



## **Strategies for Trawl Fisheries By catch Management**

REBYC-II CTI (GCP/RAS/269/GFF)

### **Report of the Regional Technical Workshop on Data Collection Trawl Fisheries Management Information and Data Requirements**

8-11 May 2013, Samut Prakan, Thailand

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## Background to the Rebyc-II CTI Project and the Data Collection workshop.

### 1. *Introducing the Rebyc-II CTI Project*

The Coral Triangle region of Southeast Asia is one of the world's most biologically diverse, economically productive but potentially vulnerable marine zones. As a result of increasing populations and exploitation pressures, growing threats from pollution and major ecosystem changes are a particular concern in the region. In the global and regional context, the untargeted capture of fish and non-fish species, commonly called by catch and discards, is an increasing concern. By catch includes fish, turtles, marine mammals, and corals and other seabed fauna and flora. This part of the catch tends to be poorly monitored and unmanaged but could be having an important impact on fishery resources, habitats and ecosystems. In some fisheries and regions, there is an increasing trend towards retention of the by catch consisting of juveniles and small-sized fish for use as food for human consumption or for utilization as feed in aquaculture or livestock rearing. This is therefore a complex issue, requiring resource and biodiversity aspects to be tackled alongside human needs and involving a mix of policy, technical and community support measures.

The project; *Strategies for trawl fisheries by catch management* (REBYC-II CTI) is contributing to the more sustainable use of fisheries resources and healthier marine ecosystems in the Coral Triangle and Southeast Asia waters by reducing by catch, discards and fishing impacts from trawl fisheries. The Project is being executed by the Southeast Asian Fisheries Development Center (SEAFDEC), based in Bangkok, Thailand, and the governments of Indonesia, Papua New Guinea, Philippines, Thailand and Viet Nam, in partnership with the private sector and other relevant national, regional and international organisations. The Food and Agriculture Organization of the United Nations (FAO) is the Global Environment Facility (GEF) agency for the project. The project began in May 2011 and will run for four years. The total budget is USD 11,218,600.

Based on the principles of the FAO Code of Conduct for Responsible Fisheries (1995) and the Ecosystem Approach to Fisheries (EAF), the project is building on the successes of the 2002-2008 FAO/UNEP /GEF global project "*Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of By catch Reduction Technologies and Change of Management*". The Project focuses on multi-species bottom trawling, where by catch issues and the effects on ecosystems and livelihoods are considered significant. The project is addressing these challenges by promoting sustainable fishing practices and improved trawl management.

The Project is structured around four interrelated components:

1. **The Policy, legal and institutional framework component** which works towards the establishment of national or area specific trawl fisheries by catch management plans and building institutional capacity for their implementation. .
2. **The Resource management and fishing operations component** that is leading to the adoption of more selective fishing gear and practices,
3. **The Information management and communication component** that includes by catch data collection (at landing sites and onboard vessels), mapping of fishing grounds, establishment of socio-economic monitoring procedures, and means for communicating by catch data and information.
4. **The Awareness and knowledge component** which is addressing awareness of and knowledge on trawl fisheries by catch management issues and how they relate to sustainability, and what measures that are available to make fishing more responsible.

## **Agenda item 1: Opening of the Workshop**

The workshop was formally opened by the FAO representative. Dr Petri Suuronen. This was followed by a speech by the SEAFDEC Secretary General; Dr. Chamnarn Pongsri, providing orientation and guidance for the workshop.

## **Agenda item 2. The Workshop**

The workshop was organized and hosted by the Project Regional Facilitation Unit (RFU) at the SEAFDEC Training Department. The prospectus and agenda are attached as Annexes 1 & 2. A total of 15 presentations were made during the 3 –day Rebyc II CTI workshop. Summaries are presented below and the full presentations can be found in Appendices 4-18

The objectives of the workshop were to:

1. Scope the pilot site data collection and mapping (e.g. spawning grounds, nursery areas, critical habitats) to (1) monitor the impacts of current management measures and (2) propose improved management measures, taking into consideration the limitations of time, budget and human resources;
2. Provide guidance on stakeholder analysis, socio-economic and gender considerations, and participatory approaches;
3. Agree on data collection protocols that fulfill the local management needs; and
4. Identify data and information gaps in the formulation of regional guidelines and tools for trawl fisheries management, considering the regional and international trade in the products from trawl fisheries.

