

GCP/RAS/269/GFF

Report on the REBYC-II CTI regional meeting on the future of Trawl Fisheries Management in South East Asia

23-25 September 2016, Bangkok, Thailand

Summary

The 'Strategies for trawl fisheries bycatch management (REBYC-II CTI)' project is coming to an end by December 2016. One of the key final activities in the project was a regional meeting on the *Future of Trawl Fisheries Management in Southeast Asia* held on 23-25 September 2016 in Bangkok, Thailand. The primary aim of the meeting was to develop policy recommendations for sustainable trawl fisheries management in Southeast Asia by reviewing the key lessons learnt in the REBYC-II CTI project and by assessing the current national policies related to trawl fisheries management in SEAFDEC member countries. It was found that the REBYC-II CTI countries are at various levels in developing fisheries development plans at the pilot site or national level. These plans are incorporating the EAFM principles and especially the active participation of stakeholders in the process. The need and content of a potential follow up project was discussed and a framework for a future project was drafted. One of the key objectives will be to identify and promote actions that will help to reduce the overall trawl fishing capacity to better match the fisheries resources available. It was also stressed that it is fundamentally important to follow the EAFM principles and address the livelihoods issues wherever the fisheries management measure are likely to affect the current livelihoods.



Background and objectives of the regional meeting

The Project 'Strategies for trawl fisheries bycatch management (REBYC-II CTI)' is contributing to the sustainable use of fisheries resources and healthier marine ecosystems in the Coral Triangle and Southeast Asia waters by reducing bycatch, discards and fishing impacts by trawl fisheries. The Food and Agriculture Organization of the United Nations (FAO) is the Global Environment Facility (GEF) agency for the project that is funded jointly by GEF and the implementation partner. The Project, which began work in April 2012, is being implemented by FAO with the implementation partner the Southeast Asian Fisheries Development Center (SEAFDEC) and the governments of Indonesia, Papua New Guinea, Philippines, Thailand and Viet Nam, in partnership with the private sector and relevant national, regional and international organizations.

The REBYC-II CTI project is coming to an end by December 2016. One of the key recommendations of the Project Steering Committee meeting of REBYC-II CTI project and the Lessons Learnt workshop held in June 2016 was to hold a regional meeting on the *Future of Trawl Fisheries Management in Southeast Asia* before the closure of the project.

The regional meeting was arranged by SEAFDEC on 23-25 September 2016 in Bangkok, Thailand, at the Novotel Bangkok Ploenchit Sukhumvit Hotel. The primary aim of the meeting was to develop policy recommendations for trawl fisheries management in Southeast Asia by reviewing the key lessons learnt in the REBYC-II CTI project and by assessing the current national policies related to trawl fisheries management in SEAFDEC member countries.

During the meeting, overall lessons learned during the implementation of the REBYC-II CTI project and the need and content of a potential follow up project was discussed and drafted. The private fishery sector was sensitized and encouraged for active engagement in the improvement of fisheries management of trawl fisheries in Southeast Asia through a Round-table meeting that was organized one day before this meeting. The recommendations of industry Round-table meeting was used as an input to recommendation of trawl fisheries management in Southeast Asia.

The specific objectives of the regional meeting were:

1. Review country information of current national policy of trawl fisheries management including problem and future direction;
2. Share overall lessons learned during the implementation of the REBYC-II CTI project to SEAFDEC Member Countries;
3. Develop the general recommendations for sustainable trawl fisheries management in Southeast Asia; and
4. Brainstorm and develop a framework for a potential future project on developing sustainable trawl fisheries in South East Asia

The participants, apart from SEAFDEC and FAO, included fisheries officials from the Ministries and Fisheries departments of the REBYC-II CTI countries and other SEAFDEC countries, private sector

representatives from the region, lead NGOs, and other development agencies in the sector. List of participants is given as **Annexure 1**. The agenda of the meeting is given in **Annexure 2**.

Agenda item 1: Opening session

On behalf of the REBYC-II CTI Project, Mr C. M. Muralidharan extended a hearty welcome to all participants. He then made a very brief presentation on the key objectives and outcomes of the REBYC-II CTI project and the background of the meeting. The REBYC-I project implemented in 2002-2008 which was a technically orientated project, focusing on bycatch reduction technologies whereas REBYC-II CTI project took a more holistic approach including of the following components: (1) Policy, legal and institutional frameworks; (2) Resource management an fishing operations; (3) Information management and communication; and (4) Awareness and knowledge. The highlights of the achievements from these components were then briefed, including (i) Fisheries management plans and policies in the member countries; (ii) Socio economics studies of trawl fisheries in most pilot sites; and (iii) Capacity building in Ecosystem Approach on Fisheries Management (EAFM) which led the member countries to successfully to use EAFM principles in their fisheries management planning. The presentation can be seen as **Annexure 3**.

Mr Bundit Chokesanguan, on behalf of Dr Kom Silapajarn, Secretary General, gave the SEAFDEC opening address. He noted that the overall lessons learned include recommendations from various stakeholders involved and these recommendations should be taken forward to ensure the best success on trawl fisheries bycatch management both at national and regional level. The results of the deliberations, especially the participant recommendations at this meeting, would be very crucial as these would also be used as inputs for the thirty ninth (39) SEAFDEC Program Committee Meeting which will take place at Indonesia in November 2016. He requested active participation of all participants in the meeting for ensuring help to build a sustainable trawl fisheries management in Southeast Asia.

Mr Petri Suuronen (FAO, Project Lead Technical Officer) noted in his openings address that the REBYC-II CTI project has significantly improved our understanding of the complexity of the trawl fisheries and its management in the Southeast Asia. We know that there is still a long way to go but some of the key barriers have been addressed and there is a common understanding of the nature of the bycatch issue in the region. It is now generally agreed by the key stakeholders that to be able to further develop fisheries livelihoods in the region, trawl fishery has to become more sustainable and also more profitable. In this context issues such as depleted fish stocks, high trash fish catches, excessive capture of juvenile fish, destructed breeding and nursery grounds, illegal fishing activities, poor compliance, and the low catch-per-unit-effort (CPUE) need to be addressed. The REBYC-II CTI project has raised the awareness of these problems and promoted potential solutions that would help to reach the goal of a more sustainable trawl fishing. The project has also significantly increased the understanding of the socio-economic conditions under which the fishing sector is working and which strongly affects the possibilities to make a change. Finally, the project has provided extensive training on the Ecosystem Approach to Fisheries Management (EAFM) which offers a holistic approach to fisheries management

and encourages stakeholder participation. This approach has been well received by all stakeholders. He noted that more work, however, is still needed.

Mr. Liao Chongguang (Project Budget Holder) in his opening address appreciated the project achievements and the direction it is setting. He also provided information of budget savings that had happened towards the end of the project and possibility of supporting certain activities that can help take the project results forward.

Mr Bundit Chokesanguan, SEAFDEC, was requested to chair the sessions of the first meeting day.

Agenda item 2: Country presentations on current national policy of trawl fisheries management including problem and future direction

This session consisted of presentations by the SEAFDEC member countries, including the REBYC-II CTI countries, on the current National policies of trawl fisheries management including problem and future direction.

1. Cambodia

The combined capture fisheries production from inland and fresh water sector in Cambodia is about 800 thousand tons per year providing employment to at least 6 million people (full and part time). There are more than 200 trawlers operating in Cambodian waters. Regarding the trawl fisheries regulation, trawling is prohibited in depths below 20 m, the maximum engine size is regulated, and pair trawling is banned. But the regulations are not implemented effectively enough especially because the registration and licensing processes are not functional. In reality, the trawl fishing capacity is still going up without much control. Ways to improve the situation were proposed. The presentation can be seen in **Annexure 4A**.

Discussion points:

- Registration and licensing system requires urgent improvement.
- Trawl fishing capacity requires better monitoring.
- The importance of strengthening of MCS and VMS was stressed.
- The need of wider adoption of EAFM was stressed.
- The encroachment of trawlers in shallow water areas (<20 m) requires actions.
- Mesh size regulations require more consideration.

2. Indonesia

The Indonesia presentation started with the various government regulations with regard to marine Fisheries and in particular trawl fisheries. The regulations of 1982 and 2009 specify the minimum codend mesh size for shrimp and fish trawl. The recent Ministry Decree of 2015 bans trawl fisheries in Indonesian waters along with moratorium on ex-foreign vessels. The two issues that have to be addressed in this context are the lack of other appropriate alternative gear to harvest shrimp optimally and the large unemployment created by the trawling ban and the moratorium.

The key achievement of REBYC-II CTI project in Indonesia has been the promotion and establishment MGT Scheme (Mapping, Gear selection and Total Allowable Effort) as a new approach to Managing Fishing Activities. The Fisheries Management plan in WPP-718 is stressing the importance of this approach. One of the major lesson learned in Indonesia was that the effective participation of members of the fisheries associations strengthens the discussion on fisheries management approaches and helps to reduce unsustainable fishing practices. The future of shrimp fishery in Indonesia will focus on standardization of fishing gear and certification of fishing activities linked to market, ensuring sustainable contribution of shrimp fisheries to local communities and local economy. The presentation can be seen in **Annexure 4B**.

Discussion points:

- The MGT approach promoted by Indonesia was well appreciated.
- Considering an earlier ban and the subsequent a re-introduction of trawling in Indonesia, there is apparently a scope for relook into the current ban also. There could be a better management option to be considered.
- Assistance to fishes/fisheries to optimise profitability from alternate fishing gears is important.
- Catch traceability is another area to be looked into.
- The quality improvement of fish need to be reflected in the price.

3. Japan (Experience sharing)

A first presentation was made on the trawl fisheries management experience in Japan. Japan usually addresses the trawl bycatch issues in a systematic way. It starts from understanding the diverseness of the bycatch issues and setting clear objectives on bycatch control. This include identifying the target species and bycatch species, and understanding current status of the fisheries. The available management measures include improved size selection for instance by mesh size or bycatch reduction device (BRB). Various combinations of these measures help to effectively separate different fish groups. Decline of target fish catches is often inevitable and need to be compensated through incentives.

Another presentation described that the trawler fleet of Japan falls under the categories of small scale trawl fishery, offshore trawl fishery, trawl fishery operated in East China Sea and distant water trawler. The largest number and the highest production is from the first category followed by the second one. The various regulations, part of Fisheries management, are similar to many other countries. But the factor that helps the success in the case of Japan is the involvement of fishers in the decision making and in enforcing the regulations. The presentations can be seen in **Annexure 4Ca and 4Cb**.

Discussion points:

- REBYC-II CTI project has promoted various measures to reduce bycatch, including bycatch reduction devices, in tropical multi-species trawl fisheries. These measures apparently will contribute in achieving the goals but there is further need of more integrated and stakeholder inclusive approach. Bycatch may not be the right word to be used in Asia.

4. Malaysia

The Malaysia presentation gave the details of the zoning pattern followed in Malaysian marine fisheries. The distance from shore based zoning for different types of fishing vessels and the fish production and composition of species were presented. Trawlers contribute to 45% of the catches. New fishing licenses is halted since 1982 along with registration control. Malaysia aims to create fisheries that are not only economically viable but also profitable and sustainable in the long term, while protecting and conserving the environment. The presentation can be seen in **Annexure 4D**.

Discussion points:

- It was clarified that in addition there is color coding to differentiate between fishing vessels from different states.
- Referring to the Indonesia trawl ban and its likely implications on Malaysia, it was mentioned that trawling may be the only cost-efficient method for fishing certain species.

5. Myanmar

The presentation described the four Fishing areas (Rakhine, Ayeyrawaddy, Mon, Tanithrayi) along the coast of Myanmar and the division of inshore (up to 10 nm) and offshore fishery. The trawlers are restricted to offshore fishery. The foreign fishing vessels are allowed to fish only in one selected area among three areas. Foreign vessels are not allowed in Mon area. There are 25,631 fishing vessels in total of which the offshore vessels comprise 3,030. Of the offshore vessels 41% are trawlers. The registration and licensing process of fishing vessels in Myanmar were explained. Enforcement of regulations are done by Inspection agencies at shore as well as at sea. The detailed check out and check in inspection measures at port were explained. Restriction to trawl include upper limit of 90 days of fishing per year and minimum codend mesh size regulations (>2 inch for fish and >1.5 inch for shrimp). In June-August season only 40-60% of the trawlers are allowed to fish. DoF is going ahead ensuring VMS in offshore vessels. Colour coding for registration base and catch documentation are other steps taken. Yet many more constraints are to be overcome. Managing fisheries for sustainability and focusing on selected offshore resources would be the future focus. The presentation can be seen in **Annexure 4E**.

Discussion points:

- A question was raised as to whether there was real discard of catch in the trawl fisheries or all the catch is brought ashore.

6. Papua New Guinea

Papua New Guinea (PNG) has three commercial shrimp fisheries areas of which the Gulf of Papua is the most important with 15 licenses. PNG has a Gulf of Papua fisheries management plan from 1980. The management plan is revised every three years. Management of fisheries is based on MEY not MSY. MSY is used as a guide. 100% VMS coverage is a specific feature in PNG management. There is need of more historical and systematic data along with up to date stock assessment. Uncontrolled discarding is illegal. Better spatial management and certification are the future steps envisaged. The presentation can be seen in **Annexure 4F**.

Discussion points:

- The exclusive shrimp trawling in PNG opens scope for a specific management approach. The scope for certification process is also encouraging
- The need of mainstreaming climate change into fisheries management and the APFIC guidelines were referred to.

7. Philippines

The Philippines presentation highlighted the major role of BFAR in the conservation and management of fishery resources and the implementation of the rules under the Fishery Administrative order/circulars. The Local Government code under which the local government units have jurisdiction over municipal waters (0-15 km from shore) was also mentioned. The orders referring to minimum of 3 cm mesh size, ban on active gears in municipal waters and need of installation of JTEDS in Philippines waters were mentioned. Conflicts between gear/resource users, unclear boundaries between Municipal and commercial fishing waters and IUU fishing are some of the issues to be tackled which otherwise would result diminishing fishing resources. Emphasis on EAFM and co-management approach through better stakeholder participation and management through local associations or alliances of LGUs is the preferred approach. The presentation can be seen in **Annexure 4G**.

Discussion points:

- Expansion of Fisheries Management plan beyond Samar Sea is an encouraging approach and the mainstreaming of EAFM approach is noted as the best approach.
- The need of more wider and complete VMS cover was emphasized.
- It was confirmed that Philippines is also moving towards a MEY approach from the MSY approach.

8. Thailand

The Thailand presentation focused on the most recent Royal Fisheries Ordinance B.E. 2558 (2015) and its details. The new legislation amounts to a fundamental and comprehensive reform of the legal framework governing Thai fisheries. The Ordinance stresses on good governance, combating IUU, ensuring MCS, traceability, eliminating all kinds of forced labour, appropriate administrative and criminal sanctions. Increased stakeholder participation in the fisheries management, establishment of national and provisional fisheries committees, and proper logbook management. The current management measures were described. The Marine Fisheries Research and Development Division has developed a Marine Fisheries Management Plan (FMP) from year 2015 to 2019 as a five years plan which was the highlight. A systematic plan to be monitor it periodically is developed. Reducing fishing capacity is an important measure. The presentation can be seen in **Annexure 4H**.

Discussion points:

- The specific measures with regard to trawl management need to be defined.
- The plan seemed to be ambitious and implementation without socio economic effects is a challenge.

- The focus Group discussions was used as an approach to propagate use of minimum 4cm cod end mesh size for trawlers and propagating use of VMS.

9. Vietnam

Vietnam started trawl fisheries in 1980 and have both otter trawl and pair trawlers, mostly small scale and focused more along southern Vietnam coast. The capacity of the trawlers ranges from below 90 hp to 1000 hp. The highest numbers are below 90 hp and the second important range are the vessels in 400-800 hp category. Trawling is year round and multi-species fisheries. Overcapacity, decreasing resources, high proportion of juveniles in the catches, weak enforcement of management measures, insufficient information to policy makers, and insufficient involvement of stakeholders were some of the issues pointed out. The legal framework starting from the fishery law (2003) was described. Examples of the fishery management plans of Kien Giang and Binh Thuan being developed and the initiative towards freezing number of trawlers were described. Measures to move towards achieving a sustainable capture fishery was listed out. The presentation can be seen in **Annexure 4I**.

Discussion points:

- The need of focusing on value addition through better post harvest fisheries was pointed out.

10. SEAFDEC

SEAFDEC presented the Plan of Action for Sustainable Fisheries for Food Security for the ASEAN Region aimed at 2020. This to be used as a guideline to develop programs, projects and activities for the implementation. This includes capacity building for planning process, enhancing fishery information system, promotion of EAFM, combating IUU, alternative energy sources and co management. The focus of marine fisheries management would be to strengthen the country capacities in combating IUU, effective measures of PSM and Flag State Measures, identifying impacts of various gears, addressing by catch issues and inclusion of fishery objectives in MPA approach. Formation of a Regional Network for the Reduction of the Impact of Fishing in Coastal and Marine Environments in Southeast Asia Waters (IFCOME Network) in the region, is another initiative. The presentation can be seen in **Annexure 4J**.

Discussion points:

- It was highlighted that Future planned programme of SEAFDEC is very much in tune with the future direction in sustainable trawl fisheries in the region being set by the REBYC II CTI project. So SEAFDEC can continue to play a major role.

Agenda 3. Presenting the outcome of Fishing Industry Round-Table Meeting

Under this agenda a representative from the Fishing industry presented the issues identified and suggestions from the Southeast Asia Trawl Fisheries Round-Table Meeting that preceded this consultation on 21 September 2016. The output from the round table conference were presented under the following broad headings: (1) What are the current constraints of trawl fisheries in SE Asia; (2) Suggestions on managing sustainable trawl fisheries; (3) How the private sector can contribute to the effective management of trawl fisheries; and (4) 4. What should be the role of the regional and

international organizations in this regard. The complete responses and views under each of the above questions from the round-table conference is given in **Annexure 5**.

Agenda 4. Panel Discussion on available options for trawl fisheries management - technical, policy, political approaches

The panel discussion on available options for trawl fisheries management- technical, policy, political had 5 panelists presenting and discussions on the topic at plenary.

1. Meeting the global demand of fish meal

On behalf of FAO, Mr Petri Suuronen made a presentation on the topic, largely based on an original presentation by Dr Simon Funge-Smith. The demand for low value fish and fish meal is increasing in Asia and trawl fishery is the major contributor to low value/ thrash fish. Currently 40-60% of trawl catch goes to the category low value thrash fish. 86% of the fish meal produced now go for aquaculture. The demand for fishmeal for aquaculture in eastern Asian region is 2-3 million tonnes (equivalent to about 7-12 million tonnes of low value/trash fish). High demand for fishmeal keeps fishing operations profitable enough despite various negative impacts and low catch per unit effort. About 6.5 million tones of capture fishery catches is used for direct feeding to aquaculture in Asia. Beyond the competition to fish for human consumption, the threat to the resources is significant and need to be addressed. There is a trend of some Asian fisheries becoming “low value/trash fish” fisheries, due to some indirect and direct incentives. The presentation can be seen in **Annexure 6A**.

Discussion points:

- The US import demands like traceability to sustainable resources could be helpful while many importers like China do not insist yet.
- Purse seine also contribute to thrash fish.
- The national policies to increase aquaculture, is increasing the demand for fish meal. There is urgent need to look for fish meal alternatives and promote more of non carnivorous species for aquaculture

2. Meeting the Catch Data and Traceability(CDT) demands

Dr Len R Graces of USAID OCEANS made a brief presentation on the Catch data and traceability (CDT) being promoted by USAID OCEANS. The concept is bait to plate tracing of seafood through the supply chain. The critical aspects of a Catch Documentation and Traceability (CDT) system were described. The presentation can be seen in **Annexure 6B**.

Discussion points:

- Philippines is already developing a framework for traceability. USAID OCEANS is working with Philippines and Indonesia on Tuna Fisheries. There is scope for adopting the same for trawl fishery.
- It may be practical to start the CDT programs from countries with smaller fishing fleet, first.

- PNG has initiated CDT for their tuna fishery
- Each country may think of taking up CDT on their own

3. Certification schemes and value addition

The presentation by WWF concentrated on the efforts being made for promoting the Andaman sea trawl fisheries to a MSC certification level. The 28 indicators based approach was mentioned. To start with, they presented the different species being fished and its consumption as food fish (domestic and export) as well as fishmeal.

Discussions points:

- On the role of the Government, it was mentioned the Department of Fisheries and Department of Marine and Coastal Resource will be jointly responsible for the annual reviews for five years.
- The fishers are involved through the fisher associations and is voluntary.
- The concern on the stringency of the MSC certification and hence the difficulty in achieving it by many fisheries was also pointed out.

4. Reducing fuel cost and carbon foot print

Mr. Bundit Chokesanguan, SEAFDEC, gave a presentation on the fuel use in different fisheries in South East Asia and then went into the details of energy audit study done for trawlers in the Gulf Thailand and Andaman Sea in Thailand. Out of 749,782 fishing vessels in South East Asia, 531,302 are powered by an engine. There is a lack of information, knowledge and technology on energy saving for fishing operations. In case of trawling, the largest part of the fuel consumption takes place during the fishing operation. The energy audit study compared the fuel consumption and efficiency of different categories of trawlers. The study came out with a recommendation to reduce engine revolution, increase engine performance by improving cooling efficiency and maintaining engine condition. Reducing speed, modification of the gear, modifying the vessel, keeping the hull clear of fouling and proper propeller design were other suggestions. The need of a longer period of energy audit study was pointed out. The full presentation can be seen in **Annexure 6C**.

