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COORDINATING WORKING PARTY ON FISHERY STATISTICS

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Report by SEAFDEC

REPORT ON SEAFDEC'S PROGRAMMES ON FISHERY STATISTICS RELATED ACTIVITIES SEAFDEC

Overview of Fishery Statistics in the ASEAN Region

PART I. – SUMMARY

INTRODUCTION

There is an increasing concern to the quality of fishery statistics in support of sustainable development and management of fisheries. In Southeast Asia, this concern is particularly true as negative signs of unsustainability of fisheries and fishery resources have been dominant. This has led to the consequences to the regional people whose diets largely depend on fish and fishery products. In particular, small-scale and subsistence fishers who scatter along the coastal areas will substantially encounter difficulty resulting from unsustainable fisheries. It is therefore inevitably to review and improve the current development and management plans and policy in response to the current regional fisheries situation which will only be possible when it is conducted based on timely, reliable and sound fisheries statistics and information.

This calls for a need not only for national efforts but regional attempts to tackle with this threat. In November 2001, ASEAN and SEAFDEC in collaboration with FAO and hosted by the Department of Fisheries, Thailand organized a Regional Conference on Sustainable Fisheries for Food Security in the New Millennium: "Fish for the People". After two long years of preparation mobilizing inputs through various regional consultation, the Conference concluded *the Resolution and Plan of Action on Sustainable Fisheries to Food Security for the ASEAN Region*. The Resolution and Plan of Action were adopted by the Ministers and senior officials of the ASEAN and SEAFDEC Member Countries who were responsible for fisheries, which are regarded as the regional fisheries policy and priority action to be taken to promote sustainable fisheries and food security at the national level. To assist the ASEAN Member Countries in the implementation of the Resolution and Plan of Action, SEAFDEC in close collaboration with the Member Countries has developed a 5-year follow-up program on Contribution of Fisheries to Food Security in the ASEAN Region based on the Resolution and Plan of Action as well as various inputs derived from the process of preparation and organization of the Conference.

Considered as a priority issue in pursuing this goal, fishery statistics was highlighted and incorporated as an integral part of the follow-up program to ensure sustainable development of fisheries and food security in the ASEAN region.

Directions for Improvement of Fishery Statistics in the ASEAN Region

In response to the regional fisheries policy framework to improve fishery statistics in support of sustainable development and management of fisheries, the following are major directions identified to pursue this policy requirement.

FISHERY STATISTICS IN SUPPORT OF FISHERIES MANAGEMENT PURPOSES

Over the years, fishery statistics are collected without having clear purposes and most cases cover a wide spectrum of data. This in return sacrifices the quality of fishery statistics – reliability, timeliness and so on. As a consequence, fishery statistics are limitedly used and given less support. This vicious cycle of quality of fishery statistics needs to be broken down, which can be done only when fisheries management purposes are clearly set.

COMPARABLE FISHERY STATISTICAL SYSTEMS

Comparability is considered as an important aspect of statistics quality. This is particularly true when statistical data is shared between the countries or used for regional management. Comparability implies that fishery statistics are developed based on standard definition/terminology and classification.

CAPACITY BUILDING FOR FISHERY STATISTICS AT ALL LEVELS

The needs for capacity building both human resources and institutional aspects for fishery statistics at all levels is one of the priority issues for improvement. Human resource development for fishery statistics does not only required for enumerators and statistician who collect, analyze and report fishery statistics but also fishery administrators, managers, decision-makers who in some way use and provide support to fishery statistics. Institutional aspect which deals with development of fishery statistical systems and coordination mechanisms to generate meaningful statistics is also an area that requires attention.

IMPROVE USAGE OF FISHERY STATISTICS THROUGH BETTER PRESENTATION AND USER-FRIENDLY

Presentation of fishery statistics plays an important role in the extent of the statistical usage. Many cases, it is found that presentation of fishery statistics is dry and unfriendly to users. This result in limited use of fishery statistics. It should be understood that the larger extent of statistical usage is the larger support and feed back for the improvement of statistics can be obtained. Considering the various statistical variables and wide range of usage requirements, tools in support of statistical collection, analysis and presentation should be developed as they will not only increase degree of statistical usage but also improve the quality of fishery statistics particularly timely provision of data.

FOCUSED FISHERY STATISTICS IMPROVEMENT ACTIVITIES

In line with the above-identified directions, SEAFDEC in collaboration with the ASEAN Member Countries is promoting the following activities to improve fishery statistics in the region.

1. Capacity Building of National Fishery Statistical Systems of the ASEAN Region

SEAFDEC is currently promoting capacity building particularly on human resource aspect of national fishery statistics in the region. The capacity building activity gives priority to the least developing countries in the region particularly Cambodia, Lao PDR, Myanmar and

Vietnam to reduce technical disparity among the ASEAN Member Countries. The activity will mobilize existing expertise and experience developed in the region especially in the countries where fishery statistical systems have been well developed.

The capacity building strategy starts by developing a regional fishery statistics plan for human resource development through regional consultations. The plan will serve as a regional reference to all Member Countries to develop their human capacity in fishery statistics as well as a basis for developing standard training packages (STP) for fishery statistics.

The STP once developed will be used for developing national curriculum and training materials in each target country. This will follow by on-site training targeting various groups dealing with collection, analysis and reporting of fishery statistics. Lessons and experience developed and learned during the on-site training will be used to improve the STP for wider promotion in the region.

2. Improvement of Regional Compilation of Fishery Statistics

As part of the attempts to promote statistical data sharing for regional and global monitoring of fisheries as well as management purposes at the regional level, the existing SEAFDEC Fishery Statistical Bulletin in the Southeast Asia will be upgraded and improved. The current bulletin has encountered with a number of problems and limitation which sacrifices the reliability, timeliness and comparability of the statistics.

Since the Member Countries have to fulfil the statistical data reporting needs at national, regional (SEAFDEC) and international (FAO) levels, burden in data reporting using different forms, standards, classification and so on has led to the delay in submitting the data. There is therefore a need to review the current data reporting needs and tools and where possible they should be harmonized and integrated to reduce burden of the Member Countries and eventually improve the quality of the fishery statistics. In addition, use of databases or electronic form or even web-based technology could be considered as a possible tool for this purpose.