The expected outputs of the workshop were:

1. Agreed data sets and data collection methodologies appropriate for implementation in project countries;
2. Indicators that allow fisheries/resource managers to evaluate impacts of management measures on the fishery and associated social and ecological systems, providing feedback to guide the trawl fishery management process and decisions;
3. Improved knowledge of the region's trawl fisheries and its catch composition enabling the formulation of regional guidelines, advice and tools for improved trawl fisheries governance and policy processes; and
4. Suitable indicators for reporting project results.

The four-day workshop was attended by representatives from Indonesia, Papua New Guinea, Philippines, Thailand, Viet Nam, and SEAFDEC, as well as FAO staff members and project managers/technical advisers of FAO-executed projects such as the Regional Fisheries Livelihoods Programme for South and Southeast Asia (RFPL) and the Bay of Bengal Large Marine Ecosystem (BoBLME). A list of participants is attached as Annex 3.

The first day of the workshop was devoted to participation in the ICES-FAO-SEAFDEC Mini-Symposium on the Impacts of Fishing on the Environment. The focus of the symposia on this day was shrimp trawl fisheries.

The Rebyc II CTI workshop was opened on 9 May 2013 by Dr. Chumnarn Pongsri, SEAFDEC Secretary General, who emphasized the importance of the regional workshop in arriving at appropriate data collection methodologies as well as indicators for the improvement of trawl fisheries management in the region.

This was followed by welcome remarks from Mr. Petri Suuronen, FAO Lead Technical Officer for REBYC-II CTI, who underlined the importance of baseline information for monitoring success. He recalled his participation during the last two months in missions to four project countries

where he participated in stakeholder consultations and discussion on national data collection programs. The present workshop was seen as an occasion for project partners to discuss and reach a full understanding of the key data issues, processes and indicators.

Mr. Niklas Mattson, Project Regional Coordinator, a.i. and Mr. Isara Chanrachkij, Project Technical Adviser, co-chaired the workshop sessions.

### **Agenda item 3. Ecosystem Approach to fisheries**

The first presentation was delivered by Dr. Simon Funge-Smith, FAO Senior Fishery Officer, on the ecosystem approach to fisheries (EAF). This presentation (Annex 4) provided the keynote perspective and overall framework for trawl fisheries management plans, and outlined how such plans using EAF could be developed. The presentation emphasized the prioritization of the issues in trawl fisheries based on risk assessment, starting with those issues that are within the power of a project to resolve. Emphases should be on data collection process that are simple, realistic, cheap and robust, and involve fishers in the process.

The following points, questions and comments were raised during the discussion:

- The EAF process allows us to look at the issues and discuss them with stakeholders. It is multi-stakeholder process with the participation of the fishing industry and resource-holders. Such participation builds ownership of and compliance with management measures.
- The concept of adaptive management, i.e. learning by doing, is relevant to the discussion.
- As not all by catch can be reduced. The crucial question is: What are the by catch species that are at risk? The aim should be to reduce those by catchspecies that are at risk and which have the biggest potential impact on the ecosystem.
- Some by catch data are being collected by regional countries but there are other data that should be collected with the help of this project. Such data gaps should be identified collected, analyzed and compiled with existing data.
- Some countries are adopting a single-species approach but the EAF requires looking at multi-species and other key drivers. There is no expectation for countries to completely change their approaches to fisheries management.
- What is needed is an adaptive management framework and gradual introduction of EAF changes. For example, most stock assessments have little focus on by catch composition, so the onboard sampling of the by catch, (with the fishing crew) could be a way forward. Stakeholder dialogue to involve them in data collection and also to get their buy-in to management measures should be part of the process.
- EAF v. EBM (ecosystem-based management): EAF looks at balancing the socio-economic and environmental issues whereas EBM is more focused at addressing environmental issues.
- There was a proposal during the last regional workshop, to hold a training workshop on EAF and this should be done soon. It was pointed out that following the 2003 FAO publication on the ecosystem approach to fisheries, training courses have been prepared and are now available. Training courses under the sponsorship of other related projects have also been conducted in the project countries except Viet Nam.. Examples are the 'EAFM 101' of NOAA and partners for the CTI countries, and the 'Essential EAFM' jointly developed by BOBLME and NOAA with partners.
- Whilst it would be difficult to assess the overall impacts of trawling on sensitive seabed in a relatively small project like REBYC-II CTI, it could be assumed that habitat impacts would be higher on nursing grounds and near-shore areas compared with muddy bottoms. Habitat mapping should be part of the data collection process.