Discussion points:

- Energy audit studies should be conducted also in other SEAFDEC countries.
- The highest cost in trawl fishery is the fuel which may go up to 70 % in Asia. There could be emission caps fixed which may go into certification process or criteria.
- The gear modifications of trawl can help increase fuel efficiency in addition to reducing bycatch.
- A workshop on fishing energy audit involving representatives from the countries was considered useful.

5. Alternative fishing gears for shrimp fisheries

SEAFDEC made a presentation of the different alternate fishing gears to trawl net used in South East Asia. This included various types of gill nets including trammel nets, traps, bagnets and seines. It also

brought the attention to the SEAFDEC publication on “Fishing gear and Methods in Southeast Asia” brought out in different languages. The full presentation can be seen in **Annexure 6Da**.

Another presentation made by Mr Rosadi Ali from Malaysia highlighted that fishing selectivity can be defined as the ability to target and capture fish by species, size or sex (or combination of these) during harvesting operations, allowing all incidental by-catch to be released unharmed. It could be spatial, temporal, behavioral, mechanical or human selection. The full presentation can be seen in **Annexure 6Db**.

Discussion points:

- The major concern is that most of the alternate gears are passive gears and are not efficient to catch bottom set shrimp (compared to trawl).
- While introducing new gears, its impact need to be assessed along with species, size and sex selectivity.
- While using gill nets for shrimp, use of light attraction has been tested in some countries. This could be an area of further work in SE Asia.
- Indonesia, where the trawling is banned, there is in urgent need of finding alternate gears for commercial shrimp fishing.

Agenda 5. EAFM in Trawl Fisheries Management

Two presentations were made by the RFU of REBYC-II CTI. The purpose was to bring the participants to a common understanding of the EAFM concept being mainstreamed under the project.

The first presentation was dealing with the Ecosystem Approach on Fisheries Management (EAFM). The presentation started with the importance of developing a clear vision for fisheries development and to start from identified issues. The balancing of ecosystem well being with human well being through a good governance system was emphasized. It was made clear that EAFM starts from what is already in place and builds upon it. The seven principles were described as good governance, appropriate scale, increased participation, multiple objectives, cooperation and coordination, adaptive management and precautionary approach. The EAFM cycle involving detailed planning, implementation and monitoring was described. The reference sources and resource material on EAFM developed by the BOBLME and REBYC II CTI projects with support of a consortium of agencies were pointed out. The full presentation can be seen in **Annexure 7A**.

The second presentation was dealing with the use of EAFM in trawl fisheries management in Thailand as an example to explain the EAFM process. The example was on the process of developing an EAFM plan for two provinces of Gulf of Thailand. The various stakeholders to be involved is identified and arrived at a vision of “A profitable trawl fishery that has little impact on the environment and other marine resource users”. The scope and profile of the Fishery Management Uni (FMU) was then defined. The issues and threats (under ecological, human and governance areas) were then identified and prioritised.

This was then followed by developing the goals, objectives and management actions. Indicators and bench marks for the management actions were then defined. The EAFM planning implementation and monitoring cycle was then explained in this context. The full presentation can be seen in **Annexure 7B**.

Discussions points:

- It was mentioned that the EAFM approach being taken up in pilot areas such as the Samar Sea in Philippines are good starting examples for wider dissemination.

Agenda 6 Discussion on the potential future project on sustainable trawl fisheries management

Based on the issues in trawl fisheries management identified and suggestions made during the round table conference that preceded this meeting, the different country groups were requested to discuss and come out with proposed objectives and actions for a Potential Future Project on sustainable trawl fisheries management in SE Asia. It was requested that the ideas under the following components be brought up: (1) Policy/Legal/Governance; (2) Technical/Fisheries Development intervention; and (3) Socio-economic viewpoints. The participants worked in four groups. The groups presented the outcome of the recommendations.

Agenda 7 Potential Future Project on Sustainable Trawl Fisheries in SE Asia

With a slight change in the planned agenda, this agenda was used to present the proposal consolidated from the group outputs under Agenda 6. The presentation from the four groups were consolidated. This was presented and discussed in detail. Editing and revisions were made to this proposal in the plenary. The framework proposal prepared at the meeting for the future project on sustainable trawl fisheries in South East Asia is shown in the summary **Table 1** below.

Agenda 8 Concluding session

The chair, Mr Bundit Chokesanguan thanked all participants for their valuable contribution in the 2.5 days of meeting. Mr Petri Suuronen and Mr David Brown from FAO assured that FAO will put its best efforts to see how the initiatives made under REBYC-II CTI can be carried forward for better holistic approach on sustainable trawl fisheries management in the region. They noted the meeting has provided valuable inputs for further discussions and deliberations in this regard. Finally, Ms Genevieve Braun (FAO GEF Coordination Unit, Rome) explained the funding cycles of GEF especially GEF 6. The International water strategy of GEF 6 was described in detail. The main goals were pointed out as: (1) Collective management of transboundary water systems and (2) Implementation of the full range of policy, legal and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services. Ms Braun mentioned that she would help in exploring the possibility for the support for the future project. The presentation is given in **Annexure 8**.

Table 1. The framework (*Draft Concept note*) for the Potential Future Project on Sustainable Trawl Fisheries in SE Asia.

1. POLICY/LEGAL/GOVERNANCE

Objective	Actions
Rational management policy for trawl fisheries in SE Asia in place	<ol style="list-style-type: none"> 1. Generate and collate factual information based on science and local knowledge. 2. Sensitize and educate policy/decision makers on factual science based assessment and Ecosystem Approach to Fisheries Management (EAFM). 3. Sensitize decision makers on EAFM through EAFM LEAD (EAFM for Leaders Executives and Decision makers) training. 4. Provide policy makers appropriate information regarding the ecosystem impact and other significant effects of trawl fisheries.
Mainstreamed EAFM plan incorporating best practices and sustainable fisheries management in place	<ol style="list-style-type: none"> 1. Do EAFM planning involving and linking relevant agencies and stakeholders. 2. Identify and replicate good practices and management measures including areal and temporal closures, zoning, gear specifications, Vessel Monitoring System (VMS), Catch Documentation System (CDS) and observer programs. 3. Formulate and implement management/regulations according to specific Fisheries Management Units (FMU). 4. Identify and adopt bilateral and multi-national transboundary management actions. 5. Provide appropriate classification of trawl gears in the region based on target species and relevant technical specifications (such as codend mesh) in order to assess appropriate number and types of licenses available for each type of trawl fishing (e.g. shrimp vs finfish trawling). 6. Provide adequate capacity building for the fisheries managers. 7. Improve Standard Operating Procedures (SOP) related to catch documentation, including electronic logbooks. 8. Provide technical support that will facilitate the installation of relevant Vessel Monitoring System (VMS) in trawlers in the region.
Trawl fishing capacity/effort matched to fishery resources	<ol style="list-style-type: none"> 1. Establish fishing capacity/effort measures as part of the EAFM plan in each relevant Fisheries Management Unit. 2. Facilitate the registration of all trawlers to assess fleet structure and capacity. 3. Assess the status of fisheries resources 4. Set up reference points and harvest control rules using available references and methodologies described among others in SEAFDEC guidelines on “Guidelines and Standard Method of Data Collection and Fisheries Indicators for

	<p>Fisheries Management “and standard methods of data collection and establish appropriate indicators for fisheries management.</p> <p>5. Implement measures suggested in the Regional Plan of Action (RPOA) on managing fishing capacity (SEAFDEC).</p>

2. TECHNICAL/FISHERIES DEVELOPMENT INTERVENTIONS

Objective	Actions
<p>Established reference points and harvest control rules for trawl fisheries</p> <p><i>Note: This objective supplements and compliments the 3rd objective under Policy/legal/governance area.</i></p>	<ol style="list-style-type: none"> 1. Conduct baseline studies on status of stocks and socio-economic aspects building up on the data and information provided by the REBYC-II CTI project. 2. Establish appropriate data collection system and reference points, and strengthen the basis of stock assessment. 3. Improve the capacity of Fishery officers in fishery data collection, reference points and harvest control rules.
<p>Resource, resource use and environmental maps in place</p>	<ol style="list-style-type: none"> 1. Mapping the critical areas and providing other key information about habitats and ecosystems. 2. Recognize and help demarcate the critical habitat that should be avoided in fishing activities, as well as allocated fishing areas. 3. Assessment and identification of appropriate fishing gear that can be used in the area (to minimize the environmental impact). 4. Access and advice the number of licenses that ensure fishing effort is not exceeding sustainable level. 5. Access and advise in harmonising trawl fishing gear specification such as the codend mesh size, for fishing in the same area in shared stock fisheries.
<p>Ecosystem impacts of trawl fisheries understood and addressed</p>	<ol style="list-style-type: none"> 1. Conduct a risk assessment of the ecosystem impacts, including benthic, vulnerable habitats and fish community impacts, of trawl fisheries conducted using and modifying the established approaches and methods such as Ecological Risk Assessment (ERA) and Productivity-Susceptibility analyses (PSAs). 2. Assess of the performance of Bycatch Reduction Devices (BRDs) and Turtle Excluder Devices (TEDs) in specific fisheries. 3. Promote the use of APFIC trawl fisheries management guidelines.
<p>Good practices in trawl fisheries management applied by the fishing industry</p>	<ol style="list-style-type: none"> 1. Develop and promote appropriate good practices (mesh size/fish size, closed season, closed area, zoning, etc.). 2. Disseminate scientific and other relevant information including fish stock status to relevant stakeholders (especially fishers). 3. Encourage the stakeholder partnership in fisheries

	management.
Fuel consumption and carbon (GHG) emission in trawl fishing reduced	<ol style="list-style-type: none"> 1. Conduct energy audit in trawl fisheries in all participating countries according to the methodology and standards developed by SEAFDEC. 2. Identify opportunities to reduce fuel consumption and the potential to increase fuel efficiency at different phases in trawl fisheries
Alternative shrimp capture methods developed	<ol style="list-style-type: none"> 1. Assessment and further development of alternate fishing gears in particular for shrimp fishing taking in account efficiency and catch quality.

3. SOCIO-ECONOMIC

Objective	Actions
Socio economically acceptable trawl FMP/regulations at appropriate Fishery Management Unit level	<ol style="list-style-type: none"> 1. Sensitize fishers on EAFM process. 2. Ensure active participation in sustainable EAFM. 3. Develop Information, Education and Communication (IEC) on responsible fishing. 4. Encourage gender equity and women participation. 5. Assess the fishing capacity of different countries in shared fishing grounds to assure a fair share of benefits.
Livelihood needs of trawl fishers addressed	<ol style="list-style-type: none"> 1. Study on socio-economic effects of codend mesh and close areas/seasons regulations (build up from baseline of REBYC-II CTI). 2. Promote and provide access to sustainable livelihoods enhancement and appropriate alternative livelihoods. 3. Monitoring labour conditions in trawl fisheries and ensure fisher labour rights. 4. Instill sense of ownership among key stakeholders in fisheries management processes. 5. Improve post harvest processes including onboard and develop value added products. 6. Create awareness on the importance of sustainability and conservation. 7. Provide/ensure adequate basic human needs.
Sustainable livelihoods for actors along the seafood supply chain ensured	<ol style="list-style-type: none"> 1. Interventions to minimize pre-catch and post-harvest loss (through application of proper technology and awareness building). 2. Establishing good communication/rapid response to market demand 3. Promote a balance between fish supply and demand. 4. Supply chain mapping

	<ul style="list-style-type: none"> a. local consumption and demand - including gender and economic issue b. export products and demand c. investigate fish from neighboring countries (full value chain analysis)(<i>note: cross reference to catch documentation action</i>) <p>5. Study on gender justice in trawl fisheries supply chain on (a) generation of income, (b) value addition of low value fish.</p>
<p>Improvement of catch quality and value <i>(Note: the objective is addressed in other actions above)</i></p>	

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Annexure 2

Agenda

Time	Session topic	Remark
23 September 2016		
08:30-09:00	Registration	Administrative
09:00-09:15	Administrative and Logistic Announcement	Administrative
09:15-10:00	Agenda 1 Opening of Meeting <ul style="list-style-type: none"> ▪ Welcome Remarks by REBYC-II CTI RFU ▪ Opening Remarks by SEAFDEC ▪ Keynote address by FAO ▪ Remarks by FAORAP 	Facilitator: RFU
10:00-10:15	<ul style="list-style-type: none"> ▪ Group Photo ▪ Refreshment Break 	
10:15-12:15	Agenda 2 Country presentations on current national policy of trawl fisheries management including problem and future direction <ul style="list-style-type: none"> ▪ Cambodia ▪ Indonesia ▪ Japan ▪ Malaysia ▪ Myanmar 	Countries Coordinators/experts
12:30-13:30	Lunch Break	
13:30-16:30	Agenda 2 (Cont.) Country presentations on current national policy of trawl fisheries management including problem and future direction. <ul style="list-style-type: none"> ▪ PNG ▪ Philippines ▪ Thailand ▪ Viet Nam ▪ Southeast Asia Region-SEAFDEC 	Countries Coordinators/experts
16:30-17:00	Agenda 3 Presenting the outcome of Fishing Industry Round-Table Meeting	Industry representative
24 September 2016		
08:30-12:30	Agenda 4 Panel Discussion on available options for trawl fisheries	

	<p>management- technical, policy, political</p> <ul style="list-style-type: none"> ▪ Meeting the global demand fish meal ▪ Meeting the Catch data and traceability(CDT) demands ▪ Certification schemes and value addition ▪ Reducing fuel cost and carbon foot print ▪ Alternative fishing gears for shrimp fisheries ▪ Others 	
12:30-13:30	Lunch Break	
13:30-14:30	<p>Agenda 5 EAFM in Trawl Fisheries Management</p> <ul style="list-style-type: none"> ▪ EAFM LEAD session ▪ EAFM in Trawl Fisheries Management 	
1430-1530	<p>Agenda 6 Discussion on the potential future project on sustainable trawl fisheries management</p>	
15:30-15:45	Refreshment Break	
15:45-17:00	<p>Agenda 6 Discussion on the potential future project on sustainable trawl fisheries management continues.</p>	
25 September 2016		
09:00-12:00	<p>Agenda 7 Summary on the</p> <ul style="list-style-type: none"> ▪ Current national policy of trawl fisheries management including problem and future direction ▪ Policy recommendations for trawl fisheries management in Southeast Asia and ▪ The potential future project on sustainable trawl fisheries management 	
12:00	<p>Agenda 8 Closing of the Meeting</p>	<p>Closing Remarks- Country representatives, FAO and SEAFDEC/REBYC- II CTI RFU</p>

Food and Agriculture Organization of the United Nations
 SEAFDEC RFU
 Strategies for trawl fisheries bycatch management (REBYC-II CTI)

Background of REBYC II CTI PROJECT and context of the Round table meeting

Presented by
C.M.Muralidharan,
 Representative of RCU, REBYC II CTI

Food and Agriculture Organization of the United Nations
 SEAFDEC RFU
 Strategies for trawl fisheries bycatch management (REBYC-II CTI)

REBYC-II CTI (2011-2016)

- Follow up of REBYC I project(2002-2008) covering larger number of SE Asian countries and focused on by catch reduction devices.
- REBYC II CTI was more focused in five countries and realising that
 - A hoholistic approach is needed
 - ‘Bycatch’ is largely utilised and considered an important part of the total catch;
 - Gear modification solutions need to be supported by appropriate legal and economic incentive frameworks
 - Understanding of, and close cooperation with stakeholders crucial for success


Food and Agriculture Organization of the United Nations
 SEAFDEC RFU
 Strategies for trawl fisheries bycatch management (REBYC-II CTI)

REBYC-II CTI Objectives (2011-2016)

- **The Global Environment Objective:** Responsible trawl fisheries that result in sustainable fisheries resources and healthy marine ecosystems in the Coral Triangle and Southeast Asian waters by reduced bycatch, discards and fishing impact on biodiversity and the environment.
- **The Project Development Objective:** Effective public and private sector partnership for improved trawl and bycatch management and practices that support fishery dependent incomes and sustainable livelihoods.

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 Strategies for trawl fisheries bycatch management (REBYC-II CTI)

REBYC II CTI Countries and Pilot sites



Indonesia: Arafura Sea
 Papua New Guinea: Gulf of Papua
 Philippines: Samar Sea
 Thailand: Chumpon Province, Trat Province
 Viet Nam: Kien Giang Province

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 Strategies for trawl fisheries bycatch management (REBYC-II CTI)

Four components:

- Policy, legal and institutional frameworks;
- Resource management and fishing operations;
- Information management and communication;
- Awareness and knowledge.






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 SEAFDEC RFU
 Strategies for trawl fisheries bycatch management (REBYC-II CTI)

Highlights

Results-Component 1: Policy, legal and institutional frameworks

Contributions to




- APFIC Regional Trawl Fisheries Guidelines;
- Fisheries management plans and policies in the member countries;

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 (REBYC-II CTI)
 


Highlights




Results - Component 2: Resource management & fishing operations

- Study on developing guidelines for fishing gear selection; Habitat mapping
- Cod end mesh size regulation in trawling in some countries,
- Study of commercial trawl fisheries

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Results - Component 3: Information management & communication

- Key documents translated in local languages;
- Socio economics study of fisheries especially trawl fisheries in most pilot sites
- Workshops held to standardize methodologies on data collection, data indicators for bycatch/ biological surveys;
- Trawler Energy Audit Study completed and communicated.

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Highlights

Progress - Component 4: Awareness & knowledge

- EAFM Training Courses and EAFM LEAD workshop;
- A series awareness building/ information dissemination/training workshops held in all five countries on the results of the various studies and works of REBYC II CTI work

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Context of this this Regional meeting on future on Trawl Fisheries Management in South east Asia

- The REBYC II CTI project is concluding now
- The results from the project has to be taken forward with
 - a broader objective of sustainable trawl fisheries management in SE Asia
 - beyond just the REBYC II CTI countries
- For this all important stakeholders in fisheries need to be informed and involved
- A round table meeting involving many of you and the private sector was already held before this

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 (REBYC-II CTI)
 


Objectives of the round table meeting

- Review country information of current national policy of trawl fisheries management including problem and future direction;
- Sharing overall lessons learned during the implementation of the REBYC-II CTI project to SEAFDEC Member Countries;
- Developing the general recommendations for sustainable trawl fisheries management in Southeast Asia; and
- Brainstorming and developing a framework for a potential future project on developing sustainable trawl fisheries in South East Asia, and

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Thank you



FAO/GEF/SEAFDEC/REMYC-4 CTI PROJECT
 Regional Meeting on The Future Trawl Fisheries Management in Southeast Asia
 23-25 September 2016
 Bangkok, Thailand

Current national trawl fisheries management in Cambodia

by
CHHUON Kimchhea and SUY Serywath
 Fisheries Administration, Ministry of Forestry and Fishery, Cambodia

Outline

1. Cambodia profile
2. Importance of fisheries sector
3. Fisheries policies related to trawl fisheries
4. Legal aspect relevant to trawl fisheries
5. Procedures on application of fishing license
6. Cambodia's fishing vessels
7. Issues and challenges
8. Proposed actions

Cambodia Profile

- Total area of 181,035 Km²
- Coastline : 435 Km
- Wetlands: >30%
- Population 15.33 M
- Literacy ratio 79.9%
- Life expectancy 68 years
- GDP: 16,780 M US\$ (1,116 USD/capita)

Language: Khmer

Importance of fisheries sector

- Cambodia's extensive river system covers 2.7% of the total surface area and contains high minerals and nutrients. This has made Cambodia rank number 4 in inland fisheries productivity behind China, India, and Bangladesh.
- The coastal area also has a high potential for fisheries productivity.
- The total marine and freshwater capture fisheries production is estimated at about 700-800 thousand tons per year.
- Fish consumption is 52.4kg/ person/year and fish provides 81% of Cambodian people's animal protein intake.
- Cambodia's fisheries play a very important role in contributing to employment opportunities to about 6 million people working full-time and part-time in fisheries and fisheries related activities, providing people's livelihoods, national food security and adding approximately UU\$1.5 Billion per year to economy, corresponding to around 8-12% of GDP.

