



**THE FOURTH REGIONAL WORKSHOP ON SHARED STOCKS:  
RESEARCH AND MANAGEMENT  
IN THE SOUTH CHINA SEA**

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**COUNTRY STATUS REPORT  
INDONESIA**

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# MANAGEMENT OF SHARED STOCK IN INDONESIA

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## I. INTRODUCTION

Indonesia is an archipelagic country, which is located between two large oceans, the Pacific and Indian Oceans. It has 17.508 islands, sea area of 5,8 million Sq Km, and the coast line of 81.000 Km. Various species of fish can be found in Indonesian waters.

The potential of marine fisheries resources is estimated around 6,2 million tons annually, consisting of 4,4 million tons from Indonesian waters and 1,8 million tons from Indonesian EEZ. From this potential resources, the total allowable catch (TAC) is 5,01 million tons annually.

Compared with the estimated production in 1998 of 3,6 million tons, the rate of exploitation is around 62%.

As the a coastal state, Indonesia has some close neighboring countries such as Malaysia and Singapore in the North West, Kampuchea, Vietnam and Brunei bordering to South China Sea in the North. Philippines in the North East, Papua New Guinea in the East and Australia in the Southeast. Therefore, they of course should together taking measure for managing shared fish stocks occurring within these transboundary area and they are responsible to keep the stock to be sustained.

In identifying the shared stocks in the region, the definition adopted by the United Nations Convention of the Law of the Sea (UNCLOS) 1982 was used, i.e., "Shared stocks are the stocks occurring within the EEZ of two or more coastal states, or both within the EEZ and in area beyond and adjacent to it".

According to Gullard (1980) and Caddy (1982) shared stocks have been divided into two groups "transboundary" and "migratory shared stocks".

A transboundary shared stocks was taken to be in which the fish are non – migratory, but where the area of distribution is crossed by a common boundary between the exclusive fishing zones of two adjacent countries.

The most common transboundary of stocks are the multi-species of demersal fish which show predominantly a random feeding movement in relation to spawning or monsoons. Other transboundary stocks are those small pelagic species where there is no definite migration but a more or less continuous mixing through the area in which the stocks lives.

The migratory shared stocks include all those migratory species which have a definite migration beyond the border of one EEZ. The migratory shared stocks can be separated into two groups. The first, which includes stock composed of the largest number of species are restricted sea areas which are closely within the limit of two or more adjacent EEZs, while the second group comprises those stocks with occur in one or more EEZs and also extend to the open sea beyond. The latter are primarily the larger tuna and bill fish .

The identification of shared stocks requires clarity on what is to be regarded as a stocks and it was clear that in the region a some what flexible definition has at present to be accepted.

To manage the stocks occurring within the EEZs of two or more coastal states, article 63 paragraph 1 of UNCLOS prescribes “States shall seek, either directly or through appropriate sub – regional or regional coordinate and ensure the conservation and development of such stocks” Available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organizations , weather sub-regional, regional or global, where appropriate and with participation by all states concerns, including states whose nations are allowed to fish in the EEZ.”

In managing the stock occurring both within the EEZ, and in an area beyond and adjacent to it Article 63 paragraph 2 of UNCLOS prescribes “ The coastal state and the states fishing for such stocks in the adjacent area shall seek, either directly or through appropriate sub-regional or regional organization, to agree upon the measures necessary for the conservation of these stocks in the adjacent area” . Prescription on contribution and exchange of information relevant to the conservation of the species all states concerned at Article 61 paragraph 5 of UNCLOS is also applied for this type of species.

Indonesia, as a coastal state, has some species indicated as shared stock is deeply concerned about the shared stock management of the certain stocks occurring in the adjacent area, both transboundary shared stocks and migratory shared stocks.

Indonesia has made serious efforts to manage the species indicating shared stock as the implementation of responsible fishing principle, however the effective management obligated and should be carried out by the sub-regional, regional or international cooperation.

