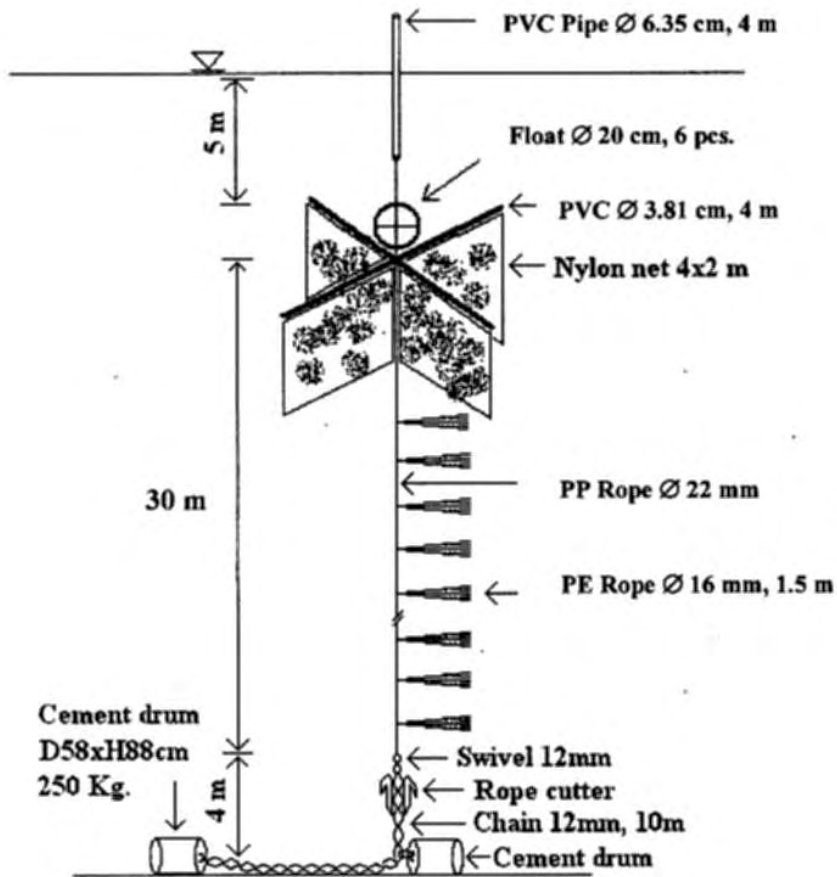
#### **Training Staffs**

1. Mr.Taweekiet Amornpiyakrit-SEAFDEC-TD
2. Mr.Suchart Kijsumut- SEAFDEC-TD
3. Mr.Weerasak Yingyuad- SEAFDEC-TD
4. Mrs.Sabidah Bt Saleh- Langkawi District Fisheries Officer
5. Mr.Anfin bin Salim-IPM, Terengganu (Observer)
6. Mr.Zahari bin Said-IPM, Terengganu (Observer)

**Fish Enhancing Device (FED) Design (Type-II, Improved)**

**Project** : SEAFDEC/TD, Resources Enhancement  
**Location** : Langkawi Island, Malaysia  
**Water Depth** : 28-34 m  
**Material** : Synthetic Fiber -Poly-Propylene (PP)  
-Poly-Ethylene (PE)  
-Polyvinylchloride (PVC)  
**Duration** : 17-22 March 2007 (Demonstration)