## **Agenda item 4: Country presentations**

### **4.1 Indonesia**

- The potential pilot sites in Indonesia are Ambon and Sorong and this is based on the number of shrimp and fish trawls and the presence of partner institutions with whom the project can collaborate on data collection. It was pointed out that in Ambon, a partnership could also be established with the Ambon Marine Science Institute that could be involved in research with the project.
- Both shrimp and fish trawls will be covered by the project.
- There is no small-scale trawling in the Arafura Sea and small communities inhabit the coastal area.
- The existing logbook system only shows how much fish and shrimp were harvested and has no information on species composition of the catch.
- There are already some existing sources of data but there would be a need to have an observer on board to get data on catches and discards.
- There should be a distinction on what part of the catch: (a) is landed; (b) comprised of juveniles; (c) used as food. There is a need to determine the proportion of the catch below commercial size and its impact on the fishery.
- Some information about spawning and nursing areas may be available from other institutions, whereas other information is for the project to investigate.
- Establishing partnerships with existing organizations would be important for the project. Indonesia and Papua New Guinea are already working on the same project, ADSEA.
- It was noted that the existing method of fee collection from the trawlers probably leads to under-reporting of the catch. It was clarified that the fee is based on the boat size and payment is made before the trawler goes out to sea.
- The uptake of management measures depends very much on socio-economic impacts. In this regard, the observers on board could also be trained to collect operational and economic data.
- Red snapper could be a good indicator species (species group). It is a target species for trawl and gillnet fisheries in Arafura Sea

### **4.2. Papua New Guinea**

- Prawn nursery areas have been identified and closed to trawl fishing, and surveys have been done during the closed seasons. There are no socio-economic surveys yet.
- Trawl by catch is often sold to local people or exchanged for food.
- As there are no coral reefs in the Gulf of Papua, trawlers are the only source of sea fish for local people.
- The closer near shore trawl fishing takes place, the more juveniles there are but also the more prawns are caught (the owners of the resource are the people living along the coast).
- The cost of feed is very high and the government's aim is to produce locally available materials for the increasing aquaculture industry.
- There is a need to get a closer look at the by catch composition and identify the species at risk. This can be done by collaborating with academic institutions.
- Data for three years are available and these sets of data can be analyzed to determine which species are decreasing.

### **4.3. Philippines**

- During the recent stakeholder consultations at the project pilot site it became clear that real improvements in the management of trawl fisheries could be made through the REBYC-II project.

- Trawling exists in all sizes – small-scale, medium, and large-scale.
- As part of the co-financing by the Philippine government, the project partners will conduct catch sampling of small-scale trawlers by buying the catch at sea and using it for analyzing the by catch composition.
- The Ichthyoplankton, (fish egg & larva) survey is important to show evidence to stakeholders about seasonality and to inform the decision-making process regarding the closed season. It will be conducted for at least one year with sampling once every month.
- Both landing data and onboard survey will be collected and these data will have to be analyzed and consolidated. The use of electronic device such as the one used by the RFLP in East Timor (see Annex 11) is worth considering.
- The project should be able to contribute to an understanding of the fishers and their vulnerabilities as well as a typology of fishers, based on livelihood dependency on trawl and other fisheries.
- The following case study supported by FAO shows how such typology and analysis could be done: Case study of the technical, socio-economic and environmental conditions of small-scale fisheries in the estuary of Patos Lagoon, Brazil, available at <http://www.fao.org/docrep/015/i2589e/i2589e00.htm>
- It was noted that there is a National Stock Assessment Program but the REBYC-II CTI project areas are not part of the sampling areas for that program. There is also an existing fisheries observer program for tuna purse seine and ring net fisheries.