Fisheries Policy related to trawl fisheries

1. Management and development of fisheries
 - managing and utilizing sustainable fisheries resources to enhance food security and food safety and to contribute to poverty alleviation.
 - promoting and encouraging fishing activities in the EEZ and in the international fishing grounds by strictly implementing the regional code of conduct for responsible fisheries and the laws of Kingdom of Cambodia.
2. Management of community fisheries and family fisheries
3. Management and development of aquaculture
4. Management and development of fish processing
5. Conservation of fisheries resources
6. Development of fisheries institutes and infrastructure
7. Budget and Fisheries Infrastructure

Legal aspect relevant to trawl fisheries

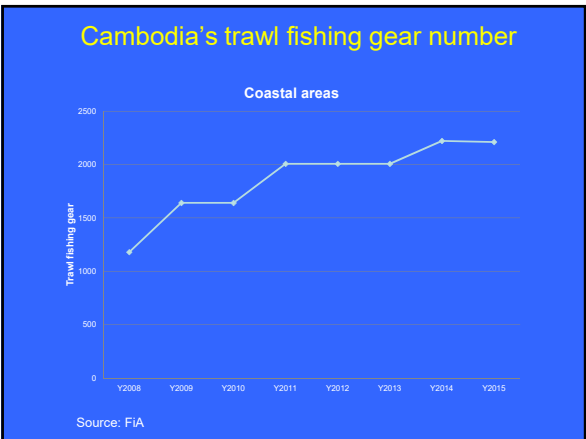
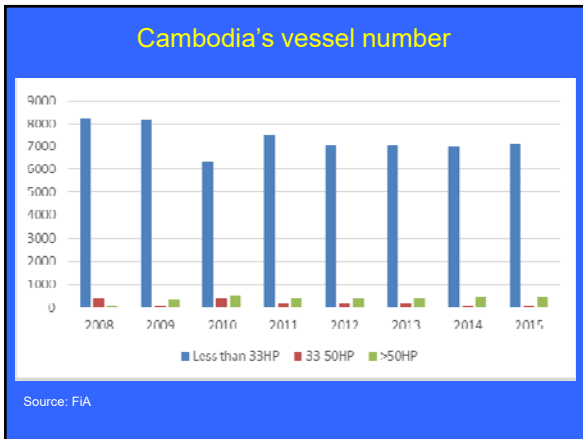
1. Fishing practices is classified into three category of fishing gears:
 - Small-scale fishing gears
 - Middle-scale fishing gears (including trawl fisheries <500Hp)
 - Large-scale fishing gears (including trawl fisheries >500Hp)
2. Trawl is prohibited to operate in fishing zone 1
3. Pair trawler or encircling net with attractive illuminated lamp for fish concentration is prohibited.

Countries	Fishing Zone 1	Fishing Zone 2	Fishing Zone 3
Cambodia	From shore line to 20 m depth	From 20 m depth to EEZ limit	



Procedures on application of fishing license

1. All types of fishery exploitations in the marine fishery domain, except subsistence fishing, shall be allowed only in the possession of license and these exploitation shall follow the conditions and obligation in the fishing logbook.
2. All fishing vessels need to comply with the proclamation on technical requirement of fishing vessel management
3. Vessel registration issued by Merchant Department of Ministry of Public Work and Transport or with Provincial Department of public work and transport.
4. Procedures on application of fishing licenses issued by FiA/MAFF
 - Fishing Vessel of 33 Hp or over issued by FiA Head Quarter
 - Fishing vessel of less than 33 Hp issued by Marine FiA inspectorate



Fishing license (vessels >33 Hp)

Year	2010	2011	2012	2013	2014	2015
Trawl fishing	89	82	66	41	48	57
Spanish mackerel gillnet	53	51	53	46	53	49
Dragged basket for undulate venus	1	20	25	33	10	23
Anchovy sien net	1	0	1	1	1	1
Crab trap	0	0	0	0	2	3
Fish Trap	0	0	0	0	0	1
Dragged basket for blood cockle	0	0	0	0	0	7
Purse seine	3	2	1	0	1	0
Total	147	155	146	121	115	141

Fishing boat license 2015 (vessels >33Hp)

Fishing gear license 2015 (vessels >33Hp)

Issues and challenges

- Large proportion of fishing boats without registration or license
- Ineffective registration and licensing
- Using gear that are not legal (pair trawl, electric trawl and lights)
- Encroachment of trawlers into waters shallower than 20m
- Mesh size of trawler less than minimum legal limit
- Trawler HP is increasing "Super trawlers" in Stung Havo with large HP, propellers and trawl nets (also with fine mesh double codends)
- Fishing capacity increasing in an open access fishery
- Size of boat and number of gear units used is increasing
- Weak inspection at landing sites (ineffective patrol vessel, lack of VMS/GIS tracking systems)
- Not regular carry out assessment of fishing capacity and monitoring of fish catch
- Ineffective data collection of fisheries statistic and information

Proposed actions

- Improve registration and licensing systems
- Strengthening MCS and law enforcement
- Strengthening landing site inspections
- Explore options for installing VMS in medium-scale vessels
- Regular carry out assessment of fishing capacity and monitoring of fish catch
- Strengthening data collection.

THANK YOU FOR YOUR ATTENTION



CURRENT NATIONAL POLICY OF TRAWL FISHERIES MANAGEMENT

National Project Coordinator of REBYC-II CTI

ENDROYONO

Bangkok, 23 September 2016

1. Indonesia current national Regulation on trawl fisheries management
 - a) **SHRIMP TRAWL** (Presidential Decree No. 85/1982 about use of shrimp trawl in the Aru-Arafura Sea :
 - eastern of 130°E except isobaths of -10m
 - Cod end 30 mm
 - Install TED with a distance of 3 inch bars.
 - Terminology this fishing gear in the category **Bottom Trawl**.
 - b) **FISH TRAWL** (Ministerial regulation of PERMEN KP 11 / MEN / 2009 trawl fish in EEZ Indonesia):
 - EEZ Indonesia in South China Sea, Sulawesi Sea, Pacific Ocean, Arafura Sea, Indian Ocean.
 - Head Rope <60m, Long Cod-end<10m, Mesh Size Cod End > 50 mm.
 - not use a trickle chain and iron sinker
 - Terminology this fishing gear is the category **Mid Water Trawl** (Not Pair Trawler).
2. Indonesia current national Regulation on Fishing Gear Operation
 - a) **Definition o Fishing Gear** (KEPMEN KP No.06/MEN/201 Fishing Gear in WPP-NRI, 11 Jan 2010)
 - 10 Category/Group
 - b) **Zoning of Fishing Gear** (PERMEN KP No.02/MEN/2011 Zoning of Fishing Gear Operation, 31 Jan 2011)

Scale & Trawl Fishing Zone

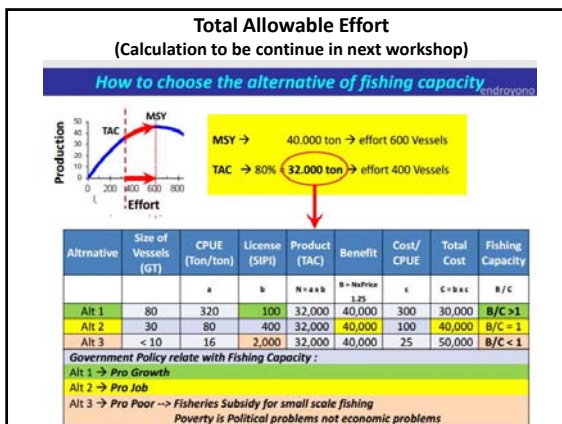
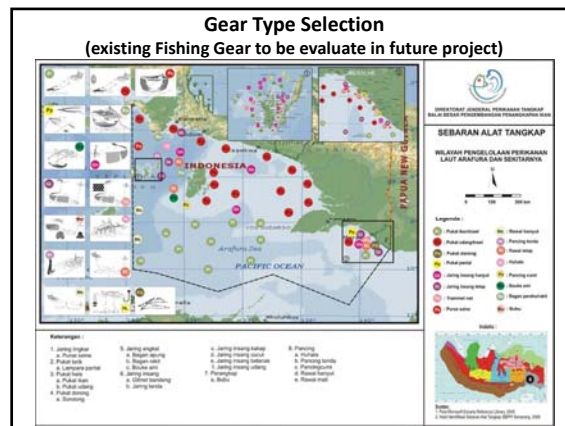
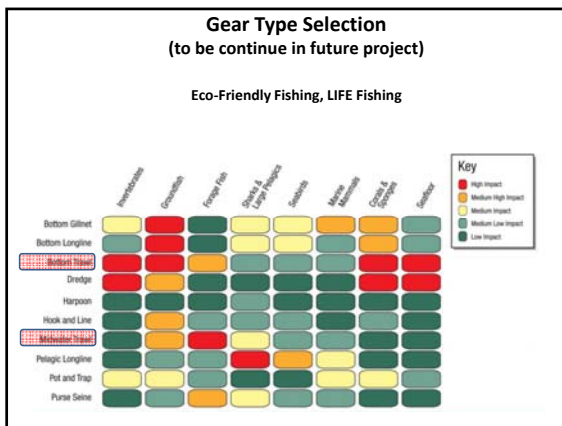
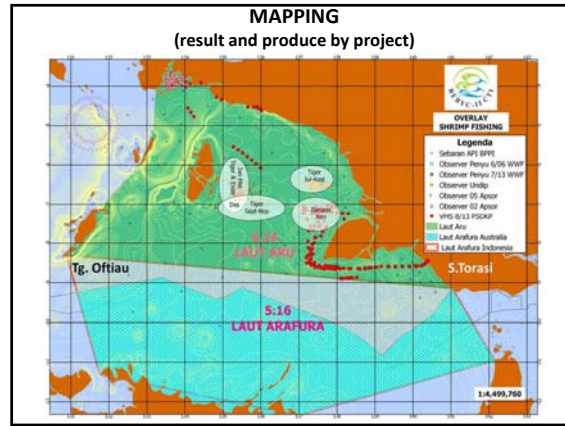
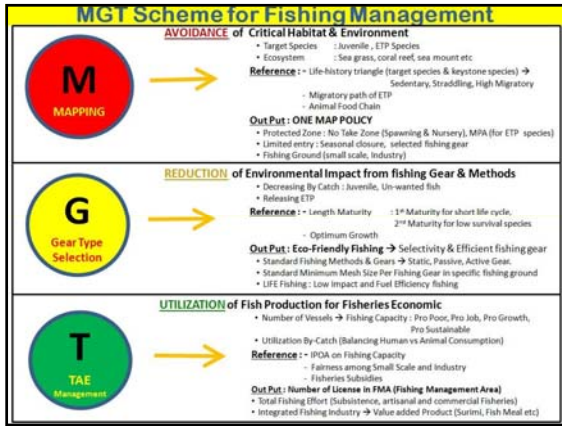
3. Indonesia current national policy of trawl fisheries management & Problem.
 - a) **Trawl Banning** in Indonesia (Ministry Decree No.2/PERMEN-KP/2015), impact are:
 - Since 2015, there is no selected fishing gear can replace trawl for shrimp exploitation purposes.
 - How to direct fishing activity in order to reduce unsustainable fishing.
 - b) **Moratorium of Ex-Foreign vessels** (Ministry Decree No.56/PERMEN-KP/2014), impact are:
 - No fishing vessels in Indonesia Archipelagic water (up 12 NM) and EEZ.
 - Specially in Aru-Arafura Sea, →
 - several small scale still operate near coastal. Less exploitation (shrimp resource) in fishing ground up 12 nautical mile.
 - small scale have low fishing power index.
 - Un employment fishing crew
 - Decreasing National Production on shrimp.
 - c) **Fisheries Management Plan in WPP-718** (Ministry Decree No.54/KEPMEN-KP/2014), impact:
 - How to implement Mapping, Gear Selection and Total Effort Management.
 - Aru-Arafura sea → focus Shrimp, Red snapper and demersal fish

4. REBYC-II CTI (Lesson Learn)
 - Rebyc-I : Understanding on by-catch : ETP Species, TED & JTED (Seafdec)
 - Collaboration with IMAC Project to conduct observer on board.
 - Establish 2 (two) Local Consultative Group in Sorong & Ambon.
 - Better communication among stakeholder during project.
[Website: rebyc-cti.kkp.go.id](http://Website.rebyc-cti.kkp.go.id)
 - We have finalized 3 guideline (MGT) : we can eliminate environment impact and **reduce unsustainable trawl fishing practices.**
 - Translate FAO reference in bahasa.
 - Promote and establish MGT Scheme (Mapping, Gear selection, Total Allowable Effort) as a new approach to Managing Fishing Activities.
 - The participation of members of the association have strengthened the discussion on fisheries management to reduce unsustainable fishing practices.


5. Future Direction

Recommendations for SHRIMP FISHERIES management in Aru and Arafura Sea

 - a) REBYC-II CTI Indonesia has been developing your management concepts through MGT Scheme (Mapping, Gear type selection, TAE management)
 - Mapping :
 - Based on the fishermen experience, the government can create a map of fishing areas/zone, in order to reduce negative impact and avoiding fishing activities in critical habitat. Ensure stability of food chain. Managing of fishing zone, seasonal closure ect.
 - Gear Type selection :
 - choose an alternative fishing gear to catch fish shrimp with quality and a good performance. Ensure to reduce by-Catch (non target/un-wanted)
 - TAE Management :
 - the government can more accurately monitor the potential of shrimp resource and determine the number of fishing capacity in appropriate to set up the limitation of the fishing license.
 - b) Develop business shrimp fishery, which can reduce unsustainable fishing activities are :
 - Standardization fishing gear.
 - Certification fishing activities related to marked.
 - Contribution of Shrimp Fisheries to local communities and local economic
 - c) the issue of by-catch should be maintained to reduce unsustainable fishing. By-Catch (ETP Species, juvenile & unwanted fish) in fishing ground.
 - the target species (Life cycle), the marine food chain, refugee
 - balance human consumption with animal consumption



Annexure 4Ca



SEAFDEC Regional Meeting
23-25 September 2016
Bangkok, Thailand

Examples of Bycatch Control Measures for the Trawl Fisheries in Japan

Y.Ochi, K.Fujita, S.Yamasaki, Y.Takahashi
National Research Institute of Fisheries Engineering
of Japan Fisheries Research and Education Agency
(NRIFE of FRA, Japan)

1

How to control the bycatch

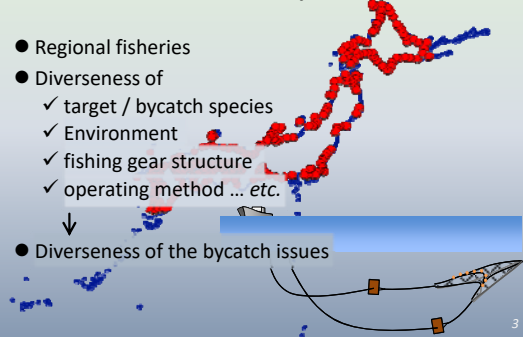
2

Diverseness of the bycatch issues

- Regional fisheries
- Diverseness of
 - ✓ target / bycatch species
 - ✓ Environment
 - ✓ fishing gear structure
 - ✓ operating method ... etc.

↓

- Diverseness of the bycatch issues



3

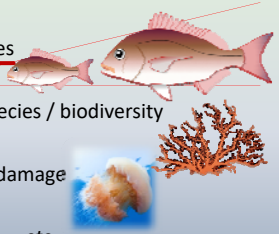
Steps toward the bycatch control

- Clarify the objectives of bycatch control
- Identify the target species / bycatch species
- Understand current status of the regional fisheries

4

What is the Objectives ?

- Conservation of juveniles
- Conservation of rare species / biodiversity
- Prevention of fisheries damage
- Efficiency improvement ... etc.

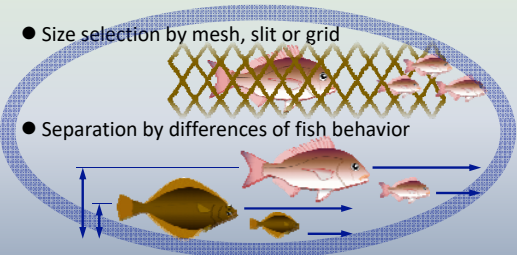


Objectives and its essentiality should be considered

5

Available control techniques

- Size selection by mesh, slit or grid
- Separation by differences of fish behavior
- Separation by temporal-spatial gaps of distribution ... etc.



6

Bycatch exclusion trawl gear developed by FRA

7

Case 1: Bycatch exclusion panel-1

- Conservation of **juveniles (general species)** and retention of **small shrimp**

NRIFE of FRA Chiba Pref. Fishermen in 1994-1998

Ex. < 12cmBL

Retention Discharge Retention

6-12cmTL

8

Case 1: Bycatch exclusion panel-1

- Conservation of **juveniles (general species)** and retention of **small shrimp**
- Observation of fish behavior against fishing gear

NRIFE of FRA Chiba Pref. Fishermen in 1994-1998

Top panel

Active Inactive

Bottom panel

Active Inactive Marine debris

Based on Matsushita (1998)

9

Case 1: Bycatch exclusion panel-1

- Conservation of **juveniles (general species)** and retention of **small shrimp**
- Size selection by mesh after separation by swimming layer

NRIFE of FRA Chiba Pref. Fishermen in 1994-1998

Inoue (2000)

Exclusion panel

> 60% [$< 10\text{cmBL}$]

Matsushita et al. (1999)

Upper bag

Lower bag

Marine debris

- Laborsaving / Quality improvement
- Voluntary adoption of developed gear since 1998

10

Case 2: Bycatch exclusion panel-2

- Conservation of **juvenile (rosy seabass)** and retention of **conger**
- Size selection by mesh after separation by swimming speed and layer

JAMARC of FRA Fishery Co-op in 2002-2007

Discharge Retention

Exclusion panel

> 50% [$< 15\text{cmBL}$]

Takayama et al. (2006) Sasao et al. (2008)

- Adoption in the regional comprehensive stock management scheme since 2009

11

Case 3: Crab exclusion mouth

- Conservation of **snow crab** during its closed season and retention of **plaice**
- Separation by behavioral characteristics

JAMARC of FRA Tottori & Hyogo Pref. in 2011-2013

walk swim

Opening

Fishing season: winter

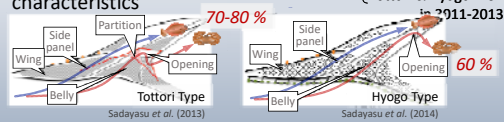
Closed season: summer

drop

12

Case 3: Crab exclusion mouth

- Conservation of **snow crab** during its closed season and retention of **plaice**
- Separation by behavioral characteristics



- Laborsaving / Quality improvement
- Voluntary adoption of developed gear under assistance of local governments since 2012

13

Conclusions

- Steps toward the bycatch control
 - ✓ Clarify the objectives of bycatch control
 - ✓ Identify the target / bycatch species
 - ✓ Understand current status of the regional fisheries
- Catch decline is unavoidable
 - ✓ Incentives to adopt the developed gear
- No “fully versatile” technique
- Regional basis approaches toward the same goal beyond the regions

14

References

1. Matsushita (1998) Underwater Observation of Fish Behavior against Fishing Gear. 5th Asian Fisheries Forum, Chiang Mai, Thailand, 11-14 November 1998.
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3. Inoue (2000) Choshi Design of Coastal Selective Trawl Net (CD-STN). Tech.Rept.Nat.Res.Inst.Fish.Eng., 23: 1-7 (in Japanese)
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5. Sasao, Shiodome, Yamashita, Harada, Satani (2008) JAMARC Report 2007, No.7 (in Japanese)
6. Sadayasu, Hirano, Okaya, Satani, Takahashi, Ochi (2013) JAMARC Report 2012, No.7 (in Japanese)
7. Sadayasu, Hirano, Satani, Takahashi, Ochi, Yamashita (2014) JAMARC Report 2013, No.5 (in Japanese)

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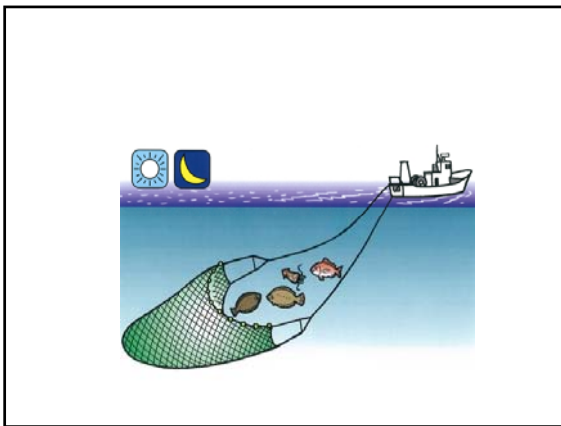
Trawl fisheries of Japan

Type of Trawl	Fishing boat size	Number of permitted vessels	Catch /year	Fishing area
Small scale trawl fishery	15~15t	21,746	457,000t	Coastal area
Offshore trawl fishery	15~150t	347	264,00 t	Offshore area
Trawl fishery operated in the East China Sea	100~170t	10	4,000t	Yellow sea, East china sea, South china sea
Distant water trawler	100~610t	12	30,000t	Russia area,High sea in Pacific oceanm, etc

Small scale trawl fishery



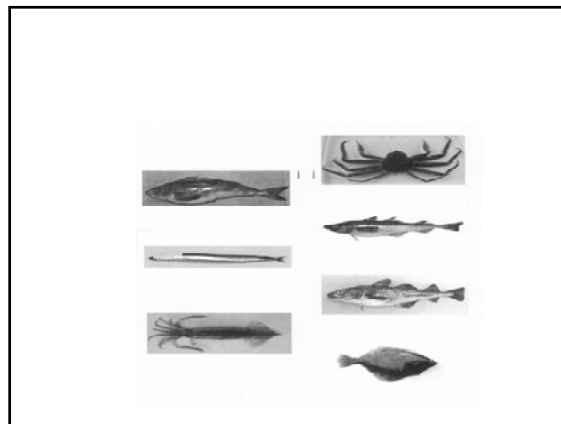
Okayama prefecture home page



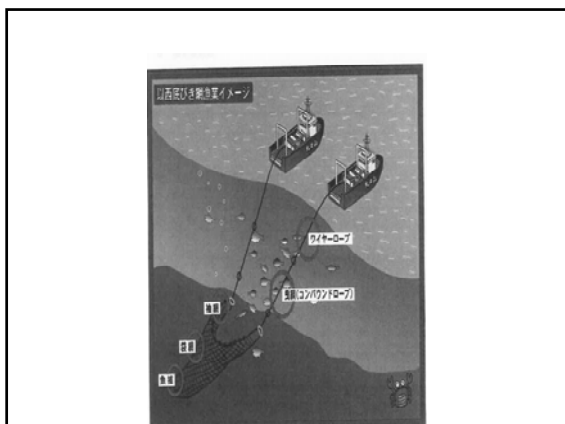
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Distant water trawler	100~610t	12	30,000t	Russia area,High sea in Pacific oceanm, etc

Offshore trawl fishery





Type of Trawl	Fishing boat size	Number of permitted vessels	Catch /year	Fishing area
Small scale trawl fishery	15~15t	21,748	487,000t	Coastal area
Offshore trawl fishery	16~150t	347	284,00 t	Offshore area
Trawl fishery operated in the East China Sea	100~170t	10	4,000t	Yellow sea, East china sea, South china sea
Distant water trawler	100~810t	12	30,000t	Russia area, High sea in Pacific ocean, etc.