**Fish Enhancing Device (FED)**  
(Water depth 28-34 m)



**Fig. 1** FEDs construction design (improved).



a



b



c



d



e



f



g

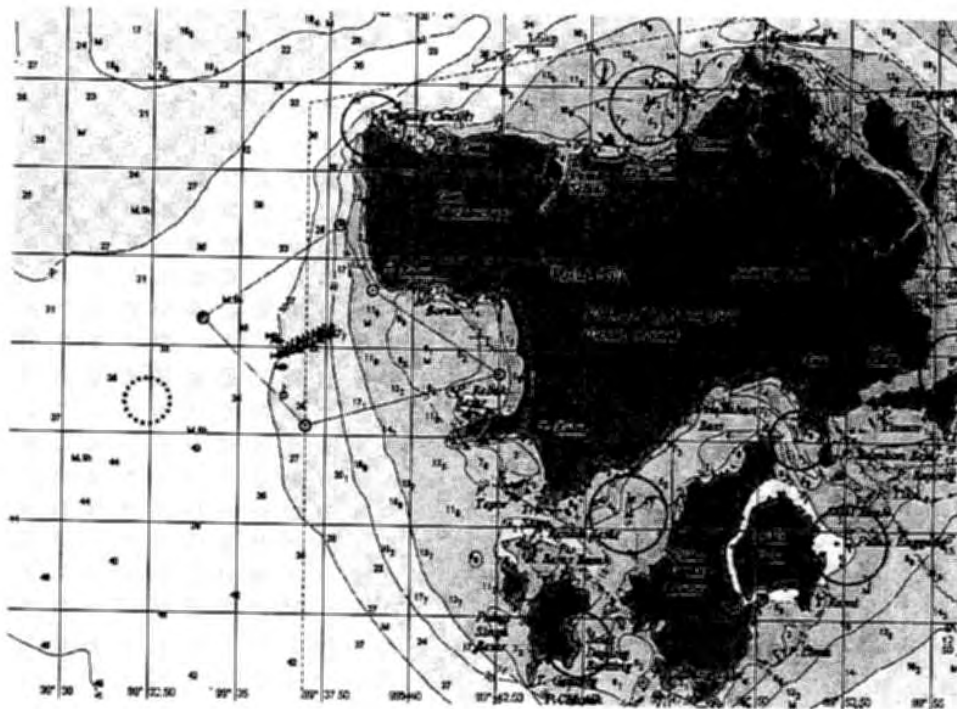


h



i

**Fig. 2 (a-i)** Training and Demonstration on the Construction of a FED to the Fisher-folks of KEN – Kuala Teriang, Langkawi, Malaysia on 19<sup>th</sup> March, 2007.



**Fig. 3** A Chart showing proposed FEDs installation site as requested by the KEN Kuala Teriang fisher-folks in 2007 (indicated by a red circle).

## 2. Pre-installation marine biological and oceanography survey for FEDs (Table 1, Fig. 4)

The marine physical and biological survey is one of essential tools to monitor effectiveness of the FEDs environmental and fisheries habitat changes by the installation of FEDs. Prior to the installation of the FEDs, therefore, an identical survey has to be initiated. The survey has been carried out on 20<sup>th</sup> -21<sup>st</sup> of March, 2007. A small fishing boat was chartered and the following subjects were collected and investigated by available oceanographic equipments prepared by FRI staffs.

### 2.1 Water quality

Conventional water quality parameters such as temperature, salinity, turbidity, depth, redox potential, dissolved oxygen and pH data (these parameters characterized the conditions existing at the site during sampling) were monitored *in situ* by using a Multi Parameter Water Quality Monitor. Nutrients such as NO<sub>2</sub>, NO<sub>3</sub>, NH<sub>3</sub> and PO<sub>4</sub> will be periodically monitored within the study sites.

### 2.2 Plankton

A plankton net was towed horizontally to collect some plankton (zooplankton and phytoplankton) including fish larvae assemblages. Samples were collected and preserved in 10% formalin. Identification of species and abundance would be analyzed in the laboratory.

### 2.3 Benthos (Benthic fauna)

Benthic fauna is an indicator for the bottom characteristics and productivity of the area. This biological aspect was investigated by collecting bottom sediment by using a small grab. Samples were collected twice and preserved before sieving. Abundance, species composition and distribution of the collectively, organisms living in, on, or near the bottom substrate would be analyzed in the laboratory.

### 2.4 Catchability of fishes

For this purpose hand-lining was conducted at the surveyed site. It would be measured as kg. catch/man/hour and would be conducted both during spring and neap tides. However, the team failed to catch any fishes due to strong current then the anchor couldn't hold the boat in place. Moreover, the muddy sand bottom might show a low productivity rather than a sandy or rocky bottom in terms of fish existence or abundance.

**Table 1** Summary of the Pre-installation marine biological and oceanography survey for FEDs on 20<sup>th</sup>-21<sup>st</sup>, March 2007 at the surveyed sites

Date	Activity
20 March 2007	<i>Station 1: N 06°_20.5200, E 099°_37.6399</i>  -Water quality (surface, mid-water, bottom, 20 m) -Water sample (surface and bottom, 20 m) -Benthos (×2) -Plankton net (Horizontal tow)  <i>Station 2: N 06°_20.5004, E 099°_37.6194</i> -Plankton net (surface), -Benthos (×2)