#### **4.4. Thailand**

- Data should be collected at the species level before aggregating into categories.
- In Rayong, the survey area is outside of the area where trawlers are fishing because of small-scale fishers such as gill-netters operating in the area.
- It would be useful to understand: (a) what is in the reserved zones, i.e. if there is high density of juveniles or high diversity; (b) what species are being protected during the closed season; and (c) if catch composition, particularly juveniles, changes during the year.
- Trat has been identified as a *Rastrelliger* spawning area. Some purse seine vessels are catching *Rastrelliger* for use as fishmeal.

#### **4.5. Viet Nam**

- Data collection will cover pair trawls that target fish and otter board trawls that target shrimp.
- At the moment, there is no data available on the amount of by catch that goes to feed mills.
- A by catch sampling program is needed because the catch collection forms do not provide information on by catch. What can be done is to encourage collaboration by the fishing crew in collecting samples by providing them with sampling bottles containing formalin for preserving the catch on board which could then be analyzed by a university or research institution. The crew would just have to fill in the bottle label on where and when the sample was taken.
- Another alternative is to collaborate with master's degree students looking for a thesis topic to work on.
- The log sheets used should be simple and easy to fill and provide basic information such as where and when they are fishing.



## **Agenda item 5: Socio-economic and gender information considerations.**

The presentation was delivered by Dr. Susana V. Siar, FAO Fishery Industry Officer. The full presentation can be found in Annex 10. The presentation categorized the information needed to understand the socio-economic and gender aspects of trawl fisheries management into the following; legal framework; resources; stakeholders; and markets.

The involvement of men and women in each category should be identified and understood, as well as the gender-differentiated potential impacts of management measures. A value-chain approach can then be used to outline and identify the information needed about the resource base and at each stage of the value chain, from harvesting to marketing. Participatory tools such as seasonal calendar, stakeholder analysis using Venn diagram, and stakeholder analysis matrix can be introduced to generate and understand contextual information that cannot be collected from questionnaire-based surveys.

It is necessary to understand the following:

- who the stakeholders and decision-makers are as well as those who could influence the decision-making process, because some groups stand to lose from this project;
- the relationship between the different stakeholder groups and the identification of who has power over who is also crucial.
- incentives for the different stakeholder groups to participate.

## **Agenda item 6: RFLP Timor-Leste fisheries information systems**

The presentation was delivered by Dr. Don Griffiths, Chief Technical Adviser of the Regional Fisheries Livelihoods Programme for South and Southeast Asia (RFLP). The details can be found in Annex 11.

The presentation showed how the RFLP has assisted Timor-Leste in establishing an online National Fisheries Statistics System. The strategy used by the project has made it easier for fishers to register their boats, by providing a mobile registration system, which resulted in a very high participation rate.

The presentation also explained the project's experience on the use of information and communications technology for small-scale fishers and fishing administrations, such as the use of personal locator beacons for tracking illegal, unreported and unregulated (IUU) fishing. The following points, questions and comments were raised during the discussion:

- The use of GPS navigation devices and echo sounders may encourage fishers to fish more effectively.
- The personal locator beacon is used for giving information to the fishing patrol about the geographic area where the IUU fishing is taking place in order to increase the chances of capturing the IUU vessel. It is not known how many arrests of IUU vessels have been made from the use of personal locator beacons.
- The cost of the technology such as the personal locator beacon could be a barrier for uptake by small fishers. In this case, the RFLP project paid for the personal locator beacon unit and the annual service fee for 2012. The government is waiting for budget approval to pay the 2013 service fee.

## **Agenda item 7: Pilot areas mapping and management**

There were three presentations that focused on mapping of pilot areas:

### ***7.1. Lessons learned from SEAFDEC projects on science-based mapping.***

The first presentation, (see Annex 12) by Dr. Penchan Laongmanee, presented several examples of maps from SEAFDEC project areas and the different information contained in the maps, e.g. resource use conflicts including those that could inform decision-making about management measures. The presentation also included an introduction to marine spatial planning. The following points, questions and comments were raised during the discussion:

- The cost of the mapping would depend on what needs to be done and could vary from low to high. Existing data can be used for the mapping.
- There are mapping authorities in each country and the maps that they generate should be used as base maps.
- It is necessary to understand exactly what you want to map and why you want to do it.