3. Fishery Statistics based Activities for the Improvement of Regional Fisheries

In addition to the improvement of fishery statistics to support the development and management of fisheries in the region, there also exists activities that require attention in their statistical components which should be taken into consideration when improving fishery statistics as a whole. These activities should be developed with close linkages with the improvement of statistics.

With the recent common position among the ASEAN and SEAFDEC Member Countries in the promotion of sustainable fish trade in the region, certain fishery statistics requirements were identified. These include the detailed fishery statistics in support of the conservation and management of shark fisheries and sea turtles as these two major groups of resources have direct linkages with the regional trade of fish and fishery products.

Another area of development which addresses fishery statistics support is the use of indicators in management and development of fisheries. The use of practical indicators has been identified as a regional trend in improving management of fisheries in the region as the

conventional management concepts and tools such as Maximum Sustainable Yield (MSY), Maximum Economic Yield (MEY) and so on have proved to require substantial data and financial inputs. In addition, the multi-disciplinary and multi-gear nature of fisheries in the region requires practical management tools reflecting this specificity. The use of indicator as well as status and trend of fisheries are therefore considered as meaningful and useful management tools which require fishery statistical support.

In order to increase usefulness of fishery statistics and information, SEAFDEC is promoting a map-based information program entitled “Digitized Atlas”. The program requires a substantial fishery statistical inputs in the form of databases in order to collate currently available data and information for fisheries related purposes.

Moreover, SEAFDEC is assisting the Member Countries in the implementation of the Code of Conduct for Responsible Fisheries (CCRF) of which fishery statistics component is identified as a priority issue. Investigation for the fishery statistical requirements has been conducted and reflected in the regional guidelines for responsible fisheries in the ASEAN region. It is now in the process to further develop best scientific evidence including fishery statistics to support effective implementation of responsible fisheries in the region.

Collaboration for the Improvement of Fishery Statistics

Based on the above-identified activities for the improvement of fishery statistics in the ASEAN region, SEAFDEC has exerted its efforts in the promotion of activities and mobilizing expertise and experience both within and outside the region. The following are proposed areas for collaboration related to the improvement of fishery statistics in the region:

- Development of fishery statistics handbook and standard training packages for fishery statistics;
- Development of fishery statistical databases using web-based technology to improve quality of fishery statistics;
- Strengthening fishery statistics and their systems in support of the use of indicators for fisheries management;
- Expansion of fishery statistics particularly in the areas of specific management needs;
- Development of the regional fishery information system particularly map-based information (Digitized Atlas – potential collaboration with FAO FIGIS); and
- Sharing and exchange of regional development, experience and tools for fishery statistics with other regions.

PART II. – REVIEW OF FISHERY STATISTICS RELATED ACTIVITIES IN SOUTHEAST ASIA

Many countries have embarked upon innovative programs and policies to ensure the development and management of sustainable fisheries in Southeast Asia. The need for timely and reliable statistics for the formulation and evaluation of fishery programs and policies has inevitably expanded manifold for development and management purposes. Fishery statistics provides essential inputs to decision-making no matter where it is made: local, sub-national, national, or regional levels. Concerns over the reliability, timeliness, and completeness of fishery statistics are the issues that national agencies and many regional fishery organizations, including SEAFDEC, have been trying to collect and maintain for decades. Despite its

importance as key inputs to effective fisheries development and management, national fishery statistics has been accorded somewhat low priority. Given the unstable infrastructure and open access nature of fisheries, collection, analysis, standardization and presentation of data have been a hard challenge for fishery statisticians, who work in the less prioritized sector.

While regional fishery statistics is essential for the management of regional fishery resources, e.g., shared, straddling, and highly migratory fish stocks, the high levels of biodiversity, ecological complexity and the great variety of fishing regimes in developing tropical countries serve to exacerbate the already deprived national fishery statistics offices. Facing this dilemma, regional fisheries agencies, such as SEAFDEC, would need to place its initial emphasis on facilitation of the regional cooperation in the management of regional fish stocks.

Fishery statistics deals almost exclusively with fishing activities, and less so about the whole fishery enterprises. The narrow scope of the present fishery statistics should be widened to change its traditional and esoteric nature to something more attractive to users.

The use of statistical information is an area of grave concern. Various workshops and meetings on information and fishery statistics have showed scanty use of the statistical information. Accessibility and digestibility of fishery statistics were identified to be the areas for improvement.

1. Review and Establishment of SEAFDEC workshop on fishery statistics and its activities

At the regional level, the Southeast Asian Fisheries Development Center (SEAFDEC) has initiated a fishery statistics program in 1976. With the endorsement of the recommendation made at “The Technical Seminar on South China Sea Fisheries Resources” in Bangkok organized by SEAFDEC in 1973, SEAFDEC Council of Directors at its Seventh Meeting in 1974 and Eighth Meeting in 1975, the First SEAFDEC Technical Workshop on Fishery Statistics was convened in Singapore in November 1976. This was the occasion, where an idea of creating a Fishery Statistical Bulletin for South China Sea Area emerged. SEAFDEC then began to organize a Technical Workshop on Fishery Statistics for the South China Sea Area at an interval of two or three years and to issue Annual Fishery Statistical Bulletin for the South China Sea Area. The Fishery Statistical Bulletin for the South China Sea Area is being published annually by SEAFDEC since 1978 starting with the statistics for 1976. The Bulletin is aimed at providing reliable and comparable fishery statistics with standardized definitions and classifications to facilitate the exchange of information for the management of fishery resources and the planning of various fishery development programs for countries bordering the South China Sea Area. It has been recognized as a valuable source of reference on fishery statistics in the region and is well-accepted by all organizations and agencies as well as personnel concerned with the management and development of fisheries in Southeast Asia.