	<p><i>Station 3: N 06°_20.476, E 099°_37.648</i></p> <ul style="list-style-type: none"> <li>-Plankton net (surface)</li> <li>-Benthos (×2)</li> </ul> <p><i>*Stations 1-3 are towards the traditional FADs, depth 20 m</i></p>
21 March 2007	<p><i>Station 4: N 06°_18.991, E 099°_36.153</i></p> <ul style="list-style-type: none"> <li>-Depth 108 ft (36 m)</li> <li>-Water quality (sub-surface, mid-water (15m) and bottom (27 m))</li> <li>-Grab (×2)</li> </ul> <p><i>Station 5: N 06°_19.033, E 099°_36.144</i></p> <ul style="list-style-type: none"> <li>-Depth 103.1 ft (34.3 m)</li> <li>-Water quality (sub-surface, mid-water (16m) and bottom (28 m))</li> <li>-Grab(×2)</li> <li>-Plankton net (surface)</li> <li>-Hand-line fishing (Station 5)</li> </ul> <p><i>*Stations 4-5 are proposed to install FEDs as requested by KEN Kula Teriang Fisher-folks</i></p>

## 2.5 Analysis of data

All obtained data would be compiled and analyzed by FRI and periodically monitored.

### Working staff

1. Abdul Razak Bin Latun-Fisheries Research Institute, Penang
2. Hadzley Harith- Fisheries Research Institute, Penang
3. Choong Kah Tung -State Fisheries Department, Penang
4. Taweekiet Amornpiyakrit-SEAFDEC-TD
5. Suchart Kijsumut-SEAFDEC-TD

### Further plans

Time allocation for the fisher-folks to complete the construction of 10 sets of FEDs was unfixed, but should not be more than 1 month. However, fisher-folks showed their enthusiasm to install them as soon as possible in the requested site. Hence, SEAFDEC team would plan to continue onto the installation in the early of April 2007.

Monitoring survey on its effectiveness will be discussed later after the installation.