Type of Trawl	Fishing boat size	Number of permitted vessels	Catch /year	Fishing area
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Distant water trawler	100~810t	12	30,000t	Russia area, High sea in Pacific ocean, etc.

Distant water trawler



Fishing regulation

- Fishing license
- Number of permitted fishing vessels
- Size of vessel
- Operation method
- Operation area
- Operation period (including closed season)
- Mesh size
- Caching fish size
- (Setting of TAC)

Japanese Trawler observe fishing regulations

- Fishermen engaged in fishery comply with fishing regulations.
- Fishermen watch over other fishermen that don't comply with regulations
- Fishermen should acknowledge the necessity of avoiding overfishing for sustainable use of fisheries resources.

Why Japanese trawler can observe fishing regulation?

- Fishing license system
- Fishermen association
- The consensus of observing fishing regulation has been formed among fishermen
- Surveillance of illegal fishing by fishermen
- Resource abundance data by scientific research
- Understanding of the necessity of fisheries regulations
- The depletion of fisheries resources causes the decrease in fishing revenue.

Issue of Japanese trawl fishing

- Catch of some fish species on some fishing ground is decreasing.
- Decreasing some species abundance
- Need to take recover fisheries resource

Fisheries resources recovery plan

- Surveys and examinations of the fisheries resources trend in each fishing zone
- There are some areas in serious situations over resources .
- Prefecture government or The fishery agency of Japan conduct survey and analyze of fisheries resources condition. Wide Sea-area Fisheries Adjustment Commission suggests that protected areas be designed to recover fisheries resources and fisheries regulations be revised to reduce fishing efforts in each fishing area and for each type of fish.

Specific example of fishing regulation

Reregulation for fishing sand fish

- Setting fishing regulation by cooperation among 3 prefectures Akita, Niigata, Aomori
- Setting more stringent Self-regulation by fishermen themselves.



Specific restriction of sand fish trawl fishing (Akita prefecture case)

- Number of fishing vessel (147 vessels)
- Restriction and prohibition of fishing method and equipment (mesh size)
- Restriction of fishing area (prohibition of fishing on spawning zone)
- Prohibition of fishing period (July ~ August)
- Prohibition of fishing at night
- Restriction catch size (under 15cm)
- Prohibition pertaining to the sale or possession of egg

CURRENT NATIONAL POLICY OF TRAWL FISHERIES MANAGEMENT IN MALAYSIA

by
Tengku Balkis binti Tunku Shahar
Rosidi Ali

REGIONAL MEETING ON
THE FUTURE OF TRAWL FISHERIES MANAGEMENT IN SOUTH EAST ASIA
23-25 September 2016
Bangkok, Thailand

CONTENT

- ▶ INTRODUCTION
- ▶ CAPTURED FISHERIES PROFILE & OVERVIEW OF TRAWLERS
- ▶ ISSUES
- ▶ CURRENT NATIONAL POLICIES
- ▶ FUTURE DIRECTIONS
- ▶ CONCLUSIONS

INTRODUCTION

1. AKTA PERIKANAN 1985 (AKTA 317) & FISHERIES ACT 1985 (ACT 317)

2. BUKU PASAR DAN PERKHIDMATAN PERIKANAN MALAYSIA

3. PELAN STRATEGI 2011-2020

4. FOR THE MANAGEMENT OF FISHING CAPACITY IN MALAYSIA

CAPTURED FISHERIES PROFILE & OVERVIEW OF TRAWLERS

Year 2020
477,000 mt

	Zone A	Zone B	Zone C	Zone C+
FISHING GEAR	Traditional, Anchovies Purse Seiner	Purse Seiner, Trawler	Traditional, Purse Seiner, Trawler	Purse Seiner, Trawler, Long liners
NO. OF VESSEL (58,211)	48,252 (82.8%)	4,949 (8.5%)	1,977 (3.3%)	1,033 (1.8%)
NO. OF FISHERMEN (140,849)	85,373 (60.6%)	20,457 (14.5%)	17,169 (12.2%)	17,950 (12.7%)
LANDING (1,486,051)	442,938 (29.8%)	353,714 (23.8%)	352,078 (23.7%)	337,322 (22.7%)

CONSERVATION ZONE: Peninsular, Coastal, 1,000, 500 mt, 100, 50

CAPTURED FISHERIES PROFILE & OVERVIEW OF TRAWLERS

LANDING BY GEAR, 2009 - 2015

1. Contribute over 45% of total landing

2. Upstream and Downstream Activities

3. Trawlers

4. Sources of income

% LANDING BY GEAR, 2009 - 2015

ISSUES

- Trash fish landings
- Encroachment in coastal areas
- Conflict between traditional fishermen and trawlers
- Limited fishing area
- Smaller size of fish caught
- Longer time required for economic return

CURRENT NATIONAL POLICIES

1. Limiting the Fishing Effort

- ▶ Issuance of new fishing license for coastal fisheries was halted since 1982 (moratorium) meant to reduce fishing pressure
- ▶ Vessels registration to control their entry into the fishing industry
- ▶ Registration of fishermen
- ▶ Owner-operated for vessels in fishing Zone A and Zone B

CURRENT NATIONAL POLICIES

2. Zoning System

Zone	Distance from Shore	Vessel Type / Operator	GRT Limit
A ZONE	0 - 5 nm	For Traditional Fisherman & Traditional Anchovy Purse Seiner (Owner Operator)	3 - <40 GRT
B ZONE	5 - 12 nm	Trawlers & Purse Seiner (Owner Operator)	0 - <40 GRT
C ZONE	12 - 30 nm	Trawlers & Purse Seiner (Owner Operated & Non Owner Operated)	40 - <70GRT
C2 ZONE	30 nm to EEZ Boundary	Trawlers & Purse Seiner	70 GRT and above
C3 ZONE	High Seas	Tuna Longliners & Tuna Purse Seiner	70 GRT and above

* There is no restriction for vessels operating at the lower zone to fish at the further up zone. e.g. vessels in Zone A are allowed to fish in Zone B, C and C2.

CURRENT NATIONAL POLICIES

- ▶ **Zone A:** < 5 nm from the shore, reserved solely for fishermen operating traditional fishing gears and using fishing vessels of less than 40 gross registered tonnage (GRT) and owner operated;
- ▶ **Zone B:** > 5 nm, for owner operated commercial fishing gears such as trawl nets and purse nets, vessels < 40GRT. Zone A operators can also fish in this zone.
- ▶ **Zone C:** > 12 nm, for commercial fishing vessels with capacity > 40GRT; Zone A and B operators can fish in this area.
- ▶ **Zone C2:** > 30 nm, for deep sea vessels, fishing with vessels of ≥ 70GRT. Zone A, B and C operators can fish in this zone.

CURRENT NATIONAL POLICIES

3. Rezoning Area (West Coast Of Peninsular Malaysia)

Zone	Distance from Shore	Activities / Vessel / Operator	GRT Limit
Conservation Zone	0 - 1 nm	Aquacultures Areas, cockles & fisherman based communities activities	< 40 GRT
Zone A	1 - 8 nm	Traditional Vessel/ Anchovies Purse Seiner (US) / 100% Local Fisherman	< 40 GRT
Zone B	5- 15 nm	Trawler/ Purse Seiner (US) / Skipper/ Local Fisherman 100% / Compulsory for AIS, MAED & JTED	< 25 GRT
Zone C	8 - 15 nm	Trawler/ Purse Seiner (US) / Skipper/ Local Fisherman 100% / Compulsory for AIS	25 - < 40 GRT
Zone C2	15 nm - EEZ	Trawler/ Purse Seiner (BUS) / Foreign Fishermen 100% / Compulsory for AIS/MTU	40 - 70 GRT & above
Zone C3	Indian Ocean	Purse Seiner / Long Liners (BUS) / Compulsory for MTU	70 GRT & above

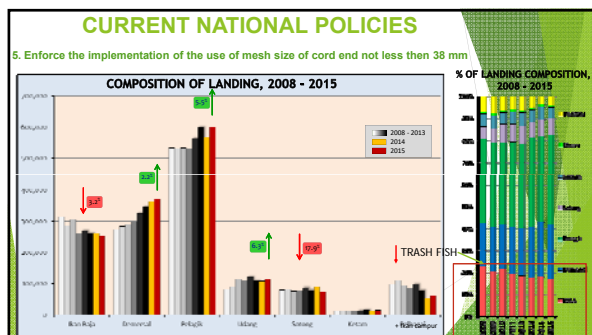
Why West Coast of Peninsular Malaysia?

- The most productive areas which accounted 50% of the total marine fish landing of the country.
- Invasions of trawlers into the inshore.
- Exploratory fisheries resources has reached optimum levels.
- Landing of trash fish.
- Highest number of fishermen.
- Highest number of trawlers licensed.
- Involving many stakeholders such as capture fisheries, aquaculture, coastal development, navigation and others.

CURRENT NATIONAL POLICIES

4. PENALTY FOR ENCROACHMENT THE AREA OF 5 NM AND BELOW

No. Of Offence	GRT of Trawler			
	< 25 GRT	25 - < 40 GRT	40 - < 70 GRT	> 70 GRT
1 st time	i. Compound RM3,000	ii. Compound RM6,000	iii. Compound RM12,000	iv. Compound RM12,000
2 nd time	• 1 year license suspension	• 1 year license suspension	• 1 year license suspension	• 1 year license suspension
	• Fishing gears confiscated	• Fishing gears confiscated	• Fishing gears confiscated	• Fishing gears confiscated
	iii. Ownership change is not allowed for 5 years	iii. Ownership change is not allowed for 5 years	iv. Ownership change is not allowed for 5 years	iv. Ownership change is not allowed for 5 years
3 rd time	• Proceeds from the auction of fishes forfeited	• Proceeds from the auction of fishes forfeited	• Proceeds from the auction of fishes forfeited	• Proceeds from the auction of fishes forfeited
				Court



- ### CURRENT NATIONAL POLICIES
- ▶ 6. Improvement of conditions of license
 - ▶ not transferable
 - ▶ modify or change vessel hull
 - ▶ Compulsory to install Automatic Identification System

- ### FUTURE DIRECTIONS
- ▶ Free Trawl Zone Below 12nm by 2020
 - ▶ Standardization Of Specifications For Fishing Gears & Fishing Vessels

- ### CONCLUSIONS
- ▶ Aims to create fisheries that are not only economically viable but also profitable and sustainable in the long term while protecting and conserving the environment.
 - ▶ Coastal fisheries will be continuously and properly managed and protected from adverse impacts by anthropogenic pressures in order to ensure supply of sufficient and safe food for the nation and to provide employment.
 - ▶ Since coastal fisheries reached maximum level of exploitation, the government always emphasize on Proper management practices.
 - ▶ Promote deep sea fisheries and aquaculture development to increase fish production to cater for the increasing population.



FAO/GEF/SEAFDEC/REBYC-II CFI PROJECT.
Regional Meeting on The Future of Trawl Fisheries Management in Southeast Asia
23-25 September 2016, Bangkok, Thailand

Trawl Fishery Management Myanmar

Myanmar

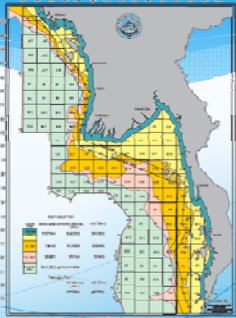
Marine Fishery

a. In-shore Fishery

- In inshore fisheries, within from shoreline to (10) nautical.
- In this area, the fishing boat which is build by traditional type with not more than 30 feet long or using less than a 25HP engine power, operate for fishing.
- The fishing gears for using are driftnet, gillnet, beach seine and long line.

b. Off-shore Fishery

- Outer area of inshore to end of EEZ
- More than 30feet long and 25 HP engine boat
- Bottom trawl, Purse seine, Drift net & Long line.



Marine Fisheries in Myanmar

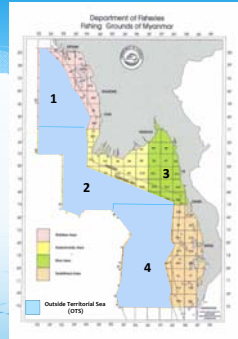
Demarcated 4 fishing grounds

- Rakhine
- Ayeyarwaddy
- Mon
- Tanintharyi

- Local vessels have privilege to operate fishing at all fishing grounds
- Foreign vessels have privilege to operate one selected fishing ground of three (1,2,4) from outside the territorial sea up to EEZ during the license period (The license can renewable to extend fishing period)


Foreign fishing vessel means;

(a) a vessel belonging to a foreigner
(b) a vessel is registered in any foreign country




Number of fishing vessel engage in Inshore Fishery

Year	Inshore fishing vessels		Total
	Power	Non Power	
2010-2011	13823	15548	29371
2011-2012	12288	15463	27751
2012-2013	12157	12757	24914
2013-2014	12490	13732	26222
2014-2015	12240	13391	25631




Number of Fishing Vessel Engaged in Off-shore Fishery (2015-16)

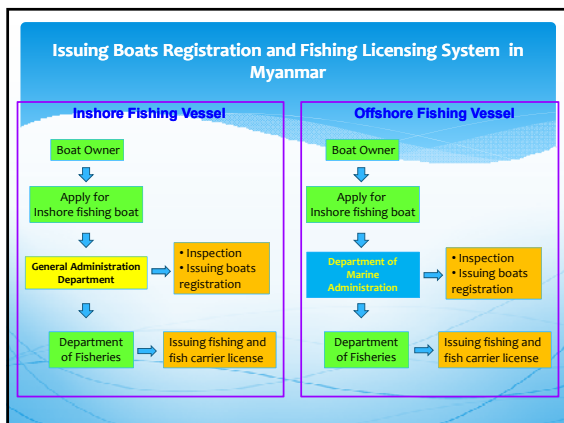
No	Type of Gear	Size of vessel		
		Under 24 m	Above 24m	Total
1	Trawl	685	555	1240
2	Purse seine	183	101	284
3	Stow net	503	104	607
4	Drift net (Gill net)	380	7	387
5	Long line	33	1	34
6	Squid cast net	351	-	351
7	Fish Trap	125	2	127
Total		2260	770	3030



Number of Trawl Fishing Vessels by size and power (2015-16)

Type of Gear		Size of vessel		
		under 24 m	Above 24m	Total
Trawl	Number	685	555	1240
	Gross tonnage	57555.97	72972.99	130528.96
	Power Kw	39905.00	273722.00	313627.00





Comparisons of Demersal fish Biomass Estimates in Myanmar 1979-80 vs 2013

1979-80 acoustic estimate : **750,000 tons** (mean Length. 20 cm)
 * 2013 Trawl estimate : **280,000 tons**

These result should be interpreted with caution, because of different methods, not standardized

Management Measures

Enforcement agencies with particular activities are listed as-

- ❖ **Inspection authority at shore OSS (One Stop Service)**
 - * Department of Fisheries
 - * Myanmar Port Authority
 - * Myanmar Custom
 - * Immigration Department
 - * Department of Marine Administration
 - * Myanmar Police Force
- ❖ **Inspection at sea**
 - * Myanmar Navy
 - * Myanmar Coast Guard

Port Monitoring System for Fishing Vessels

Check out vessel

When Fishing vessels want to go-out to the fishing ground, have to apply the sailing order to the DOF.

The members of OSS (One Stop Service) inspect the fishing vessels just before depart to the fishing ground.

- (1) Fishing Licence
- (2) Fisherman Registration Card.
- (3) National Registration Card .
- (4) Vessel Registration Certificate.
- (5) Life Saving Appliance (LSA)
- (6) Navigation Certificate.
- (7) Mesh size of Fishing Net.
- (8) Fishing log book
- (9) Communication equipment

Port Monitoring System for Fishing Vessels

Check in

When the Fishing Vessels come back to the Check-Point, as a OSS members inspect again below:

- (1) Whether the Fishermen those come-back to Check Point.
- (2) Check the Fishing log book.
- (3) Whether the fishing vessels have operated in the fishing ground over fishing period.
- (4) Inspection the species of catching.
- (5) After inspection above mentioned, allowed to fishing vessel to proceed their landing site.

Management measure

Depend on the fuel-saving Department of Fisheries was allowed number of fishing days at sea is 90 days. All catch were landed by carrier vessel.

- Trawl net cod-end mesh size not less than 2 inches for fish trawl and 1.5 inch for shrimp trawl net.
- Nursery areas are identified and they have been protected and managed as a reserved fishing areas to ensure survival of juveniles of commercially important fish species.
- Strict law enforcement on fishing activities in Myanmar's fishery waters, is carried out by Myanmar Navy address the problem of illegal fishing.
- To avoid conflate between the artisanal fishermen and the trawler, ten miles from the shore line in all coastal area the trawler will not allowed to fishing in those areas.

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Management measure

Around three miles of the all islands area, (announced as fisheries protected areas) whereby collection of marine fauna and flora is prohibited.


- Reduce trawl fishing capacity, In 2016-17, all of the coastal of Myanmar off-shore areas, DOF allowed only 40 % of trawl fishing vessels to operated in June , July and August as a close season. (In 2014-15, 60% and in 2015-16, 50%)
- DoF Organize to installation of Satellite base VMS system for all off-shore fishing vessels.
- Issue fishing log books to all fishing vessels for catch record (Area, species composition). At the landing site DoF check catch and log book.
- Inspect check in check out reporting system at check point (Before going to fishing ground and after come back from sea)

Management measure

Fishing Boat Registration must be renew every year.

- Now a day, shall not allow to build the new building boats for purpose of fishing. Only can repair for damage boat.
- Markings and colour coding must be needed according to the place of license Issue.

Description	Place of Licence Issue	Word colour on Line Colour of Hull
Off Shore Fishing Vessel	Taninthayi	red
	HO/Ayeyarwaddy/Mon	gray
	Rakhine	yellow
Off Shore Center	Local Carrier	white
	Joint Venture	white
Foreign Fishing	OTS (Long Line, Squid, Trap)	white



Catch Documentation

Catch Flow

```

    graph LR
      FG[Fishing Ground] --> PL[Port/Landing site]
      PL --> LC[Local consumer]
      PL --> PMD[Processing Plant]
      PMD --> CC[Catch Certificate]
      CC --> OC[Other Countries]
      CC --> EC[EU Countries]
  
```

Catch record

- Vessel name
- Registration No:
- Fishing area
- catch/date
- Catch by species
- Catch by weight

PMD

- Fishing log book
- Catch per unit effort
- Fishing time
- Catch composition
- Average fish size
- Fisher Income
- Fishing cost
- Profit


In order to issue Catch Certificate the following is required:

- The Company that will export to the EU must apply to the DOF for the C/C.
- In the application ED/PMD to be attached together.
- The PMD will be inspected at the Landing Site and recommendation given.
- Compile the list of each vessel catches from PMD that have attached with C/C.
- PMD must be as the evidence of the export document and case file opened and C/C will be issued.
- All the case files are filed and kept case by case for each C/C issued.

Constrain

Currently we have some problem in fishery sector these are as follows:

- By-catch and discards are a serious problem that hinders the sustainability of fish stocks and marine species. (Using small mesh size)
- Using distrusted fishing gear and methods and impact on environment. (Poison, explosive)
- Uncover the long coastal areas and Difficult to control MCS system for IUU fishing. (Fishing in protected areas and season/ without licence)
- Abandonment of dumping net and gears (Ghost fishing)
- Prevalence of poaching from foreign fishing vessels.
- Need energy saving method and fishing technology.
- Difficult to get data from remote areas.
- Lack of Methodological and analytical expertise.
- Through the use of artificial reefs and coral replanting program have not yet been established in Myanmar Coastal zone.