Thus, for the period from 1976 to 1994, eight regional workshops were organized by SEAFDEC. The development of statistics program in the region tackled in the workshops were as follows:

- Standard classifications and definitions of fishery statistics for all statistical items based on FAO definition, if available;
- The standard units of measurement used in the region;

- The examination of the methods by which statistics are collected in participating countries, their coverage and reliability; and etc.

For the recent development of fishery statistics in ASEAN Region, it could be summarized as follows:

MINIMUM REQUIREMENTS OF A NATIONAL FISHERY STATISTICAL SYSTEM IN ASEAN REGION

At the FAO/SEAFDEC Workshop on Fishery Statistics held in August 1997, the “Minimum Requirements of a National Fishery Statistical System in ASEAN Region” was agreed to be used as a basis for the establishment or improvement of a national fisheries statistical system to support the management of marine fishery. This includes the following statistical items:

- Fishing establishment (In ASEAN region, the majority of fishing establishments are fishing households)
- Fishing laborer’s households
- Fishing boats
- Fishing manpower (fishermen)
- Fishing units
- Fishing effort
- Catch in quantity and value; and
- Catch per unit of fishing effort

With regards to improvement of aquaculture statistics, SEAFDEC and FAO jointly organized an Ad-hoc Expert Consultation on Variables and Terminology for Aquaculture Monitoring in Asia in 1999. The Consultation reviewed variables that are currently collected particularly in ASEAN region, discussed the definition of aquaculture and the terminology of variables used to monitor the production from aquaculture and its development as well as defined selected variables that could lead to a more harmonized approach for data collection at both national and international levels.

THE REGIONAL PLAN OF ACTION AND PROGRAM FOR THE IMPROVEMENT OF FISHERY STATISTICS IN ASEAN REGION

A series of recommendations during the 1998 Consultation of Senior Fishery Administrators and Managers on Fishery Statistical Systems in Southeast Asia, calls for the strengthening and greater usage of fishery statistics at national and regional levels. This was supported by the recommendations made during the 31st Meeting of the SEAFDEC Council which included the need to develop guidelines and plans of action for strengthening the fishery statistics in Southeast Asia. This requires SEAFDEC to play a coordinator’s role in assisting member countries to improve their national fishery statistics, taking into consideration the fact that the transfer of expertise does not occur without a regional mechanism, and that such arrangement would make it possible to sustain the regional fishery resources through effective management.

This Regional Plan of Action and the Program for the Improvement of Fishery Statistics was developed based on the recommendations concluded at the 1998 Consultation of Senior Fishery Administrators and Managers on Fishery Statistical Systems in Southeast Asia, and

was endorsed at the 32nd Meeting of SEAFDEC Council and SOM-AMAF Meeting in 2000 respectively.

The Plan of Action for the Development of Fishery Statistics in Southeast Asia has the following purposes:

- a) To ensure an evolving and dynamic understanding of the role and importance of fishery statistics in sustainable fisheries development in Southeast Asia;
- b) To improve national fishery statistics in the region as well as their systems; and
- c) To enhance the benefits derived from the utilization of sustainable and comparable fishery statistical systems.

Based on recommendations made at various workshops and meetings, the following strategies were identified in order to effectively implement the Plan:

Strategy 1: Increasing the availability, accuracy and use of fishery statistical data and information for fishery development and management

Strategy 2: Developing and utilizing methodologies and tools as well as improving skills and capacities of statistical personnel to assist Member Countries in strengthening their national fishery statistical systems

Strategy 3: Promoting and supporting the formulation and application of sustainable and comparable fishery statistics in the region

2. Fishery Statistics and Sustainable Fisheries in the New Millennium

First and foremost, it should be recognized that improvement of fishery statistics in the Southeast Asia is substantially important for the promotion of sustainable fisheries and eventually the contribution of fisheries to food security. Fishery statistics maintained at national levels should be regarded as the main source of information for the long-term and sustainable development and management of fisheries. Along this line, strengthening of national fishery statistical systems and promotion of sustainable and comparable data collection systems should be given a first priority to fulfil the purpose.

Although, there have been attempts to improve fishery statistics in the region, however, the improvement has been in little progress. One of the major constraints to the improvement of fishery statistics is that statistical data is collected for the record purpose. This has caused a lack of feedback and control in checking the quality of data due to lack of involvement of local fishery managers for doing so. Consequently, the quality – availability, reliability and timeliness – of data compiled at national level is not at the satisfactory level. And eventually leads to insufficient recognition and support to fishery statistics by the policy makers and managers.

It is therefore important that the policy on improvement of fishery statistics was addressed to be the integrated part of national fishery management program to ensure sustainable fisheries and food security at ASEAN-SEAFDEC Conference held in 2001.

AVAILABILITY AND OBJECTIVES OF DIFFERENT LEVELS OF FISHERY STATISTICS FOR FISHERY MANAGEMENT

Fishery statistics has been used primarily to review the past trend of a fishery to forecast the future fisheries to develop fishery policy and program planning. As fishery policy towards sustainable fisheries is changing from development to a more management orientation, it is therefore important that fishery statistics should be improved towards requirements of management objectives.

In ASEAN region, coastal fisheries prevail and are the main stay of the national fisheries. This fact implies a need for more comprehensive fishery statistics for the planning of coastal fisheries development and management. As mentioned above, the “Minimum Requirements of a National Fishery Statistical System in ASEAN Region” was agreed to be used as a basis for the establishment or improvement of a national fishery statistical system. To satisfy the minimum requirement of fishery statistics, it was suggested that national fishery statistical systems should include (a) a fishery census, (2) an annual fishery inventory survey, (3) a fishery production survey, (4) a fishery commodity survey, (5) external trade statistics on fishery commodities and (6) a fishery economy survey. Besides, it was also suggested that statistical data should be consistent in terms of comparability, continuity, and reliability. These three elements can be well ensured through the establishment and well followed of national fishery statistical standards, continuity of the survey methods and availability of financial and manpower resources.

Considering the relationship between the minimum requirement of statistical items needed to support fishery management objectives and the availability of statistical data in ASEAN countries region, two main levels – local and national – of fishery statistics should be established and clarified.