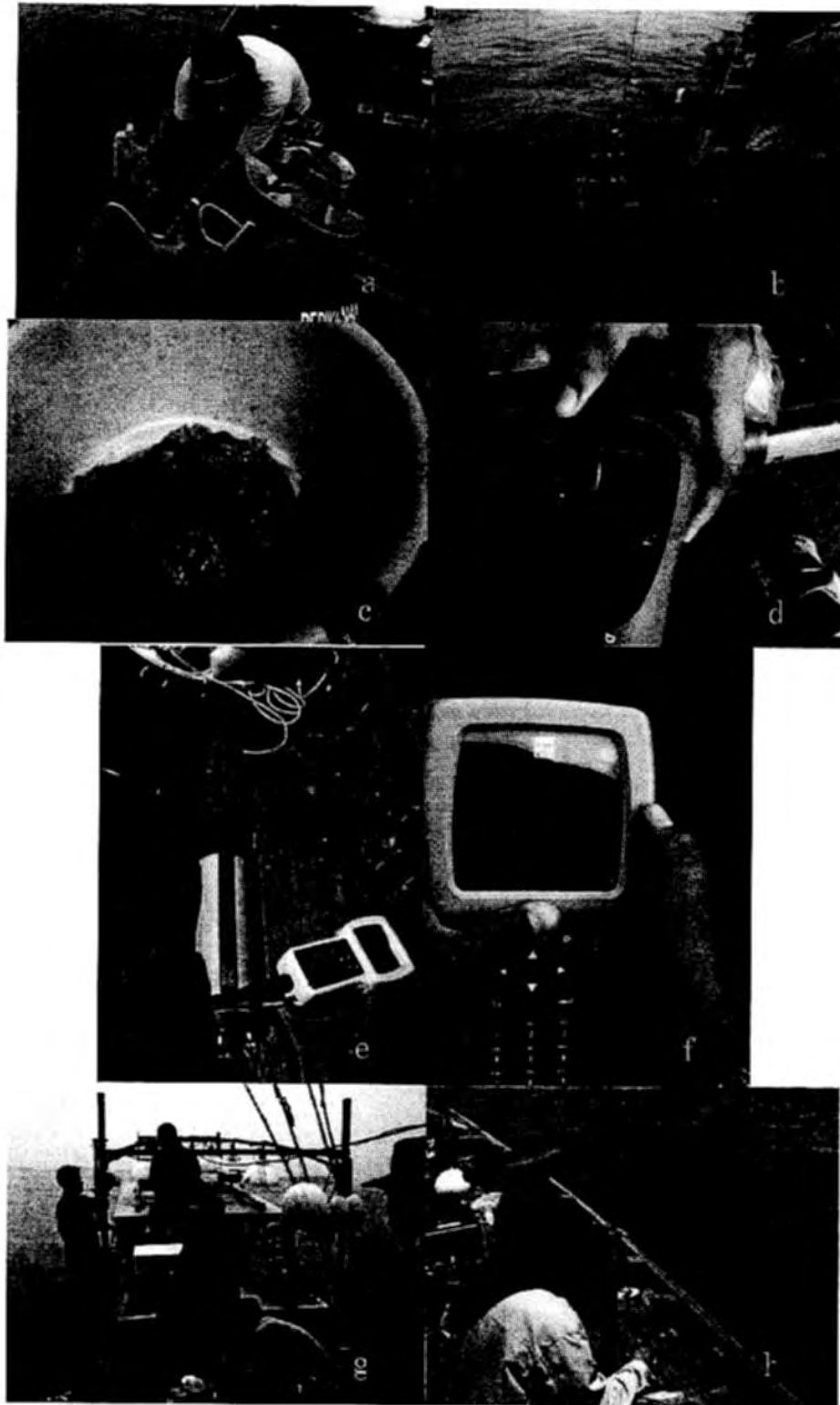


Fig. 4 (a-h) Pre-installation marine biological and oceanography survey for FEDs on 20<sup>th</sup>-21<sup>st</sup> March, 2007 at the requested installation site of FEDs.

## Annex 6

### Report of installation of Fish Enhancing Devices (FEDs) in Kuala Teriang, Langkawi,

Dr. Yuttana Theparoonrat  
15 May 2007

Since, SEAFDEC/TD staffs were introduced a new designed of FEDs (Figure 1) to the fishermen group of Kuala Teriang, Langkawi, Malaysia during 17-22 March 2007 under the project of Integrated Coastal Resources Management in Pulau Langkawi (ICRM-PL). The fishermen group are requested to completed all 10 unit of FEDs by themselves within one month. All 10 unit of FEDs were proposed to install in the demarcated zone of Kuala Teriang. On 4-5 April 2007, TD staffs in accompany with DOF Malaysia, Mr. A. Krishnasamy and Mr. Choong Kah Tung conducted an installation of 10 unit s of FEDs. The installation position are indicated by proposed of fishermen group as shown in the Table 1. and Figure 2. There are around 20 fishermen participated in the installation process. The installation were conducted by 2 local fishing boat equipped with GPS and Echo-sounder system.