At present, the fisheries management agreement between sharing countries both bilateral or and multilateral dealing with shared stocks is not sufficient enough. The problems are among others: lack of information of shared stocks in the region, lack of consensus on what species indicated as the shared stocks in the region, model of sharing for the stocks varies greatly according to distribution, migration and movement / displacement patterns of the particular stocks. And to the type of employment and characteristics of fishing in each of the countries concerned.

It appears that presently available information on these two aspects above mentioned is not yet sufficient for all purposes.

Therefore, we proposed the SEAFDEC to be a facilitator in the region in planning and implementing the research/studies in join research on the management of shared stocks and necessary to take priority in certain species to be shared.

## **II. UTILIZATION AND MANAGEMENT FOR THE RESOURCES OF SHARE STOCKS**

After accepting the UNCLOS 1982 (as The International law) Fisheries Management principles include shared stocks began to be discussed regionally as well as internationally.

To take the management of shared stocks, I propose that SEAFDEC should carry out together with sharing countries to conduct the research about shared stocks. Indonesia also responsible for this research, management and control. To plan this program it is important to identify the problem, research activities that will be done and choice of strategic management. The basic management principles gained from the research is important for national as well as international in exploiting the fish resources and insuring the conservation of the fish resources at the same time, particularly for shared stock.

In order to manage the shared stocks prior the implementation of management measure, principally could be identified:

- Formulation the share stocks include, definition, identification and distribution of the stocks and other relevant biological factor.
- Monitoring the utilization of the stocks (improving fishing data) of respective countries
- Preparing the appropriate management measures of the stocks.

Therefore, the policy taken to implement the shared stocks considered national and international interest of fishing operation on fishing ground within state jurisdiction.

In terms of the utilization and management of fisheries resources (shared stock) in general there are several in balance situation shown at border area of Indonesia.

First, a heavy fishing pressure is shown tend at border area between the Republic Indonesia and neighboring countries such as: Thailand, Vietnam, Malaysia in the South China Sea. The rapid expansion of the marine fisheries will affect to fully exploited for both pelagic and demersal fish which include mackerels (Indo Pacific and Indian Mackerels), scads, sardines and anchovies. Almost the species group of demersal fish probably over-exploited.

Second, it seemed also a heavy fishing at border area between Indonesia and Malaysia in Malaca strait especially for demersal fish and prawn. The demersal fish and prawn in Malaysia territory probably were subject to tend intensive fishing pressure, due to increased number of trawlers operated compared to Indonesia, that prohibited the trawl.

Third, it is also happened in border area between the RI and Philippine while in general, Philippine has already exploited these resources intensively especially for pelagic species include oceanic tuna and skipjack compared to Indonesia fishermen who caught big pelagic species by the use of pole and liner or hand liner, while Philippines fishermen caught by the use of purse seiner and payaos (as an fishing aggregate).

In other area, although the management of the shared stocks is insufficient such as in border area between R.I and Australia and R.I and PNG it has not shown the apprehensive condition yet, the management of the shared stocks in Indonesian border as a whole has urged to be handled.

It is well known that Indonesia has not been able yet to evaluate fish resources or shared stock resources in the territorial waters regularly like doing cruise track trawl every month rather than Australia, which they very interested in managing the species indicated shared stock especially scout and shark. Indonesian government concerns for this, however, due to lack of data, budget and these species do not the target species of Indonesian fishermen, Indonesia can not full participate in this activities.

### **III. RESEARCH PROGRAM AND MECHANISM FOR SHARED STOCK MANAGEMENT**

#### **3.1. Research Program**

Pursuant to the result of the previous workshop regarding the relevant species identified to be shared stock management that has been determined lot of species could be grouped as the shared stock, however in terms of taking management for those species of course will faced difficulties.

For managing that we propose conducting a management studies should be started by a preliminary study (dealing with shared stock management ) due to impossible to cover all species in the area, in detail in the certain time of period.

We propose in setting up the research program should be taken priorities, by taking consideration as follows:

- What kind of species has the main role in supporting the income (fisheries welfare) in these countries which can be grouped as commercial fishes, like : tuna, skipjack tuna.
- What species mainly have biological interrelation or dependent one to the others such as: anchovies, mackerel, scads.