Fishery statistics at the local level is considered as the foundation for the overall national fishery statistical system. Besides the minimum requirements mentioned above, statistical data should be collected in order to develop management actions to be taken at local level. This will create a feedback and control mechanism to ensure the quality of data as local fishery managers will make use of the data and consequently provide support for the data collection at local level. Such an approach will make it possible for local fishery managers to be involved in the design of a survey and the estimation of fishery statistics at local level. In addition, this approach will give a great incentive to local fishery managers to improve the contents of statistical inputs, at the same time to learn about the needs of national fishery development planning. Along this line, the national fishery statistics will gradually be improved and sufficient support in the improvement of fishery statistics can be ensured.

To obtain timely management actions, designing of data and information required, collection, processing, analysis, and interpretation of data – accommodating management objectives – will be done more effectively at the local level. This approach will allow local fishery managers to adjust/modify collection of data and information in terms of types of detailed related data and information and their periodicity that is required for management actions.

This does not imply that collecting data and information for indicators for management actions needs to establish a different mechanism but rather to incorporate the action-oriented management requirements into the existing fishery statistical systems. In other words, within the national fishery statistical systems, data and information will be collected to fulfil the

national purpose as well as local management objectives – to develop appropriate management actions. The latter has so far been given a little focus and support, and needs to be further promoted if indicators are accepted to be used for management purposes. Existing national fishery statistical systems will then be used to incorporate requirements of management actions to be undertaken at local level. To obtain data and information for indicators, it is important to raise the awareness on the importance of fishery statistics among the statistical personnel and strong cooperation among fishery managers, statistical enumerators, fishers and other stakeholders to facilitate the collection, compilation and analysis of the fishery statistical data. It is also important that capacity building for local fishery management including local fishery managers need to be promoted simultaneously particularly in the identification and utilization of required data and information for indicators.

Along this line fishery statistics will become more proactive towards fishery management and ensure participation from stakeholders in providing required data and information. The key to success is to establish a policy on decentralization of management authority at local level. Such a policy will make it possible for local fishery authorities to be involved in the improvement of fishery statistics at local level. In addition, this policy will give a great incentive to local fishery authorities to improve the content of fishery statistical outputs, at the same time to learn about the needs of national fishery development and management planning.

While fishery statistics at the national level based on the compilation of statistics at local levels should be considered as a means to obtain information to a) to monitor overall performance of fisheries and status of fishery resources; b) to develop national policy and plans for fishery development and management; and c) to monitor contribution of fisheries to national food security (outlook of fish supply and demand). The quality of fishery statistics at the national level then very much depends on the quality of data collected at the local level.

Based on the understanding on the changing role of fishery statistics to support fishery management, the minimum requirements are meant to obtain national fishery statistics to facilitate monitoring of national status of fisheries and planning for fishery policy and programs. Besides the national requirements for fishery statistics to obtain status of fisheries, collecting of data and information needs to be tailored to the management requirements at the local level which can be varied from one place to another.

3. Policy Consideration for the Improvement of Fishery Statistics in ASEAN Region

For consideration in the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”, the following policy related issues were proposed as a basis for discussion.

- Fishery statistics should be considered as a management tool to ensure sustainable fisheries and food security. Statistical data, process and systems should then be developed to fulfil the management objectives – policy, plans and actions.
- Different objectives and requirement for fishery statistics at both local and national levels should be clarified. Data and information collected at local level should also accommodate the requirement to develop management actions for local fishery managers as they will support the collecting of the data and help checking the quality of data in

support of the management actions. Along this line, quality of fishery statistics compiled at national level will be gradually improved. While data and information compiled at national level will be used to monitor overall performance of fisheries and status of fishery resources, to develop national policy and plans for fishery development and management, as well as to monitor degree of contribution of fisheries to national food security.

- Since data and information required for the management of fisheries does not exist only within the national fishery related authority, data and information, which exists in other authorities, should be identified. In addition, coordination process to obtain and use the data and information should also be developed.
- Improvement of national fishery statistics to support the management to ensure sustainable fisheries and food security should focus on the existing fishery statistical system.
- Standardization to facilitate integration between different data collection systems should be promoted. Where possible and appropriate, it is desirable to apply internationally recognized definitions and classification.
- Decentralization of authorities for fishery management should be promoted. This will support further improvement and effectively use of fishery statistics at various levels. In addition, administrators and managers of fishery statistics at various levels need to be encouraged to play a proactive role as they are providing a foundation for monitoring the status of fishery resources and developing policy, plans and management actions for fishery policy makers, managers and scientists. This is including capacity building of local fishery management authorities should be promoted including participation from various stakeholders to obtain timely and reliable data.

4. ASEAN-SEAFDEC Conference on “Fish for the People”

With a view to achieving sustainable fisheries and stable supplies of fish and fishery products in the ASEAN region, ASEAN and SEAFDEC in collaboration with FAO and hosted by the Department of Fisheries, Thailand organized the *ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”* in November 2001. The purpose of the Conference was to evaluate fisheries issues and problems identified at the regional and national levels. In particular, the Conference focused on the unique context and nature of the region’s fisheries on important fisheries issues including inland fisheries management and improvement of fishery statistics and concluded the *Resolution and Plan of Action on the Contribution of Fisheries to Food Security in the ASEAN Region*, considered as the regional policy framework and actions to be undertaken to ensure sustainable development of fisheries and food security in the region. In the Resolution, the importance to promote fishery statistics in the region as “Strengthen national fishery statistical systems and maximize their use for fisheries planning and management and develop standard definitions and classifications to facilitate regional fishery statistics and information exchanges”.