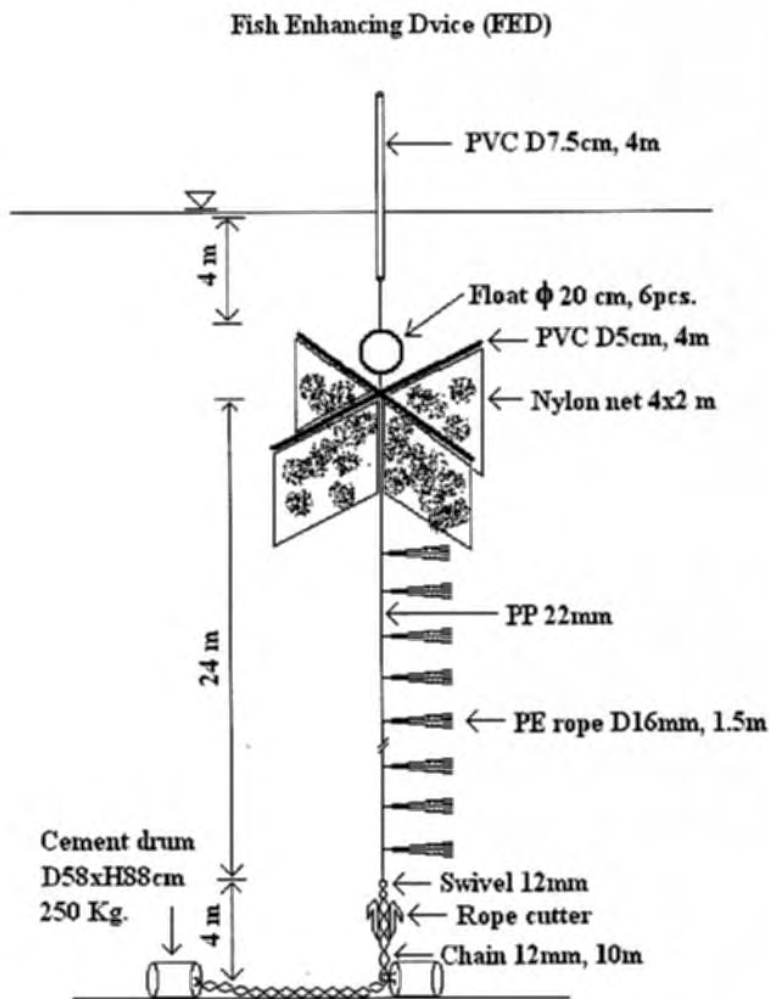


Figure 1. FEDs construction design.

Table 1. FEDs installation position in demarcated zone of Kuala Teriang

No.	Position	
	Latitude	Longitude
1	6° 19'.025 N	99° 36'.211 E
2	6° 19'.011 N	99° 36'.151 E
3	6° 19'.004 N	99° 36'.202 E
4	6° 18'.999 N	99° 36'.184 E
5	6° 18'.977 N	99° 36'.184 E
6	6° 18'.970 N	99° 36'.170 E
7	6° 18'.954N	99° 36'.151 E
8	6° 18'.935 N	99° 36'.159 E
9	6° 18'.901 N	99° 36'.217 E
10	6° 18'.968 N	99° 36'.209 E

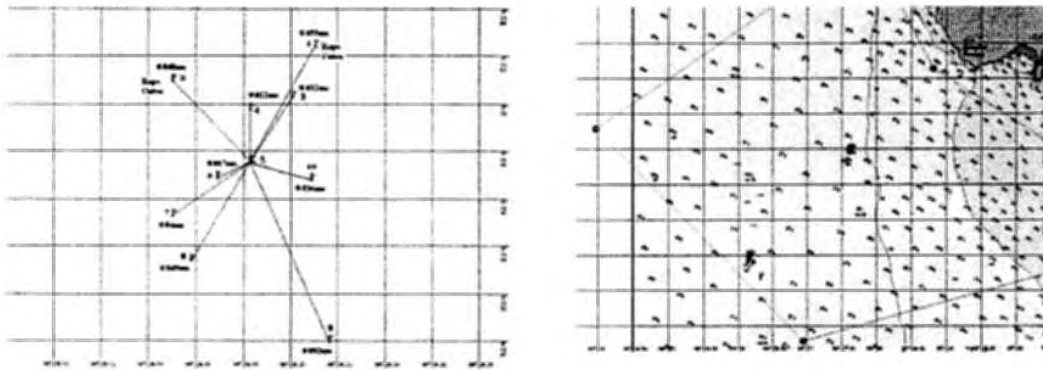


Figure 2. FEDs installation position in demarcated zone

FEDs were installed in demarcated zone with water depth of 32 meter. In order to avoiding damage from surface passage boat, the Poly-propylene, 22 mm, standing rope, 22 meter, was hang on the 20 cm plastic floats at 4 meter under water surface. Appendage ropes, un-twisted PE 16 mm, 1.5 meter long, were attached at 1.5 meter interval along standing rope. Lower part of standing rope attached with 12 mm, 10 meter long, galvanize chain. Two concrete weight, 250 kg., were attached at the losses end of galvanize chain and at 4 meter apart from other end. Buoyancy of 6 plastic floats are sufficient to lift up galvanize chain on vertical standing at 4 meter from the bottom. A stainless steel rope cutter was attached at the upper part of standing chain at 4 meter above bottom. Top of standing rope was connected with two perpendicular PVC pipe, 5 cm, 4 meter long, with hanging net for shelter providing. A closeded ends PVC pipe, 7.5 mm, 4 meter long, was tie with under water plastic float by 16mm PE rope for indicated of FEDs position.

Figure 3 Meeting of fishermen group leader for identifier the FEDs installation positions.



Figure 4. Material and equipment preparation.



Figure 5. FEDs installation by local fishing boat



## **Conclusion & Recommendation**

Since, the tidal current in Langkawi area are strong. Then during the high tide, surface PVC marking pipe were sinking under water surface and floating un again when current clam down. Then it is necessary to add more buoyancy to the float of FEDs by means of putting more floating material. Empty plastic container 30 lits seem to be the most suitable for buoyancy adjustment.