Those researches should be focused on taking data to support in setting up the management criteria by gradually collecting relevant biological data and other matters that can support in taking management measure for shared stock. The data or information among others are migration pattern, behaviors, fish distribution, the kind data in accordance with food chain, inter relation among species, stock abundance, rate of exploitation, natural mortality and other matter that relevant to answer the status of biological condition in each area (of bordered area).

We propose in taking management measure on shared stock should not be formulated limited in one year or in one meeting, however need a period of time and the research should be designed (or programming) in short and long term period. It is considerable to design an effective management measure by sufficient basic data that gained from those research.

It is important to understood that in relation with research activities in South East Region , currently there are several bodies concerned to fisheries studies other than SEAFDEC namely Indonesia, Malaysia, Thailand Growth Triangle (IMTGT). Group expert for South China Sea Brunei, Indonesia, Malaysia, Philippines, East Asia Growth Area (BIMP EAGA), even the members or non member Countries of SEAFDEC also has their own research for fisheries. It is important to take into account that activities, in other to avoid any duplication. That is suggested to make joint research among those institution or countries to carry out the similar surveys program.

As we know, currently the research program or activities of this regional bodies among others:

1. The experts groups of South China Sea (for managing potential conflict of the area). Those experts as individual capacity basis had identified several important topics to be the subject research in South China Sea such as: to achieve way out or problem solving of over exploitation in the area mainly in coastal area and due to the increase of uncontrolled fishing vessels. That objectives may be enhance by shared stock survey.
2. Fisher research carry out by IMTGT.  
Currently, IMTGT has the fisheries research proposal was prepared by Thailand dealing with:
  - Experimental fishing (for bottom vertical long-line, tuna long-line and squid jigging);
  - Fishery resources research focused on tuna, demersal and oceanic squid stock.
3. Currently, Indonesia conducting several research programs as follows :
  - Enhancement of tuna fisheries in Indonesia supporting by OECF (Japan);
  - Management and conservation of sardinella terubuk in Riau or SCS water;
  - Tuna tagging research in the North Sulawesi Water and Pacific Ocean.
  - This research collaborated between Indonesia and Philippines (BFAR). The research had been conducted in 1997. This research will be continued, and in the next coming year (year 2000) will be conducted a work shop in Indonesia to discuss the result of the tagging program (technical assistant from International Body (South Pacific).
  - Other regular research such as :1) demersal and pelagic survey in South China Sea and Jawa Sea (for migration pattern and resource stock), 2) research on bait fish, 3) Malalugis scad stock abundance and their migration etc.

### **3.2. Research Mechanism**

Establish a working group to discuss a kind of shared stock research need to research measure, the need of data to support in establishing management measure etc. Regularly, the working group (expert working group) should carry out a meeting to make project proposal and agreement. The proposal should be submitted to the

respecting government in order to take endorsement. For this purpose I purpose as follows : The member of group experts compose of the fisheries expert of respective countries. They would be come from fisheries or biological scientific basis. From Indonesia they would be come from Marine Fisheries Research Institute, Ministry of Maritime Exploration and Fisheries.

- Research program should be formulated together among experts group and should supported by counterpart budget. It is responsible to need the support from each country because these coastal states have obligation to establish regional cooperation dealing with management and conservation of living resources in accordance with the UNCLOS 1982.
- In formulating a research program and their implementation should be done by joint together between countries and SEAFDEC. Establishing research base in each countries is important. Other way is by sharing the program which a part of the program done by countries and SEAFDEC, in order to give some comment in term to improve the research program.

For the realization of the research program it should be taken efforts :

- To identify what kind of research and the facilities of each country available to support the activities i.e. : research vessels, shore facilities (office / research base)
- To identify fisheries experts (biological, oceanography, legal etc.) obtained by each country.
- The targets of the research, in short or long term mainly to formulate a specific management measures for shared stock. It is may be in first step the targets limited of primer production and their movement, food chain linkage, and other general biological aspect such as : first maturity, maximum length, size composition, general (prediction) of fish migration of certain species (tuna and tuna like fish, anchovy etc.).