Guided by the Resolution on Sustainable Fisheries for Food Security for the ASEAN Region, and the need to formulate regional guidelines for the Code of Conduct for Responsible Fisheries, the Senior Officials adopted the Plan of Action on Sustainable Fisheries for Food

Security for the ASEAN Region to be used as a guideline to develop programs, projects and activities for the implementation of the Resolution which fishery statistics is to be strengthened in the region as shown in the Plan of Action to numbers 10, 11 and 12 that “Coordinate and decentralize the collection and use of fisheries related statistical data between the national fisheries and other authorities including those responsible for food security, trade, vessel registration, aquaculture and rural development”; “Maximize the use of national fisheries statistical systems by focusing on clear objectives and timely results directly related to fishery management, decision-making and planning processes”; and “Apply, where appropriate, regionally standardized definitions and classifications for statistical data to facilitate regional compilation, analysis and data exchange”; and “Develop national statistical mechanisms on inland fisheries and aquaculture in order to provide a basis for their development and the exchange of statistical data and related information, with particular emphasis on the catchment approach in international river basins”.

5. *Follow-up Program of the ASEAN-SEAFDEC Conference on “Fish for the People”*

As the Resolution, the Plan of Action and the Technical Report of the Conference, are the foundation for an improvement in national fisheries policies and a national commitment toward the achievement of sustainable fisheries and a stable supply of fish and fishery products. With the view to achieve sustainable fisheries and increasing supplies of fish and fishery products in the ASEAN region, the Special 5-year Program on Contribution of Sustainable Fisheries for Food Security in the ASEAN region was formulated to support the implementation of the Resolution and Plan of Action on Sustainable Fisheries for food Security in the ASEAN Region and the recommendations from the Technical Sessions. The program aims to provide benefit to all ASEAN Member Countries, emphasizing support for the least developed countries in the region to minimize disparities and to achieve coordinated efforts toward sustainable fisheries.

SEAFDEC APPROACHES TO THE IMPROVEMENT OF FISHERY STATISTICS

Together with global and regional concerns on the current status of national fisheries information system in relation to achievement of sustainable fisheries in the region to assist all ASEAN countries to implement the Resolution and Plan of Action, SEAFDEC has developed *The Project on “Improvement of Fishery Statistical Systems and Mechanism – Capacity Building on the Improvement of Fishery Statistical Systems in the ASEAN Region”* as one of a follow-up program under the Special 5-year Program on Contribution of Fisheries to Food Security for the ASEAN Region”. The project aims at supporting the ASEAN countries through the regional collaborating mechanisms to improve their national statistical systems.

It is widely accepted that fishery statistics provides a basis and are crucial to the determination of national fisheries policies, the formulation of national management frameworks and actions or even as a basis for understanding the status and condition of fisheries resources. However, current national fishery statistical systems of ASEAN Member Countries are not effectively implemented. The extent of the situation may be worse in the new ASEAN Member Countries (Cambodia, Lao PDR, Myanmar and Vietnam (CLMV)). Since the production of effective and timely fishery statistics is a costly exercise, improvement in the utility of statistics at the national level should be accorded high priority. In addition, to reduce the gap of fishery development and management among the ASEAN

Member Countries, priority should be given to the CLMV in capacity building of their national fishery statistical systems particularly on the statistical personnel aspect.

Because of the similarity of fishery structure and specificity among ASEAN Member Countries, existing cases, expertise and experience in the ASEAN region will be mobilized and form basis for capacity building of the national fishery statistical systems with emphasis on the CLMV to ensure compatibility of fishery statistical systems and fishery structure of the CLMV and other member countries in the region. The project targets at the development of training packages for training of statistical personnel and conduct of on-site training in CLMV.

This project was proposed based upon Resolutions 4 and 7, the Plan of Action A9, A10 and A11 as well as relevant conclusions and recommendations endorsed by the Conference, which highlighted important issues in the improvement of fishery statistics.

The objectives of this project are as follows:

1. To improve fishery statistical systems and mechanisms in response to the needs of national fishery development and management, particularly in the new ASEAN Member Countries (Cambodia, Lao PDR, Myanmar and Vietnam (CLMV)) through the establishment of pilot projects;
2. To mobilize expertise and experience on fishery statistics existed in the ASEAN region;
3. To develop national plans for strengthening national fishery statistical systems for CLMV;
4. To promote harmonized/standardized definition and classification of fishery statistics in the ASEAN region; and
5. To improve the Fishery Bulletin for Fishery Statistics in the ASEAN region toward more usable and timely provision.

In brief, strengthening national fishery statistical systems through development of standard training packages which also serve as a regional reference to support human capacity building.

- Collaborate with FAO
- Use existing regional expertise
- STP is composed of four main modules namely a) overall fishery statistical system and mechanism; b) marine capture fisheries; c) inland capture fisheries; d) aquaculture; and e) other statistics related to fisheries.
- Considering different development stages and special situation in each ASEAN country, the Standard training packages will be used to facilitate national plan and action to improve fishery statistical system

The following outcomes are envisaged through the project activities.

- 1) Enhancement of the applicable and practical technologies required for the implementation of the improvement of national fishery statistical systems in ASEAN Member Countries both policy making and technical levels.
- 2) Improvement of the understanding on the needs to improve the national fishery statistical system in ASEAN Member Countries.
- 3) Better understanding of the applicable improvement of the fishery statistical system in different levels of situation in terms of achievement so far, and economic and fisheries development.

- 4) Formulation of practical national implementation plan for the improvement of the national fishery statistical system, which could be considered as a basis for each ASEAN Member Countries to follow-up national activities toward the improvement of the system.

The implementation of the Program will be fully coordinated with fisheries related offices of all ASEAN countries. The communication with the relevant officers in these countries will be conducted through the established channels with SEAFDEC. Regional Fisheries Policy Working Group (WGRFP) established in the Secretariat, composed of the seconded staff from seven SEAFDEC Member Countries will liaise with their home offices and worked as technical coordinators on the project, especially for organizing on-site training at CLMV countries.

SEAFDEC INITIATIVES ON INLAND FISHERY STATISTICS IN THE ASEAN REGION

With a growing population in Asia in general and some of the countries in the ASEAN region in particular, it is not only important to maintain the contributions of inland fisheries to food security but also enhance it to increase production. Concerted action is required in this regard. There is a need to improve collection of statistical data, which can be interpreted in economic, scientific and ecological terms for use in planning and development purposes. The increasing degradation of the environment and loss of fisheries habitats are of serious concerns for the sustainability of inland capture fisheries. This situation must be checked through a multi-purpose use framework and an integrated management approach involving the fishers, industry and other stakeholders utilizing the water resources.