In order to extend the service period of FEDs, utilization management and maintenance of FEDs by DOF Malaysia is necessary. Additional of float from time to time when the marine growth grow upon FEDs is recommended.

Annex 7

**REPORT ON THE 5<sup>TH</sup> STEERING COMMITTEE MEETING**  
INTEGRATED COASTAL RESOURCES MANAGEMENT  
IN PULAU LANGKAWI, MALAYSIA (ICRM-PL)  
AT HOTEL CITYVIEW, LANGKAWI  
ON 22<sup>nd</sup> MARCH 2007

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**1. List of Participants:**

DOF Malaysia

- |                                     |  |
|-------------------------------------|--|
| 1. Mr. Abdul Rahman bin Abdul Wahab | Planning, Development and International Division & National Project Coordinator (Chairman) |
| 2. Mr. Arthur Besther Sujang        | Planning, Development and International Division and National project (secretariat)        |
| 3. Mr. Choong Kah Tung              | State Fisheries Department, Penang   |
| 4. Mr. A. Krishanasamy              | Fisheries HQ   |
| 5. Mr Anuar bin Omar                | Extension Unit, Kedah State Fisheries Office   |
| 6. Mr. Badeli bin Hassan            | Langkawi District Fisheries Officer  |
| 7. Ms. Faizah Ismail                | Licensing & Resources Management Division  |
| 8. Mr. Abd Razak Latun              | FRI, Penang  |
| 9. Mr. Hadzley Harith               | FRI, Penang  |
| 10. Ms. Sabidah Bt Saleh            | Langkawi District Fisheries Officer  |
| 11. Mr. Mohd Taman Hussan           | Langkawi District Fisheries Officer  |
| 12. Mr. Anfin bin Salim             | IPM, Terengganu  |
| 13. Mr. Zahari bin Said             | IPM, Terengganu  |
| 14. Mr. Mohd Nizam Khahruddin       | Langkawi District Fisheries Office   |

LKIM (Fisheries Development Authority of Malaysia)

- |                         |                          |
|-------------------------|--------------------------|
| 1. Mr. Mohamad Noor Had | LKIM Senior- officer, KL |
| 2. Mr. Zakaria Ali      | LKIM officer, KL         |

KEN / KEW member

- |                          |                              |
|--------------------------|------------------------------|
| 1. Mr. Mahadzir Ibrahim  | Chairman KEN Kuala Teriang   |
| 2. Mr. Hj Padzil hj Din  | Secretary, KEN Kuala Teriang |
| 3. Ms. Che Embon BT Saad | Chairman of women's group    |
| 4. Ms. Mahani BT Masor   | Secretary of women's group   |

SEAFDEC/TD

- |                                 |   |
|---------------------------------|---|
| 1. Mr. Seiichi Etoh             | Project Leader (Co-Chairman)                |
| 2. Dr. Thaweekiet Amornpiyakrit | Section Head, Fishery Resources Enhancement |
| 3. Ms. Sumitra Ruangsvakul      | Section Head, Socio-economic                |

**2. Welcome address:**

- 2.1 The meeting was chaired by Mr. Abdul Rahman b. Abdul Wahab of Fisheries Officer, Planning, Development and International Division, DOF Malaysia. He conveyed an apology note by Mr. Shaupi B. Derahman, Director of Planning, Development and International Division, DOF Malaysia for not being able to attend and chair the meeting, due to other commitment.



- 2.2 Mr. Chairman informed the meeting that, DOF has appointed the Licensing and Resource Management Division to lead an Implementation Committee in view to accelerate and strengthen the implementation of this project. In addition, the said committee is also tasked to explore any future possibility to replicate this project elsewhere.
- 2.3 Mr. Seiichi Etoh, Project Leader for the SEAFDEC-TD informed that the project ICRM-PL will be terminated at the end of 2007 but it is anticipated that the project activity will be continued by hands of DOF Malaysia and other institutions and agencies involved for the benefit of the community. He also stated that the final goal of the project lay in building up the institutional capacity of KEN/KEW so as for them to manage the program independently and sufficiently with continued assistance from DOF Malaysia.
- 2.4 Mr. Chairman briefly touched upon the constructive outcome of the Stakeholder Consultation held last November 2006. Following to that, actions are being taken among others, drafting of regulation to gazette the demarcated zone by the legal section based on the Fisheries Resource Management Plan of Kuala Teriang.
- 2.5 In light to assist KEN and KEW Kuala Teriang in their daily management, Graduate Short-termed Contract Worker will be hired and be stationed at the designated KEN office.