One of the research aspect is tagging program, it is very considerable action to be continued.

- It is very important to look for a contact persons (beside of the formal institution or body) of each country. It would be easily to do exchange information of the research situation or problem and of course in solution or improving the program or activities (immediately prepared).

Finally to answer what kind of shared stock management measures should be applied (base on same perception of bordered countries), is not like the instant product, however should be setting up step by step, by



improving the fisheries research activities in compliance with the UNCLOS 1982 provisions and code of conduct for responsible fisheries particularly for taking measure based on scientific evidence.

#### **IV. CONCLUSION AND RECOMMENDATION**

In order to manage the shared stocks, first step is necessary to establish an expert team, members of the team are the experts of each relating countries that involved to manage the stocks. The main tasks of the team expert are :

- To carry out together a research about shared stock such as kind of stocks to be shared, stock abundance (and MSY), utilization and conservation of the stocks.
- To raise the exchange information about the stocks.
- To formulate management measure (simple method) that applicable, and compliance with to the fishermen in respective country.

In operational of the team, it is necessary to be pointed out a contact person. In Indonesia we proposed, Directorate General of Fisheries (for management aspect) and the research institute (for research aspect) to act as a contact person.

After research done and gain a recommendation for shared stock management it is necessary for the respective country to socialize the management measure.

Finally, as a concrete way in managing the shared stock, it should be pointed out an effort dealing with conservation management.

The utilization of marine resources must be envisaged in the context of their long-term development and must take into account the concept of maximum sustainable yield (MSY). Fisheries management must pay due regard to and be in harmony with the environment in accordance with common standards and responsibilities. In respect of shared stock, the resources management must be based on the principle of the biological unity of the stock and the best scientific advice available.

The objective of conservation requires that the measures taken should establish a conservation policy within the area of national jurisdiction and in the adjacent area, whilst respecting the rights of all the parties concerned. The effective protection of these stocks can only be carried out by cooperation between coastal states fishing in accordance with common guidelines. Anything

else would fail to protect the environment through the conservation and management of these fish stocks through out their are of distribution.

It is necessary for the next workshop to discuss :

1. Probability to establish To do international cooperation under umbrella of Government to Government (G to G) Cooperation

In Indonesia, Ministry of Foreign Affair is in charge in G to G cooperation. International co.-operation must-constitute one of the foundation strong for the management of shared stock. Universal actions should be avoided and states should adopt effective measures within a bilateral on a multilateral co-operation framework (without ignore the management principles).

2. After G to G was designed, it is important to establish

The ability of developing countries fo fulfill conservation and management objectives is dependent upon the financial, scientific and technological measures at their disposal. Adequate financial, scientific and technological coopaeration should be provided to support action by these countries to implement these objectives.

3. The result of G to G Cooperation such as basic principal for management measures should be endorsed and ratified by each country.

Annex II

FISHERIES SITUATION OF INDONESIA IN BORDERED AREA 1997

1. MALACCA STRAITS

a. Marine Fishery Production, 1997

| Province       | Production |
|----------------|------------|
| DI. Aceh       | 158.901    |
| Sumatera Utara | 50.982     |
| Riau           | 18.391     |
| Total          | 228.274    |

b. Number of Marine Fishermen by Category of Fishermen

| Province       | Full Time | Part time<br>(Major) | Part time<br>(Minor) | Total   |
|----------------|-----------|----------------------|----------------------|---------|
| DI. Aceh       | 21.016    | 3.360                | 551                  | 24.926  |
| Sumatera Utara | 101.706   | 26.503               | 3.066                | 131.274 |
| Riau           | 7.504     | 1.753                | 813                  | 10.070  |
| Total          | 130.226   | 31.616               | 4.430                | 166.270 |