### ***7.2. Participatory research methodology for habitat mapping***

The second presentation (see Annex 13) by Dr. Susana V. Siar, focused on how the knowledge of fishers on habitats and specific fish resources can be incorporated into a mapping exercise that can be useful in initiating discussions on management options. The following points, questions and comments were raised during the discussion:

- As a general comment, it was pointed out that the project activities could be clustered into three main categories: knowledge management, capacity development, and governance.
- The participatory mapping exercise should also include politicians, scientists and other decision-makers.
- Institutions can also be mapped. This is useful in showing their relationships to each other.
- The present project on REBYC-II CTI belongs to a global network of GEF-funded projects under the International Waters portfolio. There are many useful lessons and experiences from other projects that are being disseminated through IW: Learn (<http://iwlearn.net/>).

### ***7.3. Marine science-based mapping***

The third presentation (annex 14) by Dr. Shetapong Meksampan, focused on mapping the concentration of the following parameters from grab sampling of sediments taken from different parts of a body of water: (a) nutrient concentration; (b) chlorophyll a concentration; (c) total organic matter; (d) water content; and (e) acid volatile sulfides. Examples of maps of different estuaries were presented. The contour map of the different concentrations could indicate where fish and bivalves could survive. The following points, questions and comments were raised during the discussion:

- It would be interesting is to relate the information from the map with other information such as the identification of spawning areas.
- Information about productivity of a specific fish species could be compared with the environmental data from the sediment mapping.

#### **7.4. A Risk-based approach to trawl fishery management.**

The final presentation by Dr. Duncan Leadbitter focused on how management objectives dictate data needs with special reference to a risk-based approach to trawl fishery management. The presenter emphasized that the adoption of management arrangements requires some determination of the objectives of the fishery, e.g. to provide jobs and in which sector; to provide domestic food or export products and which species are of interest.

If good information is needed to help control catches at sustainable levels, decisions have to be made on what species to evaluate and how to evaluate them. In this regard, risk-based approaches are increasingly being used. Dr Leadbitter then introduced the use of Hobday's technique (Productivity Susceptibility Analysis) and the types of data required. The details of the technique and its application are shown in the full presentation in Annex 15.

The following points, questions and comments were raised during the discussion:

- There are many different lobbies with different interests and objectives in a trawl fishery and the big challenge is how to balance these multiple objectives.
- Different groups would have different ways of evaluating a fishery.
- The eco-labelling system based on MCS being considered by the EU is a potential 'game changer'. See <http://agritrade.cta.int/Fisheries/Topics/Market-access/EU-institutions-prepare-their-trilogue-on-fish-products-market-access-conditions>
- The focus should always be on the species of highest concern. Some of the information required is available from the literature and from FishBase.
- For a species that has been over-fished already, the situation would be of low encounterability but high vulnerability.
- The PSA process can also be used to identify the most vulnerable species that could also be the keystone species.
- In many fisheries management approaches, MSY, not risk-based approaches is used. One has to be creative in promoting and using risk-based approaches.
- The question was asked how Sustainable Fisheries Partnership (SFP) could assist the project and if the organization plans to put focal points in each partner country. It was clarified that SFP plans to have focal points in Thailand and Viet Nam but not in all partner countries.
- A general comment was made that there had been no discussion at the meeting, regarding the different types of trawl and gear.

#### **Agenda item 8: Working groups.**

Working groups were set up to identify and draft process for collecting data and plenary presentation of working group outputs

The partner countries were divided into two groups to enable the sharing of experiences and lessons. Papua New Guinea and Indonesia were grouped together because their project areas are near each other, and also to benefit from the experience of Indonesia who participated in REBYC Phase I. Philippines, Thailand and Viet Nam formed the other group so they could benefit from the experiences of the Philippines from REBYC Phase I. However, after an initial discussion among the three countries, it was realized that it would be effective and efficient to discuss separately assisted by RFU and FAO officers. The output of the working groups was presented during the plenary.

### 8.1. Philippines

The fisheries regulations prohibit active gears within municipal waters, i.e. 0-15 km from the coastline. Even with the existence of this regulation, the problem of trawlers encroaching on municipal waters persists due to weak enforcement and implementation.