Future direction


According to the outcome and results of sustainable fishery in Myanmar by stakeholder meeting

- Fishing vessels will avoid overfishing by abiding with regulations regarding size of the stock, capacity and effort limit.
- Fishing vessel owners should ensure that all fishing vessels are registered, licensed, and with appropriate markings as defined in the Myanmar fisheries law.
- Establishment of efficient MCS system is essential for effective controlling of fishing capacity and IUU fishing.
- Vessels, where possible, should be fitted with a fully operational vessel monitoring system (VMS) and be compliant with International Regulations for the Prevention of Collisions at Sea.
- Member companies will facilitate access of workers and crew to skills training with a view of promoting professional development, innovation, and efficiency.
- Vessel owners will conduct training on responsible fisheries for crew.
- To agree with regional trawl fishery guide line

Conclusion

- Since coastal fisheries is facing with over-fishing and over-capacity, offshore or deep-sea is the only promising area for sustainable fisheries development and food security for the people in future.
- Even offshore fisheries/deep-sea fisheries is not developed yet, results from series of fishery resources survey and experimental fishing indicated that Myanmar is rich in some commercially important big pelagic species such as sword fish and deep-sea lobster and deep-sea shrimp.
- Since offshore / deep-sea fisheries areas are away from the shore, more advanced fishing technologies, modernized fishing gears, latest post harvest technologies, skillful fishers and more investments are needed.
- To exploit underutilized fishery resources from offshore / deep-sea for sustainable fisheries development and food security for the people in this region, Myanmar would like to make good coordination and cooperation with international / regional organizations, to obtain technologies, knowledge and experiences.

Thank

A photograph of a fishing boat on the ocean, positioned at the bottom of the slide. The boat is blue and white, with a red stripe. It is sailing on a dark blue sea under a clear sky. The background of the slide is a light blue gradient with a white wavy line at the top.

• TRAWLING NOT SELECTIVE

- **MANY SPECIES - BYCATCH OR CATCH (DEFINE)**
- **PRAWNS AND BYCATCH – OFTEN THE SAME SIZE**

• size selection not the only solution

• behaviour – better driver for separating shrimp and other spp



WAY FORWARD/FUTURE DIRECTION

Reducing impacts of bycatch

- Compulsory use of by-catch reducing technologies & turtle excluding devices
- Greater reduction in bigger commonly caught by-catch, e.g. jewfish, snappers, sharks/rays/turtles

Establish appropriate and standard data collection system and archive

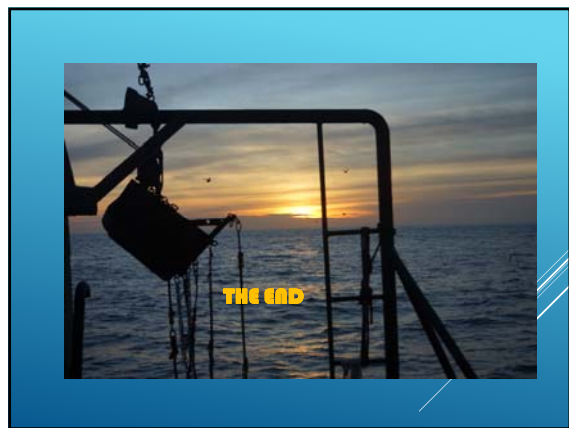
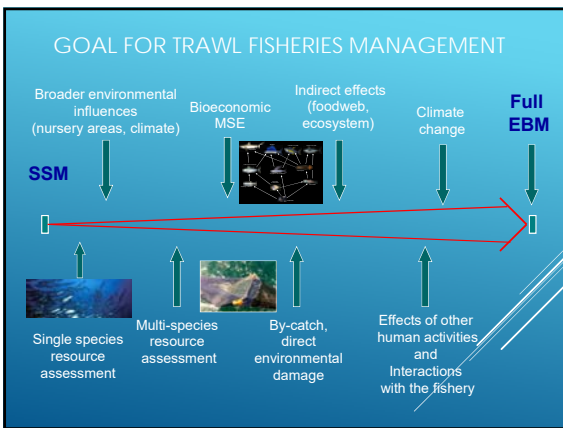
- This will allow future managers and management to build on work that has already been done rather than starting from scratch

Spatial management

- Manage prawn : bycatch catch ratio
- spatial closures (e.g. to protect nursery areas, and spawning population)
- Moving towards value added fishery (MSC certification/US market access)

More collaboration with relevant international agencies & PPP partnership approach for incentive, regulation etc

Compulsory Installation of TEDs/BRDs in fishing nets





PH Current National Policies of Trawl Fisheries Management including Problem and Future Direction

REBYC-II CTI project will contribute to more sustainable use of fisheries resources and healthier marine ecosystems in the Coral Triangle and Southeast Asia waters by reducing bycatch, discards and other impacts of trawl fisheries



OVERALL MANAGEMENT FRAMEWORK

R.A. 8550 (Fisheries Code) as amended by R.A. 10654

- BFAR as leading government agency responsible for conservation and management of fishery resources beyond municipal waters
- Specific/Implementing rules by Fisheries Administrative Orders/Circulars (FAOs/FACs)

R.A. 7160 (Local Government Code)

- Local Government Units (municipal and city governments) have the jurisdiction and responsibility to manage the fisheries within their jurisdiction (municipal water 0-15 km from the shoreline).
- Local ordinances are issued for the management of fisheries resources

SPECIFIC REGULATIONS

Fisheries Administrative Order 155

- 3 cm minimum mesh size regulation for fishing gears including trawl

Fisheries Administrative Order 201

- Bans active gears (including trawls) in municipal waters

Fisheries Administrative Order 237

- Requires installation of JTEDs in trawls in PH waters

PROBLEMS

- Diminished fishing grounds due to expanded municipal waters
- Conflict with other gears/resource users
- Overlapping / unclear fishing ground boundaries between municipal & commercial waters
- IUU fishing

Future direction

- > Co-management of Fishing Grounds
- > Increased stakeholders participation in policy formulation
- > Implementation of FAO 237
- > Formulation of Specific Area Management Plan in the context of EAFM

- > Management of Fisheries Resources by local Association or Alliance of LGUs (Ex. Samar Sea, Biliran, Leyte)
- > Implementation of Closed Seasons in addition to technical management measures.
- > Support to National Stock Assessment Program with emphasis on trawl fisheries

- > Expansion of socio-economic studies in other major trawl fishing grounds
- > Stronger Institutional Linkages in the planning, implementation and monitoring

Annexure 4H

**FAO/GEF/SEAFDEC/ REBYC-II CTI PROJECT
REGIONAL MEETING ON THE FUTURE OF TRAWL
FISHERIES MANAGEMENT IN SOUTHEAST ASIA**

**“Thailand: Trawl Fisheries and by-catch
management”**

Dr. Mala Supongpan
National Technical Officer

23-25 September 2016
Novotel Ploenchit, Bangkok

**Current national policy of trawl fisheries management
in Thailand**

The trawl fisheries and by-catch management policy has been developed under the Royal Fisheries Ordinance B.E. 2558 which details are as following:

The **Royal Fisheries Ordinance B.E. 2558 (2015)** came into force on 14 November 2015, replacing the recently amended Fisheries Act B.E. 2558 (2015).

The new legislation amounts to a fundamental and comprehensive reform of the legal framework governing Thai fisheries.

Key Principles and Objectives for Fisheries Management

To establish **good governance in the management of the fisheries sector and the conservation of aquatic resources**

To **combat illegal, unreported and unregulated (IUU) fishing**, as well as **prevent overfishing and overcapacity** of the fishing fleet

To ensure effective **monitoring, control and surveillance** of fishing activities

To bolster the **traceability** system of fisheries products along the whole value chain, from fishing vessels to end consumers.

To **eliminate all forms of forced labor and improve welfare and working conditions** of workers in the fisheries sector, both in fishing vessels and in seafood processing factories.

To introduce proportional and deterrent **administrative and criminal sanctions**.

More effective fisheries management and stakeholders' involvement.

- Establish: A **National Fisheries Committee**
- Establish: A **Provincial Fisheries Committee**

Improved oversight of fishing operations and transshipments at sea.

All commercial fishing vessels are required to have valid **fishing licenses**, 10 GT and above

All commercial fishing vessels must record their fishing operations in the **fishing logbook** and report every **port-in and port-out** operation

Every **Thai fishing vessel operating outside Thai waters must obtain a specific license. An observer** must be stationed on board

Oversight on transshipments at sea. VMS is mandatory on all transshipment and storage vessels

Enhanced traceability system

The mandatory submission of fishing logbook and marine catch transshipment document by fishing operators is designed

Fishing ports and fish markets are required to record data on every fishing vessel berthed at port, as well as prepare a **marine catch purchasing document (MCPD)** for a buyer and submit a copy to the Department of Fisheries

Importers and exporters of aquatic animals and products must present a **catch certificate** or similar document

Preventing IUU vessels and products from entering port

Publicly declare a list of non-Thai "IUU" fishing vessels Which are prohibited from entering Thailand.

Every non-Thai fishing vessel wishing to bring in aquatic animals into Thailand must notify the competent official at least 48 hours prior to its arrival at the port of entry

After berthing at port, the aquatic animals in the vessel may not be unloaded and imported into Thailand, unless **permission has been granted by the competent official**

A valid license and other required documents to prove that it has **not engaged in IUU fishing activity**.

Deterrent sanctions

The law introduces **proportional and deterrent administrative and criminal sanctions**

-A number of "**serious infringements**" are defined in the Royal Fisheries Ordinance B.E. 2558

-Deterrent **administrative sanctions**

A seizure of the catch or fishing gear, prohibition of fishing activity until full compliance is achieved, suspension of fishing license, revocation of fishing license, inclusion of the vessel into the IUU list, and detention of the vessel.

-**Criminal sanctions** are designed to be deterrent and proportional for different sizes of fishing vessels, with a maximum fine of **30 million baht** or five times the value of the catch obtained from the fishing operation, whichever case is higher. If a serious infringement is re-committed within a period of five years, the penalty prescribed shall be doubled.

Improving welfare and working conditions of seamen, and eliminating unlawful labor practices in the fisheries sector

A seaman must hold a seaman document issued under the law on navigation in Thai waters. A seaman **who is not a Thai national** must obtain permit to remain in Thailand under the law on immigration and a work license under the law on working of aliens.

When porting-out, **the owner or the master** of a fishing vessel must submit to the PIPO Control Center a list of outgoing seamen on board and evidence related to the provision of appropriate systems for ensuring occupational safety, hygiene and wellbeing of seamen. Non-compliance will result in the detention of the fishing vessel at port.

The **owner** of any fishing vessel making **use of a seaman without a valid work license or permit** is subject to a fine of up to **800,000 baht per seaman**. In addition, the Director-General shall order **the revocation of the owner's fishing license**, and the Director-General of the Marine Department shall also **revoke the seaman document of the master of the vessel** pursuant to the law on navigation in Thai waters.

A **factory operator** who engages in a business relating to aquatic animals is prohibited from employing illegal workers, including aliens who do not hold a legal work permit. Violation may result in a fine of up to **800,000 baht per each unlawfully employed person**. Moreover, if the number of workers unlawfully employed at the factory is not more than five, then the Director-General shall order **the suspension of the factory operation** for a period of ten to thirty days. If more than five workers are employed illegally at the factory, then the Director-General shall notify the Permanent Secretary of the Ministry of Industry to order **the closure of the factory** pursuant to the law on factories. Such an order shall also have the effect of **license revocation** under the law on factories.

The factory operator who violates the labor protection law or employs illegal alien workers is also liable to **criminal penalties**, including a term of imprisonment not exceeding two years or a fine of 200,000-2,000,000 baht, or both, as well as a daily fine of 100,000-500,000 baht for the entire duration of the violation.

Current Marine Fisheries Management Measures in Thailand include:

- 1) All fishing vessels must be **registered**,
- 2) Some types of fishing gear prescribed under the Ministerial Regulation must be **licensed**,
- 3) Controlled under the Ministerial Regulation, numbers of trawlers, push nets, anchovy purse seiners and anchovy lift nets must be **frozen**,
- 4) Commercial fishing vessels \geq 30 GT are required to **install VMS** as they have a capacity to operate outside Thai water,

- 5) Fishing vessels importing fish into Thailand has to follow Port in-port out measures; and Port State measures; including artisanal fishing vessels from neighboring countries. (Now: not yet applied),
- 6) Registered at the port to record vessel require details (Submission of a copy of their fishing license; information on the vessel, fishing activity and catch; advance notification prior to port in; Register to Thai Officer inspections).

Technical measures management include:

1. No fishing of all commercial fishing in the area and season closure (protection for spawning stock and juveniles),
2. Suitable mesh sizes are applied to purse seines, trawls, anchovy lift nets, collapsible crab traps and gill net,
3. Demarcated zones between artisanal and commercial fisheries.
4. Reduce fishing capacity by the enlargement of mesh size and the limitation of the ground rope for trawlers,
5. Ban on all push nets except fishing for *Acetes* (*Sergestids*) nets.

Other Management measures and activities in Thailand include:

1. Prohibiting trawlers and push net from fishing within 3 nautical miles from the coastline;
2. Marine Protected Areas (MPAs) for full protection varies from aquatic sanctuaries, non-hunting area, marine national park, mangrove swamps, coral reef areas, sea grass bed etc.

3. Reserved areas for special purposes, e.g. coral reefs, sea grass beds and mangroves. DOF is carrying out other conservation measures including: - Establishing artificial reefs for spawning grounds, fish shelter;

4. Promoting community-based fishery management and EAFM.

Future Marine Fisheries Development

The Marine Fisheries Research and Development Division has settle a Marine Fisheries Management Plan (FMP) from year 2015 to 2019 as a five years plan

The FMP include Policy, Plan of Action, Monitoring and Evaluation

The policy of the Marine Fisheries Management Plan of Thailand (FMP) 2015-2019 includes

1. Sustainable utilization of marine fisheries resources through the control of fishing effort and capacity at the level that is commensurate with MSY;
2. Healthy environment and habitats;
3. Increased socio-economic benefits to fishermen, buyers, processors and consumers; and
4. Reformed marine fisheries management and compliance in accordance with good governance principles and international rules.

Plan of Action

1. Reducing fishing capacity and fishing effort (Fish group **capture reduce** by % within 3 yrs)

2. Rebuilding fish resources through **artificial reefs** and **restocking** programs (10 sites/yr)

3. Minimizing IUU fishing through **effective MCS** (at level can control)

4. Reducing the **catch of juveniles** of the larger commercial species (50% reduction of current level wthin 5 yr)

5. Resolving **conflicts** between small-scale and large-scale fishers

6. Restoring and maintaining **critical habitats** (4,000 rai² of mangrove increased by 2019)

7. Improving fisheries **data and information** and dissemination systems within 2 years

8. Strengthening fisheries management capacity using **VMS and MCS** within 5 years

9. Need for institutional changes and strengthening the human resource capacity to improve future fisheries management.

Monitoring and Evaluation

1. An evaluation of the policy performance against its objectives will be made each year.

2. A major evaluation and review will be carried out every 2 years, and if appropriate, the issues, goals and objectives will be modified. At this review, social and economic impacts will be assessed and incentives and compensation will be considered.



Thank You



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Vietnam Directorate of Fisheries

SEAFDEC gef

FAO/GEF/SEAFDEC/REBYC-II CTI PROJECT

REGIONAL MEETING ON THE FUTURE OF TRAWL FISHING MANAGEMENT IN THE SOUTHEAST ASIA

23rd - 25th September 2016

CONSTRAINTS AND ORIENTATION FOR VIETNAM TRAWL FISHERIES MANAGEMENT



Food and Agriculture Organization of the United Nations


Vietnam Directorate of Fisheries

SEAFDEC gef

Strategies for trawl fisheries bycatch management (REBYC-II CTI)

Out line:

- Introduction
- Constraints
- Legal frameworks
- Orientation



Food and Agriculture Organization of the United Nations


Vietnam Directorate of Fisheries

SEAFDEC gef

Strategies for trawl fisheries bycatch management (REBYC-II CTI)

1. Introduction

- Developed rapidly since the 1980s
- Two main types: Otter trawl and pair trawl
- Small scale
- Concentration mainly in the south Vietnam
- Majorily, fishing ground in the South Vietnam (FAO area 71)
- Operating year round
- Multi species targeted



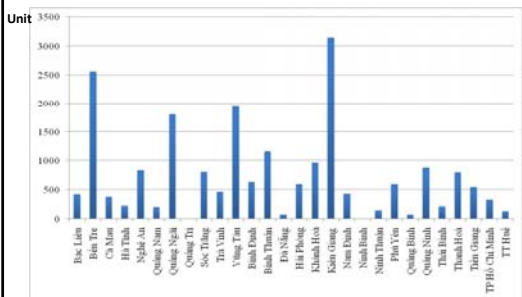
Food and Agriculture Organization of the United Nations

Vietnam Directorate of Fisheries

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Strategies for trawl fisheries bycatch management (REBYC-II CTI)

Total number of trawlers



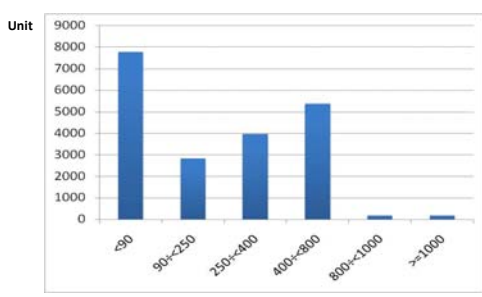
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Strategies for trawl fisheries bycatch management (REBYC-II CTI)

Fleet structure



Food and Agriculture Organization of the United Nations


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(REBYC-II CTI)

2. Constraints related to trawl fishery


- Over capacity/backward/small scale
- Fishery resources decreased
- High proportion of juvenile fish in catch
- Lack of labor force/weak management of the fishing crew
- Insufficient information needed for policy decision maker
- Weak inforcement



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Vietnam Directorate of Fisheries
Strategies for trawl fisheries bycatch management
(REBYC-II CTI)

2. Constraints related to trawl fishery (cont.)

- High pressure on incomes/livelihoods
- Increasing demand on seafood/fishmeal
- Increasing conflicts among/within resources users
- Weak cooperation among relevant stakeholders
- Poor involvement of private sector, NGO, associations in fisheries management




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Strategies for trawl fisheries bycatch management
(REBYC-II CTI)

3. Legal framework

At central government:

- Fishery law (2003)
- Circular No 02/2006/TT-BTS
- Decree N0 33/2010/NĐ-CP
- Decree No 53/2012/NĐ-CP
- Circular No 25/2013/TT-BNNPTNT
- Legal document No 9443/BNN-TCTS
- Circular No 89/2011/TT-BNNPTNT



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Strategies for trawl fisheries bycatch management
(REBYC-II CTI)

3. Legal framework

At local government (examples):

- Trawl fisheries management plan (Kien Giang, Binh Thuan)
- Closed seasons
- freezing number of trawlers, meshsize, species, fishsize, closed areas/seasons,....)




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Strategies for trawl fisheries bycatch management
(REBYC-II CTI)

4. Orientation

- Toward achievement the responsible/sustainable ca fishery
- Mitigate post harvest losses, improve economically catch/landing value
- Promote good practices in fishing industry
- Promote the partnerships in fisheries management/production
- Mitigate destructive fishing gears/negative impacts on ecosystems




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Vietnam Directorate of Fisheries
Strategies for trawl fisheries bycatch management
(REBYC-II CTI)

4. Orientation

- Decision No1960/QĐ-TTg dated 16th September 2010 regarding Strategy for fishery sector development;
- Decision No1445/QĐ-TTg dated 16th August 2013 regarding the national master plan for fishery sector to 2020;
- Decision No 375/QĐ-TTg dated 1st March 2013 regarding to reorganize the capture fishery;
- Decision No 787/QĐ-BNN-TCTS dated 21st April 2014 regarding National Plan of Action on managing fishing capacity;
- Legal document No 9443/BNN-TCTS dated 18th November 2015 regarding to enhancing fisheries management in Viet Nam water.

THANK YOU VERY MUCH!


Annexure 4J



SEAFDEC Policy
Related to
Trawl Fisheries Management

Isara Chanrachkij

Regional Facilitation Unit (RFU)
Southeast Asian Fisheries Development Center / Training Department



Content of presentation

- SEAFDEC Background
- SEAFDEC Plan of Action
- IFCOME Network

SEAFDEC/Training Department www.seafdec.or.th

SEAFDEC Background

What SEAFDEC does?


Mandate

“to develop and manage the fisheries potential of the region by rational utilization of the resources for providing food security and safety to the people and alleviating poverty through transfer of new technologies, research and information dissemination activities”.

(endorsed by the 41st Meeting of the SEAFDEC Council)

Reference Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020

<http://www.seafdec.org/documents/ref02-4.pdf>



SEAFDEC/Training Department www.seafdec.or.th

SEAFDEC Background


What SEAFDEC does?

Objective

1. To promote rational and sustainable use of fisheries resources in the region
2. To enhance the capability of fisheries sector to address emerging international issues and for greater access to international trade
3. To alleviate poverty among the Fisheries communities in Southeast Asia
4. To enhance the contribution of fisheries to food security and livelihood in the region

Reference Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020

<http://www.seafdec.org/documents/ref02-4.pdf>



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SEAFDEC Plan of Action

The Senior Officials adopted in **ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment** in Bangkok, Thailand on 16 June 2011 on the following Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 to be used as a guideline to develop programs, projects and activities for the implementation of the Resolution.