c. Number of Marine Fishing Units by Type Fishing Gear

| Fishing Gear    | DI. Aceh | Sumut  | Riau  | Total  |
|-----------------|----------|--------|-------|--------|
| Payang          | 472      | 436    | 35    | 943    |
| Purse Seine     | 407      | 728    | 68    | 1.203  |
| Drift gill net  | 1.189    | 3.525  | 522   | 5.236  |
| Long Line       | -        | -      | -     | -      |
| Drift long line | 24       | -      | 18    | 42     |
| Skipjack        | -        | -      | -     | -      |
| Troll line      | 611      | 22     | 110   | 743    |
| Others          | 4.157    | 18.268 | 3.113 | 25.538 |
| Total           | 6.860    | 22.979 | 3.866 | 33.708 |

d. Marine Fishery Production

| No. | Fishes                     | DI Aceh | Sumut  | Riau  | Total  |
|-----|----------------------------|---------|--------|-------|--------|
| 1   | Indian Mackerels           | 2.779   | 32.761 | 402   | 35.942 |
| 2.  | Eastern litle tuna         | 3.558   | 13.639 | 1.184 | 18.381 |
| 3.  | Anchovis                   | 3.009   | 12.806 | 631   | 16.446 |
| 4.  | Trvallies                  | 2.363   | 11.703 | 428   | 14.494 |
| 5.  | Scads                      | 1.969   | 9.960  | 275   | 12.204 |
| 6   | Fringescale sardinella     | 1.021   | 5.074  | 4.999 | 11.094 |
| 7   | Crackers/drums             | 497     | 5.547  | 828   | 6.772  |
| 8   | Narrow baret king mackerel | 948     | 3.959  | 639   | 5.546  |
| 9   | Red snappers               | 1.115   | 1.938  | 1.322 | 4.375  |
| 10. | Bombay duck                | 132     | 1.878  | 932   | 2.942  |

**2. SOUTH CHINA SEA**

a. Marine Fishery Production

| Province         | Production |
|------------------|------------|
| Riau             | 165.521    |
| Kalimantan Barat | 47.443     |
| Jambi            | 5.862      |
| Sumatera Selatan | 26.475     |
| Total            | 245.301    |

b. Number of Marine Fishermen by Category of Fishermen

| Province         | Full Time | Part time (Major) | Part time (Minor) | Total   |
|------------------|-----------|-------------------|-------------------|---------|
| Riau             | 67.535    | 15.781            | 7.315             | 90.631  |
| Kalimantan Barat | 14.548    | 14.878            | 5.837             | 35.263  |
| Jambi            | 2.225     | 1.636             | 628               | 4.489   |
| Sumatera Selatan | 7.341     | 5.882             | 2.462             | 15.685  |
| Total            | 91.649    | 38.177            | 16.242            | 146.068 |

c. Number of Marine Fishing Units by Type Fishing Gear

| Fishing Gear    | Riau   | Kalbar | Jambi | Sumsel | Total  |
|-----------------|--------|--------|-------|--------|--------|
| Payang          | 310    | 697    | 165   | 195    | 1.367  |
| Purse Seine     | 608    | 58     | -     | -      | 666    |
| Drift gill net  | 4.694  | 1.022  | 274   | 549    | 6.539  |
| Long Line       | -      | -      | -     | -      | -      |
| Drift long line | 161    | 179    | 71    | -      | 6.950  |
| Skipjack        | -      | -      | -     | -      | -      |
| Troll line      | 988    | 197    | -     | -      | 1.185  |
| Others          | 28.032 | 5.192  | 874   | 2.346  | 36.444 |
| Total           | 34.793 | 7.345  | 1.384 | 3.090  | 46.612 |