SEAFDEC Approaches to the Improvement of Inland Fishery Statistics

The ASEAN-SEAFDEC Conference on “Fish for the People” also focused on the unique context and nature of the region’s fisheries on important fisheries issues including inland fisheries management and improvement of fishery statistics.

Due to the importance of and need for proper development and management of inland fisheries, the Special 5-year Program also cover areas related to improvement of inland fisheries statistics as part of the national fishery statistical system and information gathering for inland fisheries management in the ASEAN region as included in the Resolution number 8 as “Emphasize the importance of inland fisheries and aquaculture in planning and policy formulation to improve food security and the livelihoods of rural people”, and in Plan of Action number 12 as “Develop national statistical mechanisms on inland fisheries and aquaculture in order to provide a basis for their development and the exchange of statistical data and related information, with particular emphasis on the catchment approach in international river basins”.

Based on the above Resolution and Plan of Action, the necessity to improve inland fishery statistics as part of the national statistical systems was highlighted as an important basis and prerequisite to tackle with the various problems toward the sustainable fisheries. Together with global and regional concerns on the current status of national fisheries information system in relation to achievement of sustainable fisheries in the region, SEAFDEC has developed a project entitled “Information Gathering for Capture Inland Fisheries” under the above-mentioned follow-up program to the ASEAN SEAFDFEC Conference. This project will be implemented at both at a regional level and at selected pilot studies. At the regional

level, information on capture inland fisheries will be compiled and evaluated through consultation visits to respective member countries with the help of appointed core-experts/resource persons. In pilot studies, information will be collected and compiled at selected proposed sites.

Six activities are proposed to be carried out as i) Organizing the First Regional Technical Consultation, ii) Compilation and documentation of data on fisheries, fishing gears and methods, fish species, environmental conditions and socio-economic data, iii) Implementation of pilot projects for the riverine system, lakes/reservoirs and flood plains, iv) Development of database, v) Application of remote sensing and GIS for the development and management of freshwater capture inland fisheries and vi) Capacity building/on-the-job training for freshwater fish taxonomy and freshwater fish larvae identification.

The expected outputs from this project include compiled information on fishing gears and methods used, list of freshwater fish species and fish larvae, biological information of commercially important species and social and economic information on capture inland fisheries in ASEAN countries. The databases containing these information at both the regional and local levels will be established and disseminated to ASEAN member countries. A Standard Operating Procedure and format for data collection and analysis will also be established and distributed to member countries.

SEAFDEC INITIATIVES ON INDICATORS AS A MANAGEMENT TOOL FOR FISHERIES MANAGEMENT IN THE ASEAN REGION

To support the recently discussed approach of using indicators for fishery management, SEAFDEC in collaboration with FAO, Government of Vietnam and ALMRV recently organized a Regional Technical Consultation on Indicators for Sustainable Fisheries Management in ASEAN Region in May 2001. The Consultation discussed status of fisheries and their management in the ASEAN region, thereby providing a basis for the identification of practical indicators for management of sustainable fisheries in the region. The Consultation identified potential applicable indicators taking into consideration the the experiences from participating organizations. The Consultation also preliminarily discussed how national fishery statistics could support the data collection to obtain indicators for fishery management.

As far as fishery statistics in support of the indicators is concerned, the Consultation made the following conclusion and recommendations which should be highlighted when the a national fishery statistical system is to be improved.

- The selection of indicators should be based on criteria, including the availability of data and information, so that the indicators are practical, simple and applicable. In the case where the data are not available, the requirement of data should be identified.
- The indicators for fisheries management should be cost effective and considered valid for local stakeholders. The mechanisms for collecting data and information supporting indicators should be established and contained within the government structure and routine mechanism including fishery statistical system. Some information and data supporting indicators such as biological, socio-economic aspects will be supplemented by other programs including research, census as non-routine exercises.

- The establishment of a good working relationship with the fishermen and a good sampling program will ensure the successful collection of data to obtain reliable information. In addition, mutual cooperation with fisheries industry in the area of collection of information will enhance the compliance of the management action.

SEAFDEC Approaches to Promote the Use of Indicators for Fisheries Management

From the ASEAN-SEAFDEC Conference on “Fish for the People”, importance of indicators for fisheries management was included in the Plan of Action number 6 as “Formulate guidelines to promote the use of practical and simple indicators for multi-species fisheries as a substitute for classical fisheries management models within the national fisheries management framework, with particular regard to facilitating timely local level fisheries management decisions”.

In order to assist all ASEAN countries to implement the Resolution and Plan of Action, SEAFDEC has developed a Project on “The identification of indicators for the sustainable development and management of capture fisheries in the ASEAN Region” to be implemented by SEAFDEC under a follow-up program entitled “the Special 5-year Program on Contribution of Fisheries to Food Security for the ASEAN Region”.

The use of indicators in the management of tropical multi-species and multi-gear fisheries is an immediate option that can be used by national fisheries managers. This option does not aim to replace conventional stock assessment methodologies that are being used but is aimed at using simple, practical, available and cost-effective indicators in the formulation of management decisions.

The introduction of the use of indicators in SEAFDEC Member countries also stresses on the needs for the development of fisheries management plans for specific fisheries and the consultation and active participation of stakeholders, the majority of whom are fishers, in the process of the development of these management plans. This project will also adopt a more “bottom-up” approach in fisheries management.

To introduce the use of indicators as a tool for fisheries management, several pilot studies for identified fisheries in selected SEAFDEC member countries will be implemented. These pilot studies were proposed and recommended for implementation. Currently pilot projects for the trawl fishery will be conducted in Brunei Darussalam and Malaysia. Indonesia will conduct a pilot study on the “mini” purse seine fishery while Philippines will study the ring net fishery. A small-scale fishery will be studied in Vietnam.