- A. PLANNING AND INFORMATION
- B. FISHERIES MANAGEMENT
 - A. MARINE FISHERIES
 - B. INLAND FISHERIES
- C. AQUACULTURE
- D. OPTIMAL UTILISATION OF FISH AND FISHERY PRODUCTS
- E. FISH TRADE
- F. REGIONAL AND INTERNATIONAL POLICY FORMULATION

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SEAFDEC Plan of Action

A. PLANNING AND INFORMATION

- Strengthen the capacity to integrate the planning of marine capture fisheries, inland capture fisheries and the aquaculture sub-sectors to promote the sustainable development of the fisheries sector, including harvesting and post-harvest in both capture fisheries and aquaculture
- Strengthen national statistical mechanisms for fisheries and aquaculture and the exchange of statistical data
- Enhance regional fishery information systems and mechanisms to facilitate sharing, exchange and compilation of statistics and information that are required at the sub-regional and regional level

Enhancing compilation and utilization of fishery statistics & information

Shark Tuna Small Pelagic Species Swimming crab and etc.


RPOA Fishing Capacity

Supporting the Establishment of trans-boundary and regional agreements on habitat and

Fishing Vessel Record


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SEAFDEC Plan of Action



B. FISHERIES MANAGEMENT

- Accelerate the development of fisheries management plans based on an ecosystem approach, as a basis for fisheries conservation and management
- Take measures to prevent unauthorized fishing and eliminate the use of illegal fishing practices by building awareness of their adverse impacts, strengthening law enforcement, developing and promoting responsible and selective fishing gears and practices, enforcing regulations and encouraging alternative means of livelihoods;
- Increase the efficient use of the alternative energy sources and reduce the use of carbon fossil energy;
- Adopt co-management at all levels and with all relevant stakeholders in the process of planning and policy formulation for management, conservation and rehabilitation of habitats and protective geographical features



The role of women and youth in fisheries

Combating IUU Fishing

Co Management

EAFM


Energy Audit

Responsible fishing & practices

REBYC-II CTI


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SEAFDEC Plan of Action



B. FISHERIES MANAGEMENT: Marine Fisheries

- Strengthen regional and national policy to implement measures and activities to combat IUU fishing
- Build up capacity, including functions for regional and sub-regional cooperation, to effectively meet the requirements of PSM and Flag State responsibilities;
- Conduct research on the impacts of various gear types and methods on ecosystems and populations of aquatic animals, fishing vessel discharges and waste disposal on marine ecosystems, to promote the use of selective fishing gears and sustainable devices;
- Refer the FAO International Guidelines on Managing By-catch and Reducing Discards to find solutions to ASEAN by-catch problems, including the excessive catch of juvenile fish;
- Ensure the inclusion of fisheries objectives in the management plans of future Marine Protected Areas (MPAs) and promote the adoption and use of Fisheries Refugia in Capture Fisheries Management



Combating IUU Fishing

PSM

Fisheries resources survey


Bycatch management REBYC-II CTI

Zoning management Fisheries Refugia

Optimizing Energy Use and Improving Safety in Fishing Activities

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SEAFDEC Plan of Action



C. AQUACULTURE

- Develop and implement ASEAN guidelines for environment-friendly and responsible aquaculture and good aquaculture practices include development of product traceability systems from farm to market
- Improve the efficient use of aquatic feeds and support continued research for developing suitable alternative protein sources that will reduce the dependence on fish meal and other fish-based products.


Sustainable Aquaculture Practice

Product traceability systems from farm to market

Improvement of aquatic feeds

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SEAFDEC Plan of Action



D. OPTIMAL UTILISATION OF FISH AND FISHERY PRODUCTS


- Development and application of technologies that optimize the utilization of catches, reduce post-harvest losses, wastes and discards in commercial and small-scale fisheries and processing operations, through improved processing, facilities and infrastructure development, on-board and on-shore handling, storage, distribution and marketing of fish and fishery products;
- Develop traceability systems, with mechanisms as needed to certify or validate the information, for the whole supply chain, and establish regulations and enforcement schemes in line with international standards. Align Member Countries' inspection systems and incorporate strengthened port inspections in the process as a means to improve inspection systems;
- Promote and conduct training programs and develop training materials to upgrade the technical skills and competencies of personnel in the public and private sectors on fisheries post-harvest technology and food safety management system

Improvement of Post-harvest Fish Handling at sea

traceability systems ACDS and CDT

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IFCOME Network




Regional Network for the Reduction of the Impact of Fishing in Coastal and Marine Environments in Southeast Asia Waters

IFCOME Network has proposed as scientific platform for;

- Facilitate sharing and dissemination of information on programs and initiatives related to the reduction of the impact of fishing
- Monitor the developments to be used as basis in improving the design of fishing gears and promotion of responsible fishing practices

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IFCOME Network



Regional Network for the Reduction of the Impact of Fishing in Coastal and Marine Environments in Southeast Asia Waters

Role of the IFCOME Network:

- Improving the current fishing technology to reduce the impacts from fishing activities
- Enhancing inter-agency and inter-sectoral coordination at the national, regional and international levels for achieving sustainable fisheries management and development in the Southeast Asian region through proper development of fishing gear technologies and practices;
- Strengthening regional cooperation on R&D, technology transfer, and resources capacity building on the issues related to reduction of impact of fishing practices; and
- Widening the network of people, government, organizations for reducing the impact of fishing practices to the coastal and marine environments

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Member of IFCOME Network

Countries	Name	Title
Brunei Darussalam	Matzainin Haji Juna	Review on the national initiatives related to the reduction of impacts of fishing gear and practices on coastal and marine environment (JTED-Zone)
Cambodia	Monirith, Kao	Reduction of the impacts of fishing gears in coastal and marine environments in Cambodian Waters
Indonesia	Zainudin, Imam Musthofa	Indonesia on reducing sea turtle by-catch: A progress update (2005-2008). (JTED)
	Zarochman	Tidal traps: their distribution and impacts on fishing in coastal waters and marine environment in Indonesia
Japan	Arimoto, Takafumi.	Resource conservation and management in tropical areas
Malaysia	Abdullah, Syed	Overview on fishing activities in the inter-nesting habitat of sea turtles in Southeast Asia
	Ali, Rosidi	Review of some initiatives/programs related to reduction of impacts of fishing gears and practices on coastal and marine environments in Malaysian waters. (Puket Buaya)
Myanmar	Aye, Khin Maung	Reduction of the impacts of fishing gear in coastal and marine environment in Myanmar (Trawl-BRD)

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Member of IFCOME Network

Countries	Name	Title
Philippines	Dickson, Jonathan	Preliminary report on the assessment of the interaction between sea turtles and fisheries in the Philippines (Management Plan)
Thailand-DOF	Awaiwanont, Kamonpan	Anchovy and squid light fishing in Thailand (Purse seine)
Thailand-DMCR	Kittiwattanawong, Kongkiat.	Fisheries interaction with sea turtles in Thailand (Bamboo tidal trap)
	Thubthimsang, Wannakiat	Value of habitats in the Gulf of Thailand to fisheries.
Thailand-KU	Mekumpun Shetapong	Impact of fishing gear on bio-resources and coastal environment of Thailand
Viet Nam	Hung, Pham	Reduction of the impact of fishing gear in coastal and marine environment in Vietnam
SEAFDEC	Munprasit, Aussanee.	Set-net fishing technology transfer for sustainable coastal fisheries management in Southeast Asia (Set net)
SEAFDEC	Chanrachkij Isara	Sea turtle mortality risk from Drifting Fish Aggregating Devices (Purse seine)
SEAFDEC	Wanchana, Worawit	Attitude of fishers on the impacts of their fishing gear and practices: a case study in collapsible crab trap

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RESULTS AND RECOMMENDATIONS FORM THE ROUND TABLE CONFERENCE OF 21 SEP 2016

1.What are the current constraints of trawl fisheries in SE Asia

1.What are the current constraints of trawl fisheries in SE Asia

- Multiple and often conflicting objectives in trawl fisheries
- Negative perception of the fishery due to inadequate studies and misinformation
- Poor orientation perception of human values
- Over fishing/ Over capacity/Ineffective/inefficient fisheries
- Low value catch(thrash fish) coupled with high demand for fishmeal/ feed
- Weak enforcement and poor compliance with management measures
- Fish trawl and shrimp trawl are not separately specified in registrations

1.What are the current constraints of trawl fisheries in SE Asia

- Limited fishing grounds limited by stringent regulations
- Conflict among people who benefit from fisheries
- Inequity in use of fishing fleet in common waters by different countries

1.What are the current constraints of trawl fisheries in SE Asia

- Many livelihoods highly dependent on trawl fisheries
- Weak cooperative organizations among fishers/poor collaboration between relevant stakeholders
- Data collection and scientific data inadequate
- Less/ineffective traceability
- Problems related to labour issues in trawl industry in SE Asia
- Lack of capacity/ technical support

2.Suggestions on managing sustainable trawl fisheries

2.Suggestions on managing sustainable trawl fisheries

- Apply EAFM and implement appropriate management plan through co management and community based management .
- Improved control of fishing efforts(Closed seasons/ areas- Input control/zonation)
- Strengthen MCS including VMS system
- Managing licenses of trawl, with specific trawl management (shrimp or fish)
- Set number of licenses that can be issued to ensure fishing effort maintains sustainable fishing

2.Suggestions on managing sustainable trawl fisheries

- Recognize the critical habitat that should be avoided in fishing activities, as well as set the map of fishing;
- Promote fishing gear that can have minimum environmental impact
- Shift to other gears and promote good practices
- Capacity building /sensitizing private sector/practitioners on sustainable practices including the younger generation

2.Suggestions on managing sustainable trawl fisheries

- Promote alternate livelihoods/ Collaborate with other sectors
- Improve post harvest handling practices
- Awareness raising on market driven approach
- Decentralisation /FA
- Strengthen stock assessment

- Catch documentation scheme
- Regional cooperation and knowledge sharing

3.How the private sector can contribute to the effective management of trawl fisheries

3.How the private sector can contribute to the effective management of trawl fisheries

- Involve in development of management plan and implementation and develop sense of ownership
- Be part of and apply Co-management
- Compliance to regulations / responsible fisheries
- Fulfill Log-book and actively respond to the information of catch (non-target, discard)/Participate / cooperate in data collection and M&E

3.How the private sector can contribute to the effective management of trawl fisheries

- Promote market driven approach that buy from good practices
- Incentives to develop sustainable fisheries
- Apply traceability
- Fund contribution

4. What should be the role of the regional and international organizations

4. What should be the role of the regional and international organizations

- Technical support and capacity building-
 - Stock assessment , understanding impact on ecosystems, gear modifications, fish handling etc.
- Monitoring the progress the work
- Scientific research collaboration.
- Common trawler guidelines-awareness raising and update the existing guidelines as required
- Fund raising
- Functional regional forum/ platform/Regional facilitation / coordination/networking
- Training programme to younger generation

4. What should be the role of the regional and international organizations

- Communication channel to global developments
- Data repository
- Certification
- Developing standard fishing gear (bottom trawl) for demersal fish in contiguous area.

Thank you

Meeting the global demand on fish meal



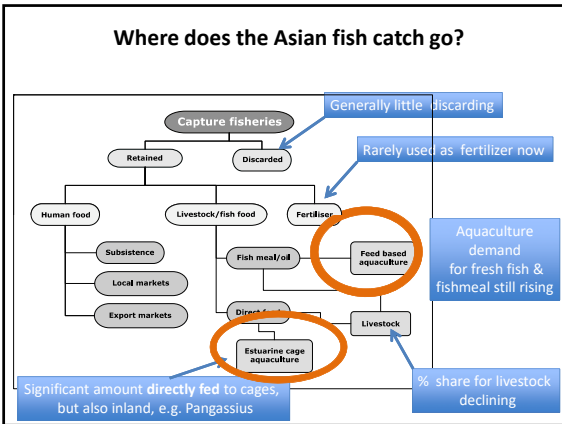
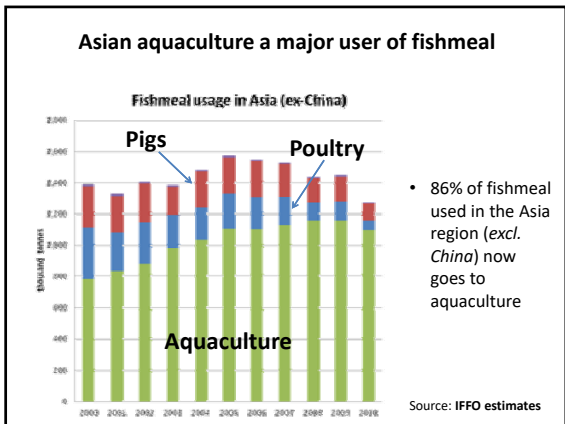
Marine capture fisheries as a source of food for aquaculture in the Asian region



Simon Funge-Smith



How much marine fishery catch is directed to aquaculture?

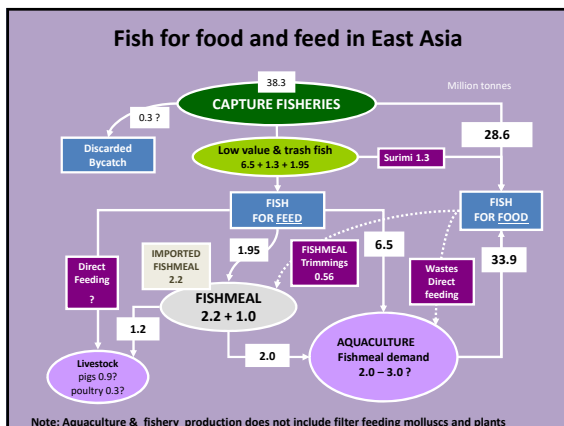

How to meet the growing demand on fish meal?



High demand for low-value fish and fish meal

- Catch of low-value/trash fish has become important for livelihoods as primary species have declined.
- Demand of fishmeal in aquaculture around 2-3 mil. tonnes in East Asia.
 - Equivalent to about 7-12 mil. tonnes of low value/trash fish.
- Production of low-value/trash fish estimated at >8.3 mil. tonnes in East Asia.
- Large part of low-value/trash fish comes from the coastal trawl fishery.
 - Currently typically 40 - 60% of trawl total catch
 - There are also other fisheries that produce trash fish!
- High demand keeps fishing operations profitable enough despite negative impacts and low catch per unit effort.

Key numbers

- About 6.5 million tonnes of capture fishery catch is used for direct feeding to aquaculture
 - marine fish, crabs, lobster
- About 1.94 million tonnes directed to fishmeal
 - 1.1 million tonnes produced in Asia
 - about 56% from trimmings
 - 2.18 million tonnes imported
 - 3.2 million tonnes fishmeal available
- Fishmeal** demand for aquaculture is around 2 – 3 million tonnes

Fishmeal production in Southeast & East Asia

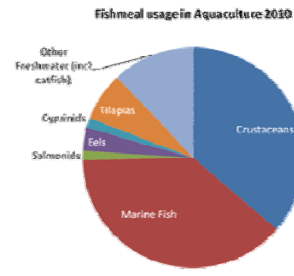
- 988,000 tonnes
- Thailand, Japan and China major fishmeal producers
- More than half from processing wastes?

Country	Fishmeal Production (Thousand tonnes)	
	Total Fishmeal	Fishmeal from Process waste
Thailand	468	278
Japan	203	192
China	141	10
Korea RO	50	10
Vietnam	46	26
Malaysia	44	19
Taiwan POC	18	13
Indonesia	15	5
Cambodia	3	2
Total (region)	988	555 (56%)
Total world	4,818	1,196

Source: IFFO 2008 compiled data from IFFO members, FAO and Oilworld

What species are using this fishmeal?

- Marine finfish fed pellet feeds
- Crustaceans fed pellet feeds
- Tilapia, Cyprinids fed pellet feeds
- Pangassius Catfish?
- Chinese & Indian carp
 - any fishmeal in diets?



Source: IFFO estimates

Competition for human food

- Fish prices globally set to rise
- Global fish demand set to rise
 - Incentivizes more innovative use of fish
- Decreasing catch of low value/trash fish?
 - Linked also to rising trend in surimi production
 - Increased icing/preservation of the low value catch
 - Innovative use of small bony demersal fish
- In the future there is less fish for fish meal in Asia



Some Asian fisheries becoming "low value/trash fish" fisheries



- Fishing directed to supply aquaculture with feeds
 - Declining investment in fisheries management
 - Reluctance to make hard management decisions
- Policy & perverse subsidies
 - Aquaculture promotion (low taxes, limited environmental regulation)
 - Fuel costs subsidized - trawling for lower value catch
 - Aquaculture is not paying the 'real price' for its feeds

Some final thoughts

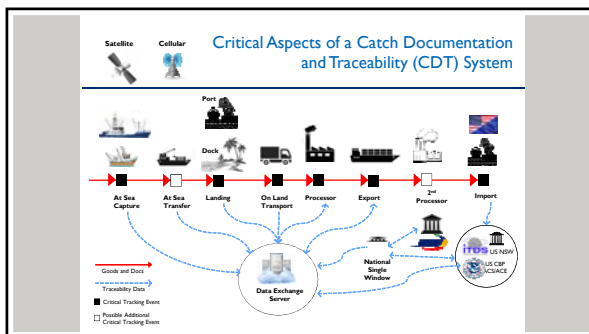
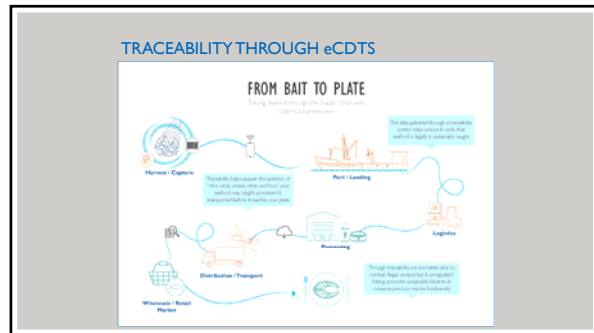
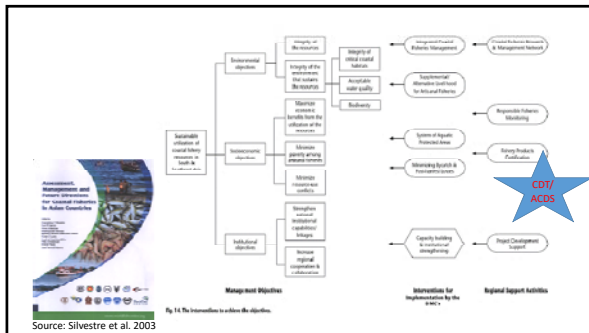
- Sustainability of the current capture of low value/trash fish
- Declining CPUE – overfishing
- Value per kg very low
- Current situation does not give much incentives for good quality
- Fishmeal supplies will continue to tighten
 - Cost for aquaculture will rise
- Increasing scrutiny of sources of fishmeal
 - Aquaculture export commodities
 - Feeds will have to meet expectations
 - Most likely to be able to afford only at higher priced alternatives



Thank you

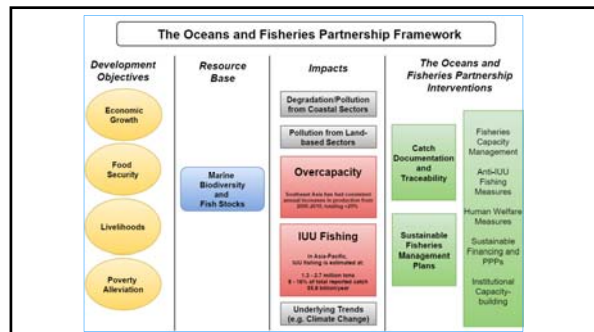


REBYC-II CTI Inception Workshop in April 2012 in Bangkok



POINT OF CATCH KEY DATA ELEMENTS

Key Data Element (KDE)	Present Based on Legal and Technical (Wild Fish Potential)	Required US Wild Harvest	Required IUU	ACDS	USAID Oceans Recommended (Minimum KDEs)
Quantity (catch/effort)		+	+	+	+
Common market name		+	+	+	+
US FIC or product code		+	+	+	+
Estimated weight		+	+	+	+
Estimated length/sexes (quantity)		+	+	+	+
Location of catch		+	+	+	+
Catch description			+	+	+
Date of observation		+	+	+	+
Date & time of catch		+	+	+	+
Date of landing		+	+	+	+
Type of gear/fishing		+	+	+	+
Name of captain/master			+	+	+
Identification of vessel/catch		+	+	+	+
Company name			+	+	+
Official vessel name		+	+	+	+
Address & contact			+	+	+
Name of vessel		+	+	+	+
Registration number		+	+	+	+
Call sign # (if available)		+	+	+	+
Observer name		+	+	+	+
Observer #		+	+	+	+
Date taken off vessel		+	+	+	+
Date, time, location of trans-shipment		+	+	+	+
Log #			+	+	+
Identification of re-shipment		+	+	+	+
Call sign # (if available)			+	+	+



Annexure 6C

Optimizing Energy Use in Fisheries in Southeast Asian Region : FISHING VESSEL ENERGY AUDITS

Bundit Chokesanguan
SEAFDEC



NUMBER OF FISHING VESSEL LESS THAN 24 METERS IN LENGTH

Country	2011	2012	2014
Brunei	2,476	2,525	
Cambodia	6,596	6,742	5,382 (2014)
Indonesia	569,105	-	~500,000
Lao PDR	1,615	-	
Malaysia	49,673	54,169	55,208
Myanmar	30,900	29,685	28,259
Philippine	472,804	472,804	478,475
Singapore	36	36	157 (Include fish carriers)
Thailand	33,050 fishing vessel registration record	39,995 fishing vessel registration record	16,423 (2013) No. of fishing gear license record
Viet Nam	127,700	122,812	113,280

NUMBER OF FISHING VESSEL 24 METERS IN LENGTH AND OVER

Country	2011	2012	2014
Brunei	4	4	3
Cambodia	Nil	Nil	Nil
Indonesia	1,722	-	-
Lao PDR	Nil	Nil	Nil
Malaysia	83	66	140
Myanmar	665	664	664
Philippine	596	596	1,001
Singapore	Nil	Nil	Nil
Thailand	865	747	219
Viet Nam	300	313	445

ESTIMATE NUMBER OF FISHING VESSELS IN SOUTHEAST ASIA (2012)

Country	Total	Non-powered boat	Powered boat
Brunei Darussalam	2,627	98	2,529
Cambodia	No Data	No Data	No Data
Indonesia	616,690	172,333	444,357
Malaysia	54,235	2,998	51,237
Myanmar	30,349	15,463	14,886
Philippines	No Data	No Data	No Data
Singapore	4	-	4
Thailand	18,089	-	18,089
Viet Nam	27,988	Unidentified	Unidentified
Grand Total	749,982	190,892	531,102

Reference : Fishery Statistical Bulletin of Southeast Asia 2012

- ### CURRENT SITUATION AND COMMON PROBLEMS ON ENERGY SAVING IN SOUTHEAST ASIA FOR SMALL FISHING BOATS
- Lack of information, knowledge and technology on energy saving/boats and engines/others.
 - Less access to assistance from naval architects, engine supplies and others than do owners and operators of larger boats.
 - Cost of fuels and poor fish resources.
 - Fishermen behaviors and attitudes for energy saving.