In the pilot site for REBYC-II CTI there are no fishing grounds for trawling outside this area and there are concerns that fish supplies would be negatively affected if trawlers were not allowed to fish. In this regard, the Philippine country partners of REBYC-II CTI are looking at an innovative and non-traditional approach that would allow the co-existence of trawling with other fisheries.

The following table summarizes the working group discussion and presentation.

Measures	Description	Data collection
BRDs	There is a policy in place requiring commercial trawlers to have JTEDs, which has reduced juvenile catch by 40-42 percent. This requirement could be acceptable to small-scale trawlers if they would be allowed to fish in a certain portion of the municipal waters	Baseline and socio-economic study to evaluate the impact.
Zoning	There is an existing zoning but within a limited area and the project will extend this area. This measure is important to reduce conflict among different users as well as to address concerns regarding the supply of fish.	Study to determine the biological impact of zoning.  Habitat mapping
Temporal	This has a potential high impact.	Baseline data and indicators for monitoring impact.
Freezing current trawler numbers	Measures are needed to control the number of vessels.	Inventory of vessels
Consultation with stakeholder groups and development of specific messages to fishers, e.g. trawling is illegal and project can help solve the problem		
It is important to show the impact of management measures being implemented through the project.		

### 8.2. Indonesia and Papua New Guinea

The following table presents the working group output for the two countries:

Issue	Indonesia	Papua New Guinea
Objective	To promote responsible trawl fisheries in Arafura sea through "MGT scheme" (Mapping, Gear type selection, TAE management)	Gulf of Papua Prawn Fishery Management Plan Review - High priority issues, eg..data gaps
Management measures	Effort management à TAE management Spatial & temporal measures à Mapping BRDs à Gear type selection	Effort management à YES Spatial & temporal measures à YES BRDs à YES Other measures à gear restriction, mesh size, trawl type (stern trawl banned, allow only twin/quad rigged).
Information needs	The source of data is available (the regulation exists) Need to improve data quality and	-Improve logbook (cover by catch) -By catch species composition

	<p>validity to be able express the management measures, such as: catch rate, fishing ground, critical habitats (nursery ground, mangrove), ETP migration to establish participatory data sharing and evaluation mechanism from relevant institutions &amp; industry</p>	<p>(length frequency) -Identity “species at risk” and monitor</p>
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In Papua New Guinea, project partners have picked up the suggestion from trawlers for them to fish inshore and have started discussions with resource owners. There is no uptake of BRDs among the trawlers and their suggestion to move inshore could be used as a point of negotiation for encouraging the use of BRDs.

In Indonesia, different regulations exist for fish and shrimp trawlers but VMS, logbook and observer on board are obligatory for both. Shrimp trawls can only land shrimp and TEDs are obligatory. Data are available but are spread out in many institutions. The government has the obligation to evaluate logbooks but these are confidential and the government is not allowed to publish the contents.

### 8.3. Thailand

The following table summarizes the working group output for Thailand:

Objectives of the mesh size increase	<ul style="list-style-type: none"> <li>•Reduce catch of small species and juveniles</li> <li>•Increase size (value) of fish caught</li> <li>•Reduce fuel use by reducing gear drag</li> </ul>
Objective of the increase the artisanal/no trawl zone	<ul style="list-style-type: none"> <li>•Increase protection zone for nurseries/juveniles</li> <li>•Increase zone for breeding (spawning grounds)</li> <li>•Reduce conflict with small scale fishery</li> <li>•Reduce impact on benthos and benthic habitat</li> </ul>
Information to be collected (Chumphon)	<p>From hired fishing vessel (cooperating with project)</p> <ul style="list-style-type: none"> <li>- Pair trawler, two pair, Single trawl - 2 vessels</li> <li>- Cooperation from Fishers Association (8 vessels – pair or single trawl)</li> <li>•Total catch and catch composition by species</li> <li>•Target catch, low value catch</li> <li>•Detailed vessel information</li> <li>• gear type, power, vessel specification, crew</li> <li>•Economic information – operation cost, Fuel use etc.</li> </ul>
Information from the fishery	<ul style="list-style-type: none"> <li>•Survey the artisanal/small-scale fishery <ul style="list-style-type: none"> <li>- composition of catch</li> <li>- overlap with trawl fishery</li> </ul> </li> <li>•Compare for different gears (squid, crab, shrimp, trammel net)</li> <li>-Look at change following the extension of the no-trawl zone from 3 to 5 km</li> <li>-Economic impacts</li> </ul>
Environmental information	<ul style="list-style-type: none"> <li>•Monitor changes in benthos and benthic sediments in areas where trawling has stopped</li> <li>-Develop basic sampling programme</li> <li>-Basic chemistry?</li> <li>-Simple estimates of species.</li> <li>-This requires some training.</li> </ul>
Mapping	Map trawl exclusion zone/artisanal zone