### **3.0 Adoption of Agenda**

The proposed agenda was adopted without amendment.

### **4.0 Endorsement of the Minutes of the Fourth Steering Committee Meeting**

- 4.1 The workshop had completed construction and currently awaiting commissioning of water and electricity which will be supplied in 2 months time. KEN proposed to carry out activities like selling spare parts, nets, lubricants and engine repairs. Ice selling business runs as usual at present ..
- 4.2 Request by KEN to proceed with Chumporn-like Crab Bank program has been approved. The meeting noted with interest to try-out Japanese marking-system which is simple and practical. Nevertheless, SEAFDEC was urged to conduct detailing activities which among others, to identify appropriate type of paint. To this end, SEAFDEC will provide 300 unit of collapsible crab-trap to KEN members for free to support this scheme.

### **5.0 Project Progress in 2006**

#### **5.1 Report by KEN Kuala Teriang**

- 5.1.1 Earlier proposal to have fish cage culture was not favoured by KEN instead to allow individual to run the project.
- 5.1.2 10 units of FED which were introduced and supplied by SEAFDEC are expected to complete construction by KEN members by the end of March. It will be launched early April 2007 at location near the LKIM artificial concrete reef.

- 5.1.3 KEN has commended good move by the DOF for stationing two Marine Enforcement Officers from Langkawi Fisheries Office at KEN's station which resulted a rapid decline in incidence of encroachment of trawlers and noticeable increase in fish landings. They also expressed appreciation for the good cooperation rendered by the Maritime Enforcement Agency or APMM. . KEN also has set up its own Local Enforcement Committee to monitor and coordinate enforcement activity.

## 5.2 Report by KEW Kuala Teriang

- 5.2.1 KEW had shown a deficit budget in their income for the year 2006. The mistake is mainly due to improper book keeping, where the transaction was not properly recorded.
- 5.2.2 2 bookkeeping formats which are simpler to record sales and production were introduced to replace the existing system. A computerized system can be used to record transaction which are more precise and accurate, and should be monitored by DOF Malaysia.
- 5.2.3 It was identified KEW is having difficulties in marketing their products locally due to competition of product from Thailand. High transportation cost and no trading company is also one of the difficulties in marketing their products outside Langkawi. It was proposed to diversify the type of production, not solely rely on anchovies for instance to produce fish cracker, when the price of anchovies is high.
- 5.2.4 The Extension and Fish Quality Control Division, will coordinate with Kedah Fisheries State Office together with KEW Kuala Teriang and IPM to form a committee to revitalize the existing business plan aiming at enhancing and diversifying production so as when the new premises is completed, the production must be justified according to the size of premise and the number of producer.
- 5.2.5 The problem of packaging especially with regards to *Halal* labeling should be resolved as to regain confidence on the consumers.

## 6.0 Endorsement of the work plan for 2007

- 6.1 The work plan for 2007 have been discussed and endorsed through the Program Plan outline as circulated in the meeting.
- 6.2 Marine resource survey, to be carried out by FRI starting early 2006 cannot be carried out yet. The survey will start by April 2007.
- 6.3 The FEDs which are being constructed will be launched on the 4<sup>th</sup> of April 2007. SEAFDEC/TD, DOF, LKIM and KEN will work together to place them on the pre-identified location during the last visit on 19-21 March 2007.
- 6.4 There is a possibility in supplemental financial inputs by SIDA to the project in the field of mangrove reforestation. To realize that, the meeting requested Mr. Hussin, the mangrove specialist, FRI, Penang, to prepare the outline of the mangrove plantation plan within the available budget of USD 10,000 in Kuala Teriang. Based on that, the SEAFDEC/TD will formulate the proposal for submission to SIDA for approval.

- 6.5 The chairman stated that the project should exert more efforts in public relations in a bid to disseminate the project concept and achievement to other areas in Malaysia through publications and other media.

## 7.0 Closing

Mr. Chairman thanked all participants of the meeting for their active involvement and contribution to the meeting in giving their comments towards the successful implementation of this project. At the end of the meeting, Mr. Seiichi Etoh presented crab folded-traps to KEN representative.

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Drafted by : Mr. Arthur Besther Sujang (28 March 2007)  
Endorsed by : Mr. Sei Etoh (28 March 2007)  
: Mr. Abdul Rahman bin Wahab (17 April 2007)