The initial phase of pilot project implementation requires detailed compilation and documentation of existing data on indicators. This role will be conducted by respective countries with the cooperation of stakeholders. The fisheries management plans for identified fisheries for the pilot studies will be developed together with stakeholders.

Outputs from this program are the Guidelines for the use of indicators in fisheries development and management and the preparation of fisheries management plans for capture fisheries in SEAFDEC Member Countries to be disseminated to ASEAN Countries.

Besides pilot studies, three new activities under the existing project and an additional new project. These are:

- a) The use of catch-effort and socio-economic indicators for fisheries management
- b) Maximising the use of size data as an indicator for the development and management of capture fisheries
- c) Application of remote sensing and GIS to support the study on the use of indicators.
- d) Training in acoustic research and methodology

These additional activities a), b) and c) proposed above are related to the main project formulated and will make use of existing data collected by SEAFDEC Department in Malaysia. Catch-effort, socio-economic and size data collected for the small pelagic fishery of the east coast of Peninsular Malaysia are identified indicators for fisheries management. The use of remote sensing and GIS data will be used to show the distribution of the small pelagic fish. GIS will also be employed to enhance the presentation of data and findings to the stakeholders of the small pelagic fishery. This will aid in communication and information dissemination both to the stakeholders and to the national fisheries managers.

The additional project on training in acoustic research and methodology, d) above, is proposed to provide technical support in the use of hydroacoustics in pelagic fish stock assessment. Acoustics surveys had been conducted in several SEAFDEC member countries but different systems e.g. SIMRAD, Furuno and Biosonics had been used to determine fish biomass. Fish biomass is an indicator that is used for fisheries development and management and will provide information on the status and trend of pelagic fish stocks in ASEAN Member Countries.

SEAFDEC INITIATIVES ON “INFORMATION COLLECTION FOR SUSTAINABLE PELAGIC FISHERIES IN THE SOUTH CHINA SEA”

In the South China Sea, there are many commercially important pelagic fishes, for example mackerels, scads, sardines and coastal tunas. So far, the information on pelagic fisheries and pelagic fish biology is still limited. Therefore, SEAFDEC proposed a program that aims to collect information on the fisheries of pelagic fish. The program focuses its target on mainly purse seine fishery because that is one of the major fisheries, which are targeting pelagic fishes in the region. Clarification of the actual status of operation and catches of the purse seine fishery in the South China Sea will produce essential information for management exploitation and utilization of the resources of the purse seine fishery.

Program’s Objectives are to 1) clarify the actual status of operation and catches of the purse seine fishery in the South China Sea for sustainable fisheries; 2) To examine existence of under-exploited resources in the purse seine fishery; 3) To examine maximizing utilization of catches in the purse seine fishery; and 4) To clarify the biological characteristics of pelagic fishes caught by the purse seine fishery.

The program comprises Component I: Meetings/Workshop for Effective Program Implementation covers reviewing results of the data collection and analyses and the Observation of landing sites and to finalize methodologies and mechanism of activities, and Training for data handling and analysis for participating countries on methodologies to handles and analyze fishing operation and catches data as well as biological data. Component II: Survey for Actual Status of Operation and Catches of the Purse Seine Fishery comprises

Project 1: Fishing operation and catches data collection and analysis and Project 2: Biological data collection and analysis of mackerels and roundskads.

SEAFDEC 'S PROGRAM ON DIGITIZED ATLAS

SEAFDEC has established its Information Policy aiming at facilitating dissemination of fishery information and the enhancement of SEAFDEC program visibility. Considering the vital role of information in the development of fisheries sector, the program, based on SEAFDEC information and communication policies, the Secretariat will continue to develop several information activities and services to support management and development of sustainable fisheries in the region as well as provide forum for communication and information exchange among fisheries-related networks. With the assistance of Internet technology, SEAFDEC is simultaneously developing its Digitized Atlas to accommodate databases of the compiled data to provide access to wider audience. Through the Digitized Atlas and databases on the SEAFDEC Web Page, dissemination of regional fishery statistics could be attempted.

Over 35 years of SEAFDEC, there were many hundreds of implemented programs and activities have been carried out, most of these were in the hard copies and publication such as research reports, oceanographic profile/data and SEAFDEC fisheries statistic data in the South China, etc. SEAFDEC understands the benefits of geo-informatics technology such as Geographic Information System (GIS), Remote Sensing, Conventional and GPS-Satellite surveying in helping SEAFDEC core activities, including more efficient and more effective ways for information dissemination. Since 1999, digitized atlas project was established through the SEAFDEC homepage. This first phase of work focused on the information dissemination of the current fisheries situation including the result from the Collaborative Research Program on the marine resources survey in the South China Sea and some work on statistic database. Due to the SEAFDEC GIS database is complex, less technology and knowledge on the GIS application, nevertheless, the Geo-informatics technology is diverse and rapidly advancing. These altogether make it necessary for SEAFDEC to improve and update the SEAFDEC Digitized atlas as the **SEAFDEC Fisheries Information System (FIS)** of the Region. In conjunction to this, the promoting of the results from SEAFDEC Special 5-year program and ASEAN interested issues through SEAFDEC Digitized Atlas is taken into consideration. Besides, the Regional database system and GIS for all fisheries information covers the SEAFDEC area such as coastal fisheries management, fishery statistic database system, fishery oceanography database system are needed to develop and establish. These provided Regional Fisheries information useful for fisheries planning, management on sustainable fisheries in the Southeast Asian country.

The project's goal is to improve the SEAFDEC information system as Digitized Atlas and to construct an operating, integrated data management system on fisheries to SEAFDEC users that can be friendly accessed through the Internet. The main objectives are 1) To improve the SEAFDEC digitized atlas for user friendly propose, 2) To develop the Regional Database System which related to all Fisheries Information Issues, 3) To develop/establish GIS on the Fisheries Information that related to all of the ASEAN-SEAFDEC Interested Issues, and 4) To promote the SEAFDEC digitized atlas through others publication, advertisement and media.