	<ul style="list-style-type: none"> <li>•Map trawlable area</li> <li>•Nursery areas?</li> <li>•Map other sensitive habitat (seagrass beds)</li> <li>•Other sensitive zone (e.g. Dolphin areas in Koh Kut)</li> </ul>
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A provincial management plan can be developed with the participation and agreement of stakeholders. The province has no absolute authority over the sea area but the provincial authorities can endorse the management plan to the DoF.

#### **8.4. Viet Nam**

The following tables summarize the working group output for Viet Nam:

##### **Objectives and information needs**

Objectives	<p>Overall object: To achieve a sustainable fisheries</p> <p>Particular objective: Maintaining balance in Mixed fisheries (fresh fish, surimi, fishmeal, fish processing – fish sauce)</p>
Direction of the sector	<ul style="list-style-type: none"> <li>- Reduce fishing effort in the coastal water,</li> <li>- Control fishing effort of small fishing vessels</li> <li>- Reduce number of trawlers;</li> <li>- Promote fisheries co-management;</li> </ul>
Background/baseline information of trawl fishery/is	<ul style="list-style-type: none"> <li>- Registration</li> <li>- Impacts of small scale fisheries to resources, recruitment pattern of fishery resources.</li> <li>- Evidences (composition of juvenile fish of highly economic important species)?</li> <li>- Mesh size of fishing gear,</li> </ul>
Gaps and needs	<ul style="list-style-type: none"> <li>- Insufficient information of catches by trawl fisheries (CPUE, catch composition, economics), supply chain (from fisher – middlemen- markets, fish meal, fish processing plants); (larger fish sizes is better for fish meal processing plants and fish processing plants, more production efficiency, reduce working time...);</li> <li>- Lack of by catch and discard information</li> <li>- Insufficient information of critical habitats;</li> <li>- Lack of fisheries statistics system (no man power, necessary resources...)</li> <li>- Legal framework for by catch data collection;</li> <li>- Weak MCS system,</li> </ul>

## Planned Activities, and Outputs

	Activity	Methodology	Frequency	Outputs	Partners
1	Convene stakeholder meeting and conduct TOT on data/information collection	Workshop meeting	Once a year	Awareness-raising; pre-consensus on data collection/plan and common understanding of the project.  Review past works of data collection (from year 2 project)	DECAFIREP, DARD, Sub-DECAFIREP, FICEN, RIMF, fishers, middlemen, fish processing plants...
2	Landings data collection	Sample based collection, followed by FAO guideline	Monthly	Total landings by fleet. Total bycatch in volume Species composition of total catch and by catch group Economically study on trawl fisheries Socio-economic studies (cost, revenue, benefit, fuel consumption...)	DECAFIREP, Sub-DECAFIREP, FICEN, RIMF, fish processing plants
3	Onboard observer data collection		Monthly	Landing of total catch by fleet Total bycatch and discards in vol. Mapping fishing grounds	RIMF (Research Institute for Marine Fisheries)
4	Conduct a study on value chain in trawl fishery		One survey/ study	Value chain, information flows of catch/by catch from fishing activities to the consumed market	FICEN, RIMF, NTU (Nha Trang University)
5	Logbook implementation	Coverage of 10% No. of trawlers in the province	Monthly	Mapping fishing grounds, catch and discards information	Sub-DECAFIREP, DECAFIREP
6	Monitor fishing effort of local trawl fishery		Monthly	Number of trawlers by fleet (HP and gear types) based on administrative system, BAC (survey)	Sub-DECAFIREP, DECAFIREP, FICEN
7	Experiments on selection BRD	Sea trial	Once	Selection of appropriate BRD for the local fishing fleets (Based on economic and biological outputs...)	Sub-DECAFIREP, DECAFIREP, FICEN, RIMF, NTU
8	Trials on BRDs	Sea trial	Monthly	Comparison of catch, bycatch, cost efficiency between unit deployed BRDs and normal gears.	Sub-DECAFIREP, DECAFIREP, FICEN, RIMF, NTU