THE FISH RESOURCE

Sustainable fishing means preventing overfishing so that the fish resource will sustain high catches for generations

Good fish resource
The catch per trip is high. Time is not lost and fuel is not consumed searching for fish.
1 tonne of fish 200 litres of diesel

Poor fish resource
The catch per trip is low. Time is spent and fuel is used to search for fish.
1 tonne of fish 400 litres of diesel

FUEL USE – PASSIVE FISHING METHODS

Fuel use – gillnetter or longliner
Most fuel is used to travel to and from fishing grounds. The setting and hauling of passive fishing gear can be done with Human power or low engine power with mechanical or hydraulic haulers.

To save fuel

1. Reduce service speed.
2. Keep the hull free from fouling.
3. Use high gear reduction and an efficient propeller.
4. Changeover from a petrol outboard engine to a diesel engine.

FUEL USE – TROLLING

Fuel is used both for traveling and for fishing.

To save fuel

1. Change over to a diesel engine.
2. Reduce service speed (except when fishing for tuna which require high speed).
3. Keep the hull free from fouling.
4. Install a high gear reduction and large diameter propeller.

FUEL USE – PURSE SEINING

Most fuel is used going to and from fishing grounds and searching for fish.

To save fuel

1. Reduce service speed.
2. Install advanced fish-finding equipment.
3. Keep the hull free from fouling.
4. Install a high gear reduction and large diameter propeller.

FUEL USE – TRAWLING

Trawling requires high engine power. Reduction power going to and from fishing grounds saves fuel.

To save fuel


1. Modify the trawl and trawl boards.
2. Install the highest gear reduction available and a large diameter propeller with a propeller nozzle (depending on stern aperture).
3. Install advanced fish-finding equipment.
4. Consider a changeover in fishing method to pair trawling or Danish seining

WAYS AND MEANS OF REDUCING THE USE OF FOSSIL FUEL IN FISHERIES

- Hull design
- Engine power and operation range
- Engine design
- Engine operation and maintenance
- Modification of fishing gear and methods
- Improvement of fish handling and post-harvest technology onboard fishing boats (Minimizing the fuel consumption for refrigeration/auxiliary engine through good fish handling processes and presentation)

WAYS AND MEANS OF REDUCING THE USE OF FOSSIL FUEL IN FISHERIES

- Alternative fuel use
 - LPG
 - LNG
 - CNG
 - Ethanol
 - Hydrogen
- Alternative energy use
 - Wind
 - Solar
 - Wave Energy



FAO-SEAFDEC/TD ENERGY AUDITS PROJECT FOR THAI TRAWLERS (PHASE II)

Bundit Chokesanguan
SEAFDEC



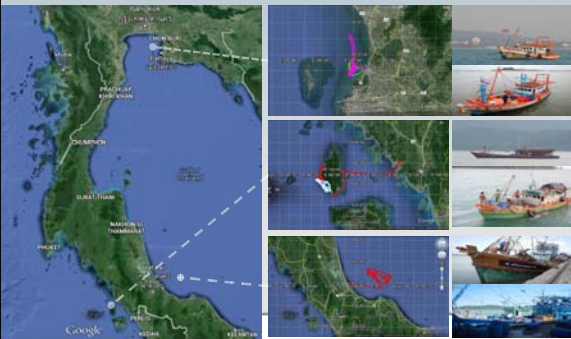
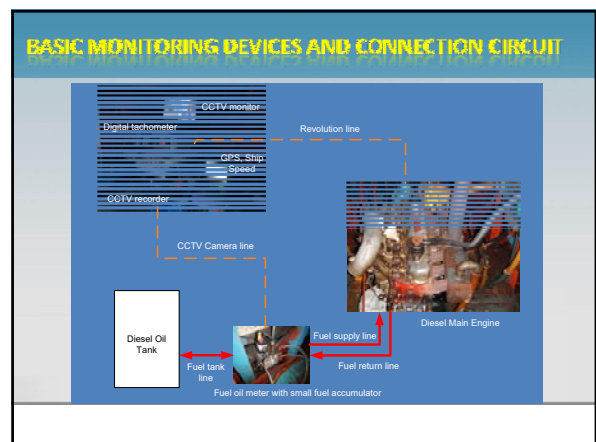
OBJECTIVES

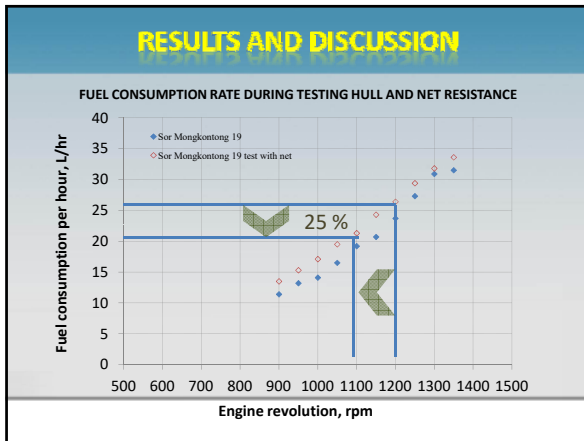
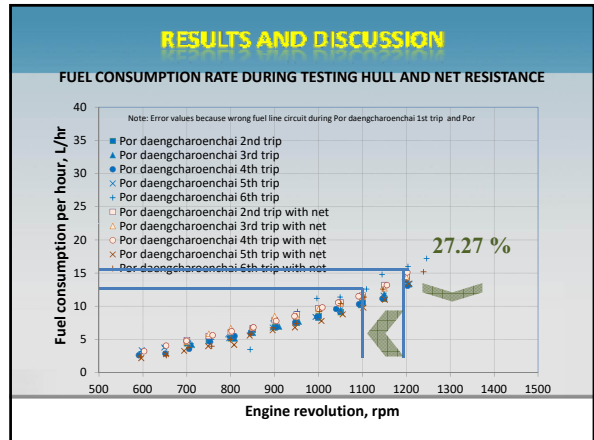
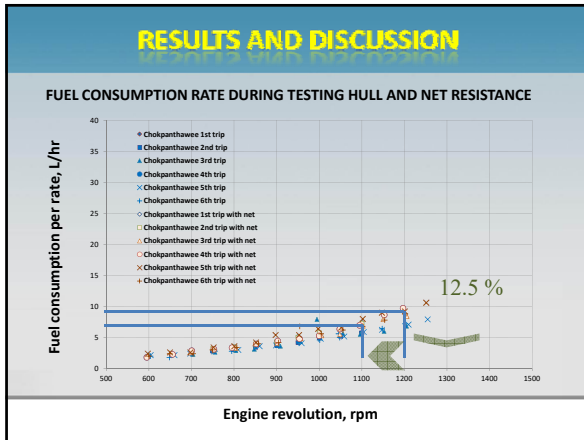
- To apply energy audit process for characterizing fuel consumption pattern of Thai trawlers through six representative local trawl fishing vessels in both Gulf of Thailand and Andaman Sea
- To investigate optimum fuel consumption condition of trawl fishing boats for minimizing fuel cost and green house gas emission delivered from fishing activities that impacting global warming
- To disseminate energy audits results and techniques to local fishermen on how to reduce fuel consumption through measurement process and identifying optimum condition over their engine

METHODOLOGY

- LOA < 14 m, 14 m < LOA < 18 m, and LOA > 18 m
- Navigation, fuel flow meter, tachometer
- Sea trial test, Sea trail test with net, practical operation
- Characterize achieved data after field trip
- Unloaded catches and generated income

THREE FISHING GROUNDS IN BOTH GULF OF THAILAND AND ANDAMAN SEA



RESULTS AND DISCUSSION

Increase engine revolution (rpm) pay more fuel cost

	Fuel cost THB/d	% increased	THB/d	THB/yr
Small trawler	2,000	12.5%	250.0	50,000.00
	Fuel cost THB/trip	% increased	THB/trip	
Medium trawler	69,127	27.3%	18,850.9	
	Fuel cost THB/trip	% increased	THB/trip	
Large trawler	244,836	25.0%	61,209.0	

RESULTS AND DISCUSSION

Towing without trawl net in water

Towing with trawl net in water

Fuel consumption rate

Engine rpm

Engine performance



Total catch from W. Yincharoen, S. Charoenchai 1 and Chokchanapol



Result dissemination seminar in Satun



CONCLUSION

Reduce engine revolution contribute to decrease fuel consumption rate

Fuel consumption rate depend on engine performance

Bad cooling efficiency can drop engine performance and increase fuel consumption rate

Keep good condition of engine to maintain efficient fuel used

**Thank you for
your attention**



ALTERNATIVE FISHING GEAR FOR SHRIMP FISHERIES

Capture Fisheries Technology Division
SEAFDEC/TD

Reference book;
Fishing gear and Method in Southeast Asia



Brunei : 2007
Cambodia : 2007
Indonesia : 2013
Malaysia : 1989, 2002 (revise)
Myanmar : implementing
Philippines :2003-2004
Thailand : 1986, 2004 (revise)
Vietnam : 2002

Type of Fishing gear for Shrimp Fisheries

Fishing gear	Type	Vessel			Location	Country
		LOA	GT	HP		
Gill net	Trammel net	6	<2	60	Mura, Tamburong	Brunei
		7-13.7		5-23	Jayapura ,Central of Java , Sorong Southeast Sulawesi East of Java	Indonesia
		11-12		7-24	Koh Scach, Koh kong	Cambodia
		4.5-14		6-24	Talok Bahang, Pinang, Salangor Pasir Penabang, Pontian Kechil, Johor	Malaysia
		12		13-18	Stilwe	Myanmar
		9-10		6-16	Ban Thungmaha, Chumphon Thasala, Nakhon si Thammarat Bangsaen, Chon Buri	Thailand
		9 -11.3		15	Quang Ha, Quang Ninh, Cat Ba, Hai Phong, Do Son	Vietnam
	Encycling net	6.3	3	6	North Sumatra	Indonesia

Type of Fishing gear for Shrimp Fisheries

Fishing gear	Type	Vessel			Location	Country
		LOA	GT	HP		
Gill net	Bottom set	4.8-8.7	3	6-12	North Sumatra, East of Java	Indonesia
		6		9.9	Sungai Udang, Pinang	Malaysia
		6-7		10	Samar, Quezon	Philippines
		5			Shanok Ville	Cambodia
Trap	Shrimp trap	6	<2	30	Temburong	Brunei
		Bamboo raft			Paratong Norte, Bangar La Union Binan Laguna	Philippines
	Stake trap	5.45	2	12	North of sumatra	Indonesia
		3-5		4	Samut Sakhon, Samut Sakhon, Krabi	Thailand
	Fyke net	7-13.8	2-5	12-20	North of Sumatra, Bengkalis, Kundur West of Kalimantan, Karimun	Indonesia
		7-14		6-24	Parit Jawa, Johor, Kuala Sugai Ayam Kg. Tinagat, Tawau, Sabah, Maludum Sarawak, Sungai Janggut, Selangor	Malaysia

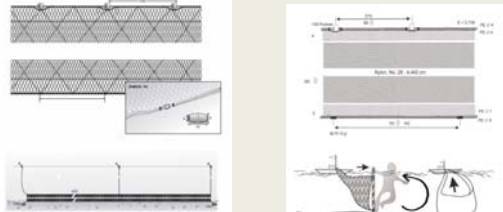
Type of Fishing gear for Shrimp Fisheries

Fishing gear	Type	Vessel			Location	Country
		LOA	GT	HP		
Trap	Fyke net	6-10		4-12	Ban Khogkhai, Phangnga, Songkhla	Thailand
		6.5-8		6-12	Ly Hoa, Quang Binh, Yhuan An, Thua Thien-Hue, Nghia Hung, Nam Dinh Koh kong	Vietnam Cambodia
	Stow net	10.4		15	Gia Lai, Bac Lieu	Vietnam
	Barrier	4		8	North of Sumatra	Indonesia
Lift Net	Shrimp lift net	4.5			Camarines Sur	Philippines
	stationary lift net				Pak Nakhon, Nakhon si Tammarat	Thailand
Seine net	Shrimp seine	5			Yan, Kedan	Malaysia
	Boat seine	5			Pontian Kechil , Johor	Malaysia

Gill net

Gill net	Vessel	Location
Trammel net	LOA :6 GT : <2 HP : 60	Mura Tamburong Brunei

Gill net	Vessel	Location
Encycling net	LOA :6.3 GT : 3 HP : 6	North Sumatra Indonesia



Gill net(2)

Gill net	Vessel	Location
Bottom set	LOA :4.8 GT :3 HP :6	North Sumatra Indonesia

Gill net	Vessel	Location
Bottom set	LOA :8.7 GT :- HP :12	East of Java Indonesia

Gill net(3)

Gill net	Vessel	Location
Trammel net	LOA :9 GT :- HP :22	Jayapura Indonesia

Gill net	Vessel	Location
Trammel net	LOA :7 GT :- HP :16	Central of Java Indonesia

Gill net(4)

Gill net	Vessel	Location
Trammel net	LOA :13.7 GT :14 HP :23	East of Java Indonesia

Gill net	Vessel	Location
Trammel net	LOA :12 GT :- HP :13-18	Stilwe Myanmar

Gill net(5)

Gill net	Vessel	Location
Trammel net	LOA :9.2 GT :- HP :15	Quang Ha, Quang Ninh Vietnam

Gill net	Vessel	Location
Trammel net	LOA :10 GT :- HP :6	Ban Thungmaha, Chumphon Thailand

Trap

Trap	Vessel	Location
Barrier	LOA :4 GT :- HP :8	North of Sumatra Indonesia

Trap	Vessel	Location
Shrimp trap	LOA :6 GT :<2 HP :30	Temburong Brunei

Trap (2)

Trap	Vessel	Location
Fyke net	LOA :7.6 GT :3 HP :12	North of Sumatra Indonesia

Trap (3)

Trap	Vessel	Location
Fyke net	LOA : 7.5 GT : - HP : 16	West of Kalimantan Indonesia

Trap (4)

Trap	Vessel	Location
Fyke net	LOA : 6.5 GT : - HP : 12	Ly Hoa, Quang Binh Vietnam

Trap	Vessel	Location
Stow net	LOA : 10.4 GT : - HP : 15	Gia Lai, Bac Lieu Vietnam

Trap (5)

Trap	Vessel	Location
Wing Fyke net	LOA : 6 GT : - HP : 4	Ban KhoKhai, Phangnga Thailand

Trap	Vessel	Location
Wing Fyke net	LOA : 10 GT : - HP : 10	Songkhla Thailand

Lift net

Lift net	Vessel	Location
Wing Fyke net	LOA : - GT : - HP : -	Pak Nakhon, Nakhon si Tammarat Thailand

Seine net

Seine net	Vessel	Location
Shrimp seine	LOA : 5 GT : - HP : 12	Yan, Kedan Malaysia

Seine net	Vessel	Location
Boat seine	LOA : 5 GT : - HP : -	Pontian Kechil Johor Malaysia

ALTERNATIVE FISHING GEARS FOR SHRIMP FISHERIES

BY

ROSIDI ALI



Introduction

- Extracted from the Concept of Responsible Fisheries, the Responsible Fishing could be understand as;
The use of capture practice that are not harmful to eco-system, resources and their quality
- The fundamental objective of the responsible fishing is to maximize returns to the operators with minimum affect on fish populations and the environment

Nature of Shrimp Fisheries in SEA region

- Issues in shrimp fisheries are complexes
- Shrimps belong to many species, some are very small
- Most species inhabit in coastal areas, which also high abundant of juveniles of many commercial fish.
- Various types of fishing gear have been employed, most are non-selective (high composition of juveniles and non target species)
- Some gears are harmful to ETP species and ecosystems

RESPONSBLE FISHING

The ethics of Responsible Fishing have been elaborated in the article 8 (Fishing Operation) in the CCRF especially article 8.4.

State should promote the adoption of **appropriate technology**, taking into account economic conditions, for the best use and care of the retained catch (article 8.4.4)



States should ensure that **assessment of implication of habitat disturbance** are carried out prior to the introduction on commercial scale of **new fishing gear**, methods and operations to an area (article 8.4.7)

Research on the environmental and social impacts of fishing gear and, in particular, on impact of such gear on biodiversity and coastal fishing communities should be promoted (article 8.4.8)

MAJOR ISSUES IN PROMOTION AND IMPLEMENTATION RESPONSBLE FISHING IN THE SOUTHEAST ASIAN REGION

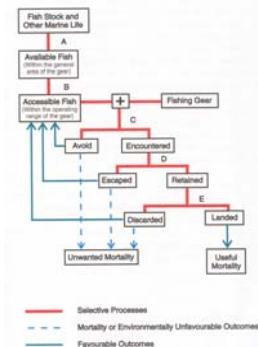
The ASEAN-SEAFDEC Conference on Sustainable Fisheries For Food Security held in Bangkok in 2001 has identified **two major issues** to be initially addressed in order to promote and implement Responsible Fishing in the Southeast Asian Region:

1. The use of illegal and destructive fishing gears and practices such as blast fishing and cyanide poisoning.
2. The use of non selective fishing gears such as push net and trawl net

Introduction

- Fishing selectivity can be defined as the ability to target and capture fish by species, size or sex (or combination of these) during harvesting operations, allowing all incidental by-catch to be released unharmed.
- Three types
 1. Species selectivity
 2. Size selectivity
 3. Sex selectivity

The Process of Fishing Gear Selectivity



Improve Selectivity Through Technology and Management

No.	Type of Selection	Management approach/ measures (eg)
1	Spatial selection	Close area, zoning
2	Temporal selection	Close season, fish refugia
3	Behavioral selection	Fishing mode, herding device, bait
4	Mechanical selection	Selectivity devices, mesh size, hook size
5	Human selection	Size limit, species prohibition, catch quota

The what and why of an Ecosystem Approach to Fisheries Management (EAFM)










The future we want: our vision



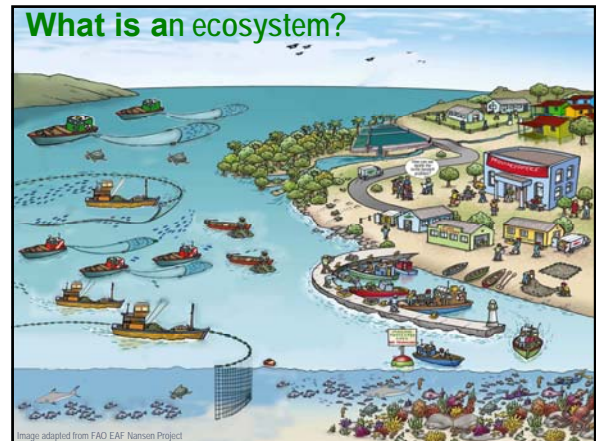
- Well-governed fisheries sector
- Abundant and sustainable fisheries resources
- Healthy environment and habitats
- Increased jobs, profits, and improved economy
- Improved human health and prosperity

A legacy for you, your children, and future generations

Threats and issues



- Fisheries face many threats and issues that constrain us from achieving this vision
- In the past, fisheries management tended to ignore the fact that many issues are interlinked
- There is a need to holistically address all the issues impacting and/or impacted by the fisheries sector
- One such holistic approach is the **ecosystem approach**



What is the Ecosystem Approach?