SEAFDEC INITIATIVE ON SHARK STATISTICS (ELASMOBRANCH STATISTICS – ITEM 7)

At the ASEAN – SEAFDEC Regional Meeting on Fish Trade and Environment, organized by the SEAFDEC Secretariat in Bangkok, Thailand from 14 to 16 October 2002 as part of the collaborative program on Fish Trade and Environment under the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) mechanism, the Meeting also stressed on the need to strengthen the existing ASEAN-SEAFDEC collaborative programs related to the improvement of management of shark fisheries, conservation and management of marine turtles and antibiotic residues of farmed shrimps.

In this connection, the Meeting took note that there is a lack of statistical data on shark due to the low importance of the species as food fish. In addition, most countries in the ASEAN region have no mechanism to collaborate with industrial fisheries in the collection of information on sharks due to the fact that most of sharks are caught as by-catch of other fishery activities. The Meeting agreed to take actions to incorporate shark fisheries management measures within their national fisheries management policy and framework. The Meeting also agreed that collection and analysis of data and information and efforts to understand the status and trend are the important basis for the appropriate fisheries management policy and actions, and would take the following urgent actions, particularly for the improvement and standardization of the collection of the information and data, including scientific data, of shark fisheries:

- Expanding the classification of some major commercial shark species into the national fisheries statistics considering the national fisheries on sharks;
- Use of species composition as an indicator for better understanding of dynamic of shark fisheries;
- Development of pilot projects to understand and manage shark fisheries;
- Improvement of the coordination mechanism with the industries to collect and understand the status and trend of shark fisheries; and
- Promotion of research activities to maximize utilization of harvested sharks and identification of species of shark products.

Lastly, the Meeting suggested to accommodate the above-agreed actions into the “Regional Guidelines of the Code of Conduct for Responsible Fisheries” so as to harmonize the above actions with other fisheries management requirement.

To follow-up the recommendation of the Fish Trade Meeting, a project on “Management of Shark Fisheries in ASEAN-SEAFDEC member Countries” was initiated under the “The identification of indicators for the sustainable development and management of capture fisheries in the ASEAN Region” to be implemented by SEAFDEC under a follow-up program entitled “the Special 5-year Program on Contribution of Fisheries to Food Security for the ASEAN Region”.

Most elasmobranches (sharks and rays) are characterised by slow growth, late age at maturity and low fecundity and productivity. Sharks species are dependent on a stable environment, have a low reproductive potential and limited capacity to recover from overfishing. Such biological characteristic have serious implications for the sustainability of sharks fisheries. Regional sharks research efforts should be targeted at understanding the biology and ecology of the elasmobranch, including critical habitat requirements during their life cycle, and

conservation needs. Theses will be conducted through the collaborative work among shark researchers in ASEAN-SEAFDEC member countries

Program's objectives are: (i) to understand the biology and ecology of sharks including habitats they are dependant during their life cycle, (ii) to identify the threats faced by them and the impacts of fishing practices (iii) to develop conservation strategies of sharks in this region, and (iv) to raise awareness among decision-makers, managers and general public of the region with respect to the special biological constrains faced by the sharks, and their vulnerability within the fisheries.

The outcome from this project will be a publication entitle "Shark fisheries, conservation and management in ASEAN-SEAFDEC member countries". It can be used as basis for formulation and management of shark fisheries in this region.

FIRMS PARTNERSHIP (ITEM 13) AND FIRMS/FIGIS DEVELOPMENT (ITEM14)

To follow-up the outcomes from the FIGIS Workshop held in Rome, 2002, *FIGIS System Design*: So far, FIGIS has developed inventories for information on stock, resource, and fisheries. Case studies information provided from existing partners are mostly on stock and resource for certain groups of species (e.g. Tuna). However, wider ranges of case studies are required in order to validate/amend the design of the System. This can be achieved through involvement of more institutions (including SEAFDEC) to provide case study; these institutions may also be partners in the future.

As indicated that FAO will further evaluate the interest of newcomer institutions (including SEAFDEC) to be partner, and make request for collaboration. If SEAFDEC interests to collaborate in this Project, at the preliminary stage, SEAFDEC would be requested to provide input information to the System as case studies.

SEAFDEC noted that FIGIS could draw on many sources, including the annually published Fisheries Statistical Bulletin containing data collected from 11 countries in the South China Sea area. Its statistical programme currently focuses on improvements of national statistical systems in the ASEAN region, particularly for four member countries of ASEAN (Cambodia, Lao PDR, Myanmar, and Vietnam). SEAFDEC has also published reports on collaborative fishery resource surveys conducted in the South China Sea area. SEAFDEC has developed the Digitised Atlas which appears in the SEAFDEC website, showing information on oceanographic data, fisheries resources and distribution, fisheries statistics, and fishing gear and methods. A new initiative, on information collection for sustainable management of pelagic fisheries in the South China Sea area, may also be a potential source of information.

For partnership agreement, as the *Draft Partnership Agreement*: Potential partners are national institutions or regional fishery bodies with legal mandate s, to monitor/manage fisheries. In general, partners will share information (according to its mandate) to FIGIS and, in return, can access to the information and database beyond the restriction applied to other user. SEAFDEC will further investigate on the potential collaboration in FIGIS considering the concepts, mutual benefits, role/responsibility, requirements and integration into the existing programs.

PART III. – CONCLUSION

It should be recognized that improvement of fishery statistics in the Southeast Asia is substantially important for the promotion of sustainable fisheries and eventually the contribution of fisheries to food security. Fishery statistics maintained at national levels should be regarded as the main source of information for the long-term and sustainable development and management of fisheries. Along this line, strengthening of national fishery statistical systems and promotion of sustainable and comparable data collection systems should be given a first priority to fulfil the purpose.

The regional cooperation in the development and management of fisheries is substantially important. The cooperation should take into consideration the sustainable data collection systems, human resources development for fishery statistics, exchange of data and information, etc. In this connection, SEAFDEC will collaborate with the regional/international organization like ASEAN, FAO and so on for supports to facilitate the tasks. And lastly, the administrators and managers of fishery statistics should be encouraged to play a proactive role as they are providing a foundation for fishery scientists to assess the status of fishery resource and fisheries for management purposes.