The following points and clarifications were raised:

- The summary table can be used as a model by other countries but more details have to be included, such as how the activity is linked to the management objectives.
- Less is more: Collect only the data that are needed and can be analyzed and utilized. Be mindful of the purpose of the information, i.e. what will it be used for and how will it be used.
- Re co-management and the discussion of the results of the management measures: the inception meeting and the stakeholder meetings will be used for this purpose.

## Agenda item 9: Assessment of training needs

Panitnard Taladon, the Training and Extension Section Head of SEAFDEC TD presented the results of a survey done to determine the training needs of the partner countries. The results are preliminary because the request had been sent quite recently. The list presented does not indicate priority or order of importance. The details of the training needs from each country are presented in the Annexes 16.

The table below taken from the Training needs assessment report (Annex 17), summarises the preliminary training areas identified by each partner country and the level of importance for each area, (high medium and low).

Topic	IND	PNG	PHI	THA	VIE
Mapping (GIS)	H	M	H	M	L
Development of bycatch database		H			
Trawl and by catch information collection and methodology		L			H
Responsible Fishing and selective fishing + BRD program		L		H	
Socio-economic survey				H	
Benthos survey + Plankton and Larvae				M	
Logbook Training	M				
Fishing capacity assessment	H				
Awareness building program		L			
EAF and Co-management approach			H		
Information technology	M				
Scientific report preparation			L		
Project monitoring and evaluation			M		M

Some of the training areas can be clustered together. RFU and FAO LTO will discuss the training needs and how best to address the needs of the partner countries. Partner countries were also requested to review their training needs and identify their priorities.



## Agenda item 10. Plenary discussion on regional data requirements

Dr. Simon Funge-Smith, as Secretary of the Asia-Pacific Fishery Commission (APFIC), presented a proposal for a process to elaborate regional guidance for trawl fishery management. (see Appendix 18). Such guidance will respond to REBYC-II CTI's and APFIC's needs and be a win-win for both, i.e. the regional advice requested by APFIC during its 32<sup>nd</sup> Session and the planned output of REBYC-II CTI on a regional by catch strategy.

The proposed process would start with the establishment of a small steering group of representatives from the following proposed collaborating institutions: APFIC and FAO, REBYC-II CTI and SEAFDEC, SFP and BOBLME. The steering group would provide advice and content to a consultant who would be recruited to put together the guidance document.

The next stage of the process would be to convene an APFIC expert workshop in Thailand (Phuket) in September 2013 to discuss and elaborate the draft document. Participation in this workshop would be by invitation and based on expertise and experience on managing trawl fishing.

## Agenda item 11: Conclusions and Calendar of events

Mr. Isara Chanrachkij, Project Technical Adviser led the discussion in the identification of forthcoming regional activities.

The table below summarises the activities agreed during the workshop

Month	Partners	Activities	Remark
April 2013	RFU	Report for Country visit	April-May
	Indonesia	Initial meeting Local consultative group	April-September
May 2013	RFU	Regional Technical workshop on data collection trawl management	
	Thai + RFU	Steering Committee Meeting	
June 2013	RFU	Training cum Workshop on Co-management	June-July
	Viet Nam	Local Stakeholder meeting	
July 2013	Phi	-First stakeholder consultation meeting in pilot site	First half of July
	PNG	Stakeholder meeting	
August	Thai	Meeting with advisory group	
September	APFIC	APFIC expert workshop, Phuket Thailand	16-20 Sept 2013

One important activity will be the Regional Training-cum-Workshop on Co-management for Trawl Fisheries that will provide training-of-trainers for NTOs and technical staff from partner countries.

## Agenda item 12: Closing of the workshop

Dr. Simon Funge-Smith, as FAO Senior Fishery Officer, delivered the closing remarks and thanked the RFU for excellent arrangements, logistics and support for the entire duration of the workshop.