d. Marine Fishery Production

| No. | Fishes                     | Riau   | Kalbar | Jambi | Sumsel | Total  |
|-----|----------------------------|--------|--------|-------|--------|--------|
| 1.  | Eastern litle tuna         | 10.657 | 5.901  | -     | 628    | 17.186 |
| 2.  | Red snappers               | 11.895 | 1.272  | 25    | 803    | 13.995 |
| 3.  | Indian mackerels           | 3.618  | 7.040  | 167   | 1.406  | 12.231 |
| 4.  | Indo Pasific king mackerel | 5.751  | 3.481  | 428   | 1.243  | 10.903 |
| 5.  | Trevallies                 | 3.850  | 5.013  | 3     | 1.701  | 10.567 |
| 6.  | Wolf herrings              | 6.530  | 2.524  | 343   | 986    | 10.383 |
| 7.  | Anchovies                  | 5.682  | 2.096  | -     | 1.978  | 9.756  |
| 8.  | Sea cat fishes             | 3.027  | 3.716  | 742   | 1.648  | 9.133  |
| 9.  | Fringescale sardinella     | 4.490  | 2.140  | -     | 1.698  | 8.328  |
| 10. | Threadfin breams           | 5.662  | 364    | 54    | 438    | 6.518  |

**3. SULAWESI SEA AND PASIFIC OCEAN**

a. Marine Fishery Production

| Province         | Production |
|------------------|------------|
| Kalimantan Timur | 9.256      |
| Sulawesi Utara   | 123.640    |
| Maluku           | 158.732    |
| Irian Jaya       | 47.219     |
| Total            | 338.847    |

b. Number of Marine Fishermen by Category of Fishermen

| Province         | Full Time | Part time (Major) | Part time (Minor) | Total   |
|------------------|-----------|-------------------|-------------------|---------|
| Kalimantan Timur | 5.441     | 2.557             | 1.024             | 9.022   |
| Sulawesi Utara   | 34.852    | 41.447            | 28.364            | 104.663 |
| Maluku           | 22.752    | 10.355            | 23.234            | 56.341  |
| Irian Jaya       | 13.147    | 18.535            | 7.506             | 39.190  |
| Total            | 76.192    | 72.894            | 60.128            | 209.216 |

c. Number of Marine Fishing Units by Type Fishing Gear

| Fishing Gear    | Kaltim | Sulut  | Maluku | Irja   | Total  |
|-----------------|--------|--------|--------|--------|--------|
| Purse Seine     | 13     | 427    | 269    | 12     | 709    |
| Drift gill net  | 398    | 875    | 1.914  | 428    | 3.615  |
| Long Line       | 10     | 249    | 133    | 10     | 402    |
| Drift long line | 33     | -      | 725    | -      | 758    |
| Skipjack        | -      | 139    | 351    | 19     | 509    |
| Troll line      | 19     | 2.942  | 4.108  | 1.615  | 8.694  |
| Others          | 3.112  | 25.286 | 18.934 | 8.608  | 55.940 |
| Total           | 3.585  | 29.918 | 26.434 | 10.692 | 79.237 |

d. Marine Fishery Production

| No. | Fishes             | Kaltim | Sulut  | Maluku | Irian Jaya | Total  |
|-----|--------------------|--------|--------|--------|------------|--------|
| 1.  | Tunas              | -      | 23.004 | 12.032 | 3.031      | 73.103 |
| 2.  | Skipjack tuna      | 235    | 32.409 | 26.282 | 3.795      | 62.721 |
| 3.  | Scads              | 387    | 22.160 | 4.669  | 1.978      | 29.194 |
| 4.  | Eastern litle tuna | 478    | 13.698 | 6.638  | 1.430      | 22.244 |
| 5.  | Trevallies         | 319    | 3.935  | 6.451  | 1.075      | 11.780 |
| 6.  | Anchovies          | 144    | 4.004  | 3.660  | 2.109      | 9.917  |
| 7.  | Indian mackerels   | 669    | 1.405  | 4.818  | 2.434      | 9.326  |
| 8.  | Barramudi          | 325    | 576    | 1.016  | 6.185      | 8.102  |
| 9.  | Sharks             | 150    | 1.088  | 2.148  | 750        | 4.136  |
| 10. | Red snappers       | 473    | 412    | 511    | 226        | 1.622  |