The ecosystem approach is "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way."

--Convention on Biodiversity (CBD 2000)

Conservation + sustainable use + equitable way
= sustainable development

"Development that meets the needs of the present generation without compromising the ability of future generations to meet their needs"

Sustainable development of fisheries



EAFM is the ecosystem approach (EA) applied to fisheries management (FM)
EA + FM = EAFM



EAFM aims to maximize ecosystem benefits, resulting in increased food security & reduced poverty

- Fish for food
- Income
- Employment
- Livelihoods
- Trade
- Coastal protection

EAFM builds on what is in place

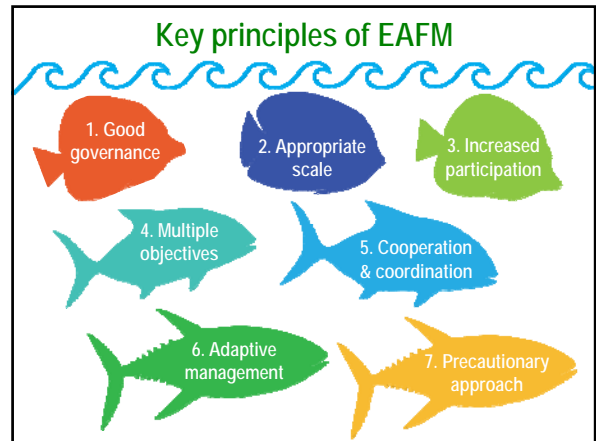
- Builds on/improves existing management
- Strengthens agencies through better planning and cooperation
- Builds on and integrates co-management and other participatory approaches
- Uses the traditional and scientific knowledge that already exists
- Improves human capacity in skills needed for sustainable management



EAFM strengthens co-management

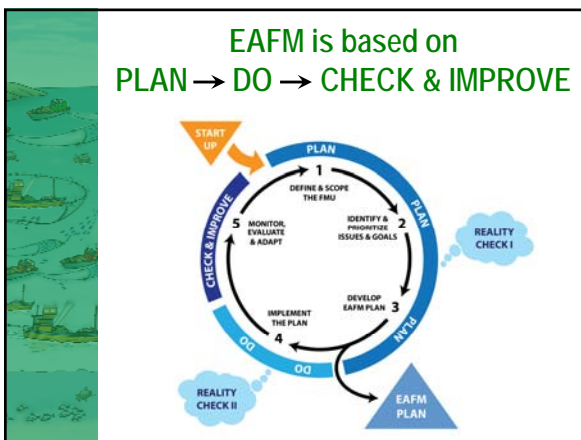
- Encourages stakeholder engagement
- Improves facilitation
- Requires effective negotiation
- Improves conflict resolution

Key principles of EAFM

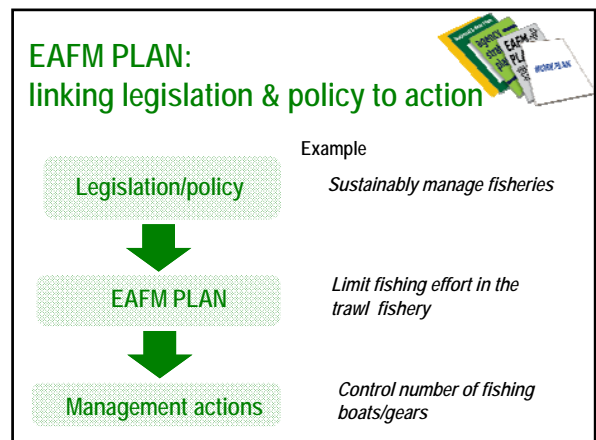


1. Good governance
2. Appropriate scale
3. Increased participation
4. Multiple objectives
5. Cooperation & coordination
6. Adaptive management
7. Precautionary approach

EAFM is based on PLAN → DO → CHECK & IMPROVE



EAFM PLAN: linking legislation & policy to action



Example

- Legislation/policy: *Sustainably manage fisheries*
- EAFM PLAN: *Limit fishing effort in the trawl fishery*
- Management actions: *Control number of fishing boats/gears*

What's in it for you and your agency?

- Helps link existing approaches through a logical and comprehensive framework
- Focuses on the real issues and their causes
- Increases trade opportunities and demand for fisheries products
- Reduces conflicts and political tensions
- Helps staff become more effective in natural resource management
- Helps leverage funding and leads to better reallocation of existing funds
- Results in sharing of responsibilities and human resources with other agencies

You and your agency WILL make a difference for the fisheries, the people, and the environment...



1. Essential EAFM training package
2. EAFM LEAD (leaders, executives, and decision makers) "toolkit"
3. Regional trainers and training institutions

www.eafmlearn.org

Thank You

Annexure 7B




An Ecosystem Approach to Fishery Management (EAFM) Plan in Trawl Fishery Example in EEAFM



What is EAFM?

- EAFM is used to promote sustainable development in the fisheries sector
- We try to balance ecological well-being and human well-being through good governance
- Do this for future generations (our sons and daughters)



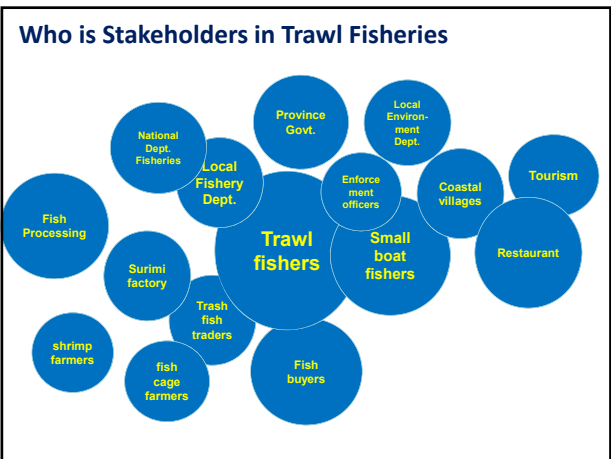
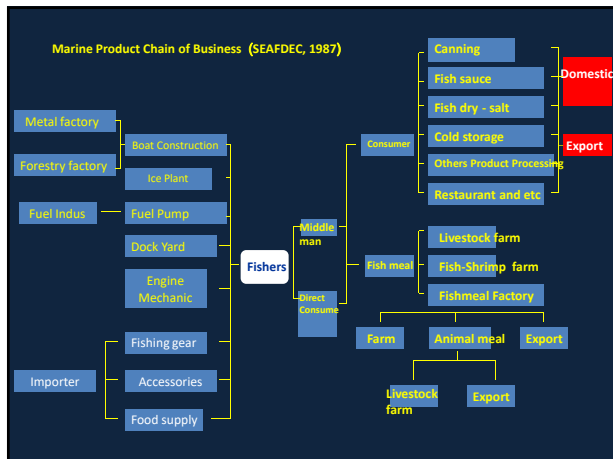
Example Trawl fishery in Thailand



1.1 Define the FMU

What are you trying to manage?):


Trawl Fishery along an in the Gulf of Thailand, Covering 2 Provinces

1.2 Agree on a vision for the FMU

Stakeholders developed this vision:

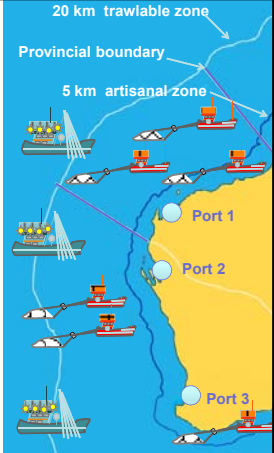
“A profitable trawl fishery that has little impact on the environment and other marine resource users”



1.3 Scope & profile the FMU

Provide some background to the fishery


- **A coastal trawl fishery**
 - operating in two provinces
 - trawling possible up to 50 km from shore
 - three major ports
- **Interacts with other fishers**
 - artisanal gillnet fishery; light attracting squid fishery
 - encroaching trawlers from other province



1.3 Scope & profile the FMU (cont.)

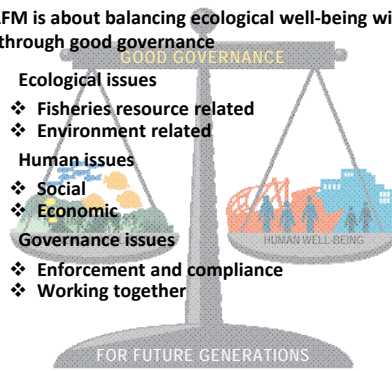
Some management and enforcement in place:

- Trawling banned in a 5 km artisanal fishery zone
- Closed season to protect the spawning fish
- 3.5 cm minimum mesh size for the cod end
- Only one patrol fishery patrol vessel



Step 2.1: Identify issues & threats

Because EAFM is about balancing ecological well-being with human well-being through good governance



- **Ecological issues**
 - ❖ Fisheries resource related
 - ❖ Environment related
- **Human issues**
 - ❖ Social
 - ❖ Economic
- **Governance issues**
 - ❖ Enforcement and compliance
 - ❖ Working together

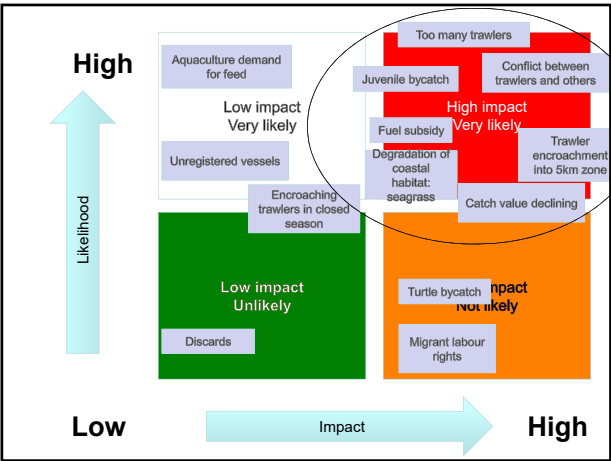
Issues in Trawl Fisheries

Overfishing	Conflicts with small-scale	Weak enforcement of mangrove protection	Encroachment of trawlers	Reduction in mangrove fringes
Tourism demands for protection	Trawler profits depend on trash fish landing	Low income in small scale fishery	Catching too many juvenile fish	Vessel registration/licensing inefficient
Employment of local women in surimi factory	Labor Issues (e.g. migrant labor, right, trafficking)	Endanger Threaten and Protected Species	Discards	
Small scale fishers cannot catch high value fish	Demand for trash fish by cage aquaculture	Limited engagement with SSF, co-management weak	Fishery Subsidy (fuel/other)	Benthos disruption by trawling
Encroaching trawlers in closed season	Degradation of coastal habitat	Markets, restaurants want higher quality fish	Fishery enforcement underfunded	

Fishery	Ecosystem	Human	Governance
Overfishing	Reduction in Bottom habitat, Sea Grass area	Demand for trash fish by cage aquaculture	Encroachment of trawlers
Catching too many juvenile fish	Benthos disruption by trawling	Tourism (beach/turtles)	Conflicts with small-scale
Shift to low value, fast recruiting species	Turtle egg collection	Low income in small scale fishery	Weak enforcement of mangrove protection
Small scale fishers cannot catch high value fish	Nutrient/sediment run off	Trawler profits depend on trash fish landing	Vessel registration/licensing inefficient
	Tourism demands for protection	Employment of local women in surimi factory	Fishery Subsidy (fuel/other)
		Markets, restaurants want higher quality fish	Fishery enforcement underfunded
			Limited engagement with SSF, co-management weak


2.2 Prioritize the issues & threats

- **Prioritise issues through stakeholder discussions**
 - stakeholder interests and priorities often different, and may conflict
- **Evaluate relative importance of the issues**
 - using a risk based approach
 - issues that are very likely to occur and will have a serious impact


Priority ecological issues

- **Fishery**
 - Too many trawlers (overcapacity)
 - Bycatch: Large percentage of juveniles of commercial species
 - High volume of low value/trash fish
- **Other non-fishing ecosystem effects**
 - degradation of mangroves




Human issues

- **Conflicts**
 - Trawlers conflict with small-scale fishers
- **Profitability**
 - low volume/value of overall catch, trawlers must land juvenile and trash fish to break even



Governance issues


- **Poor compliance with regulations and few incentives**
 - Trawl fishers not organized, difficult to engage
 - National fuel subsidy system cannot be changed locally
- **Encroachment**
 - Artisanal fishery zone set at 5 km, but regular IUU by trawlers
- **Vessel licensing and registration system ineffective**



2.3 Define the goals for the EAFM plan

- **Goal 1: Fisheries and critical habitats have been restored and sustained**
- **Goal 2: The trawl fishery is profitable with minimum conflict with other users**
- **Goal 3: The compliance and enforcement of illegal activities are effective and efficient**





Reality check I


- Are the goals achievable
 - Have we engaged with the key stakeholders?
 - Do we have enough money?
 - Do we have enough human capacity?
 - Do we have political support?
 - Do we have support from our agency/Department?

3.1 Develop the management objectives

Examples


1. Reduce the catch of juvenile fish
2. Increase the area of Sea Grass
3. Reduce encroachment of trawlers

For this talk, only use 3 examples. In reality we would have one objective for each issue



3.1 How do we know if we are meeting the objectives

- For each objective,
 - develop an indicator (measures where you are) and
 - compare the indicator with a benchmark (where you want to be or where you have come from)



3.2-3.3 Develop indicators & benchmarks

Goal 1: Fisheries and other living resources have been restored and sustained

Management objective	Reduce the catch of juvenile fish		
Indicators	Percentage of juvenile fish at sample landing sites		
Benchmark	Reduce the percentage to 20% in 5 years (currently 50%)		
Management actions	Expand no trawl zone to 5km	Increase the mesh size of the cd end	Extend the closed season to 3 months

3.1-3.32 Develop indicators, benchmarks & management actions

Goal 2: The coastal environmental quality is restored and maintained

Management objective	Increased sea grass area	
Indicator	Hectares of degraded sea grass recovered	
Benchmark	Sea grass coverage restored to 80% of 1970 area (currently 50% of 1970s sea grass coverage lost/degraded)	
Management actions	Fishing activities Restricted to legal user groups	Encourage and support local communities to plant sea grass


3.1-3.2 Develop indicators, benchmarks & management actions

Goal 3: The compliance and enforcement of illegal activities are effective and efficient

Management objective	Reduce encroachment of trawlers	
Indicators	Number of encroachments into artisanal zone reported by small-scale fisher group	Number of prosecutions for illegal fishing
Benchmark	Reduce to 10 incidences per month in two provinces	Currently 0 per year
Management actions	Establish reporting system for small scale fishers	Establish dedicated compliance unit for legal action on IUU and establish procedures for taking legal action

Information needs for indicators

- **Percentage of juvenile fish at sample landing sites**
 - Monitored by research institute through visiting the ports every 3 months
- **Hectares of degraded seagrass recovered**
 - Monitored by remote observatoin
- **Number of encroachments into artisanal zone reported by small-scale fisher group**
 - Monitored by communities
- **Number of prosecutions for illegal fishing**
 - Data from legal agency



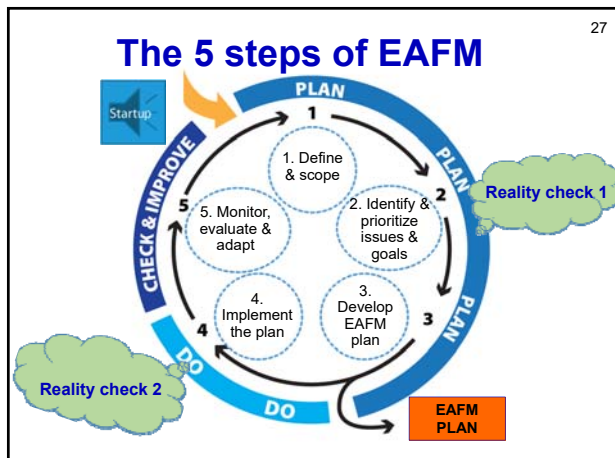
Management actions

3.3b Consider enforcement and compliance

- How do you get stakeholders to comply (MCS)

3.4 Identify sustainable financing

- Where the finances will come from?

The EAFM plan

EAFM Management Plan for FMU XX

1. Vision (Step 1)
2. Background (Step 1)
3. Major threats and issues (Step 2)
4. Goals (Step 2)
5. Objectives, indicators and benchmarks (Step 3)
6. Management actions (Step 3)
7. Compliance (Step 3)
8. Data and info needs – source of data, etc. (Step 3)
9. Financing (step 3)
10. Communication – link to communication strategy
11. Review of the plan


Implementation of the plan

4.1. Formalize, communicate & engage

- High level support – decree or proclamation
- Buy-in local government authority for endorsement and formal recognition
- Awareness raising for fishers and stakeholders (posters, announcement, meeting with organizations)
- Communicate the plan to other stakeholders

Trawl Regulations

- Trawl Areas/zones
- Trawl seasons
- Mesh size regulation



Reality check II

- **What stands in the way of implementing the plan?**
 - Is the legal framework adequate?
 - Is management at the geographic scale : are most of the ecosystem components included?
 - Do we have sufficient coordination and cooperation to be able work with others
 - Are we prepared to start managing and learn by doing?

5.1 Monitor and evaluate

- Monitor the indicators
 - stakeholder perceptions
 - Supporting information
- Evaluate how well you are meeting the objectives



5.2 Review and adapting

- At regular intervals review the plan against the M&E results
- Adapt the plan
 - Every year
 - Adjust the management actions
 - Examine why MCS is not working
 - Every 5 years
 - Goals
 - Objectives



Special thanks for EAFM training course
and Dr. Derek Staples






Brief introduction to the Global Environment Facility (GEF)

GEF-6 International Waters Strategy



Role of the GEF

- **Established in 1992**
- **Links local with global**
 - Co-financing mechanism that provides new funds to support sustainable development at national, regional or global level while providing global environmental benefits
- **Leverages additional investment**
 - GEF seeks co-finance, replication and follow-up investment.



GEF investments


- **GEF replenishments (USD billions)**

PILOT	GEF 1	GEF 2	GEF 3	GEF 4	GEF 5	GEF 6
1992 - 1993	1994 - 1998	1998 - 2002	2002 - 2006	2006 - 2010	2010 - 2014	2014 - 2018
0.843	2.01	2.75	3.00	3.10	4.25	4.43



GEF-6 Focal Areas

- **Biodiversity**
- **Chemicals & waste**
- **Forests**
- **Climate Change**
- **Land Degradation**
- **International waters**



Two Climate Change Adaptation funds

- **Least Developed Countries Fund (LDCF)**
- **Special Climate Change Fund (SCCF)**



GEF-6 International Waters


- **oceans**
- **coasts**
- **Large Marine Ecosystems**
- **transboundary rivers**
- **transboundary lakes**
- **groundwater basins**



GEF-6 International Waters


DOUBLE GOAL

- collective management of transboundary water systems
- implementation of the full range of policy, legal and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services



Drivers

- Increasing and competing demands on freshwater and marine resources
- Lack of incentives for sustainable management of freshwater and marine resources




GEF IW – Marine aspects – Main Issues

unprecedented deterioration of valuable marine and coastal ecosystems:

- Habitat destruction
- Biodiversity loss
- Overfishing
- Pollution
- Climate change
- Ocean acidification



Marine aspects – What does GEF?

- works with partners to improve ocean **governance**
- helps countries develop **regional institutional frameworks**
- These policy frameworks, in turn, enable countries to implement **ecosystem-based approaches to manage fisheries** and other marine and coastal resources
- At the same time, these approaches can protect coastal habitats, including blue forest, from land-based sources of pollution



Focal Area Objective	Focal Area Program	GEF-6 (USD Million)
Objective 1: Catalyze Sustainable Management of Transboundary Waters	Program 1: Foster Cooperation for Sustainable use of Transboundary Water Systems & Economic Growth	100
	Program 2: Increase Resilience and Flow of Ecosystem Services in Context of Melting High Altitude Glaciers	
Objective 2: Balance Competing Water-uses in the Management of Transboundary Surface and Groundwater	Program 3: Catalyze investments, enhance multi-state cooperation	145
	Program 4: Advance Conjunctive Management of Surface and Groundwater system	



Focal Area Objective	Focal Area Program	GEF-6 (\$ Million)
Objective 3: Foster Sustainable Fisheries, Restore and Protect Coastal Habitats, and Reduce Pollution of Coasts and LMEs	Program 5: Reduce Nutrient Pollution Causing Ocean Hypoxia	211
	Program 6: Prevent the Loss and Degradation of Coastal Habitat	
	Program 7: Foster Sustainable Fisheries	
Total International Waters		456





GEF in the Countries

GEF Political Focal Point:

- Governance issues and policies
- Normally in the Ministry of Foreign Affairs

GEF Operational Focal Point (OFP)

- Coordination of programming of GEF resources, projects, programmes, and other operational activities
- Endorses all GEF concepts (PIFs) prior to submission to the GEF Secretariat and GEF Council for approval
- Normally in the Ministry of Environment.



Contact

FAO Regional Office in Bangkok

FAO-GEF Coordination Unit in Rome