FISHERY AND AQUACULTURE STATISTICS IN ASIA

Proceedings of the
FAO/SEAFDEC Regional Workshop on Fishery Statistics
Bangkok, Thailand

19-21 August 1997

Volume I
REPORT OF THE WORKSHOP

The Secretariat
Southeast Asian Fisheries Development Center
Bangkok, Thailand

December 1997

FISHERY AND AQUACULTURE STATISTICS IN ASIA

Prepared by

Ms. Virgilia T. Sulit
(Rapporteur of the Workshop)
Special Assistant to the Chief
Aquaculture Department of the
Southeast Asian Fisheries Development Center
Tigbauan, Iloilo, Philippines

with the assistance of

Miss Eileen S. Gayamat
SEAFDEC Aquaculture Department

in consultation with

Mr. Udom Bhatiyasevi
Secretary-General
Southeast Asian Fisheries Development Center
Bangkok, Thailand

Dr. Richard Grainger
Senior Fishery Statistician
Fishery Information, Data and Statistical Unit
Food and Agriculture Organization of the United Nations
Rome, Italy

and

Dr. Veravat Hongskul
Senior Fishery Officer
FAO Regional Office for Asia and the Pacific
Bangkok, Thailand

TD/RP/43 December 1997

VOLUME I: REPORT OF THE WORKSHOP

CONTENTS

SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER
Office of the Secretary-General

FOREWORD

Fishery statistics is the basis for sound management of fishery resources and fishery policies planning and formulation. Fishery statistical systems in most Asian countries however, have not been receiving the proper attention it deserves, in spite of the various fora that emphasized the need to improve data compilation and application. The UN Conference on Environment and Development (UNCED) highlighted the need for fishery statistics, drawing the attention of coastal states to improve their national capacities in collecting, analyzing, and processing fishery statistics for effective resource management. The 1995 UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks as well as the 1995 Code of Conduct for Responsible Fisheries also recognized the need for reliable fishery statistics specifying the minimum essential data requirements in resource management considering the available resources.

SEAFDEC and FAO have continuously worked together, starting in the 70s, towards improving the collection, processing and dissemination of fishery statistics in Asia. Since then, considerable progress in these efforts has been accomplished by these organizations. The 1997 FAO/SEAFDEC Regional Workshop on Fishery Statistics was the ninth of a series of workshops on fishery statistics organized by FAO and SEAFDEC since 1976. One very significant achievement of this collaborative effort is the automation of data compilation and analysis which is already in progress in the region, although in some countries computerization is still at some stages of development.

Another development is the collection of aquaculture and socio-economic statistics which has already started, making the compilation of fishery statistics very comprehensive. It is also envisaged that the compilation of national economic accounts would soon be realized to be used as basis for the systematic and statistical description of the contribution of fisheries to a country's economy. Nevertheless much remains to be done. These developments, together with the improvement of the compilation of artisanal and aquaculture statistics, are captured in this Proceedings of the 1997 FAO/SEAFDEC Regional Workshop on Fishery Statistics.

The Proceedings comprised two volumes, the Report of the Regional Workshop as Volume I while Volume II contains the papers presented at the Workshop. The Report in Volume I also includes the recommendations raised during the Workshop, directed for national action and those directed for global action.

In the organization of the Workshop and the Proceedings, SEAFDEC is thankful to FAO for their continuous support, and to the participating countries as well as the regional organizations for the valuable information that went into the Proceedings.

Lastly, special gratitude is due to *Dr. Veravat Hongskul*, Senior Fishery Officer of the FAO Regional Office for Asia and the Pacific and to *Dr. Richard Grainger*, Senior Fishery Statistician of FAO Fisheries Information, Data and Statistics Unit, for their effort in organizing the Workshop and advice in the publication of the Proceedings. Also to *Mrs. Virgilia T. Sulit* and her assistant, *Miss Eileen Gayamat*, of SEAFDEC Aquaculture Department in the Philippines for the preparation of the text that went into the two volumes of the Proceedings.

To all those who, in one way or another, contributed to the publication of the Workshop proceedings, SEAFDEC is very thankful. On behalf therefore of SEAFDEC, I wish to thank everybody for their cooperation during and after the Workshop.

U. Bhatiyasevi

UDOM BHATIYASEVI
Secretary-General

FISHERY AND AQUACULTURE STATISTICS IN ASIA

EXECUTIVE SUMMARY

The FAO/SEAFDEC Regional Workshop on Fishery Statistics was convened by the SEAFDEC Secretariat and FAO in Bangkok, Thailand from 19 to 21 August 1997, in order to review the current status of fishery and aquaculture statistics in Asia; recommend ways and means to improve the collection, compilation, and dissemination of fishery and aquaculture statistics; and discuss regional efforts in strengthening the application of statistics in the region. The Workshop, attended by over 50 participants, was organized in conjunction with the First Session of the APFIC Joint Working Party on Fishery Statistics and Economics which was also held in Bangkok from 22 to 23 August 1997.

In reviewing the national fishery and aquaculture statistical systems in the region, 12 country papers were presented indicating the current status, constraints encountered in compiling statistics, and efforts planned for the improvement of collecting, compiling and disseminating statistics. The summary of issues raised by the participants indicated the need to harmonize and standardize concepts and methodologies for the collection of capture fishery and aquaculture statistics.

The participants also indicated the need to collect data on fish processing and trade as these are often lacking. The need to breakdown the number of fishers into either full-time or part-time in order to account for the total employment in the fishery sector, and also to breakdown the number according to gender, and the need to improve the accessibility and availability of statistics to the end users, were also raised. The participants however emphasized that these issues can be dealt with in their respective countries with the guidance and technical assistance from regional and international organizations concerned with fishery and aquaculture statistics in the region.

The FAO Fishery Information, Data and Statistics Unit (FIDI) which compiles global fishery statistics obtained from national reporting offices and other sources, has developed fishery databases and statistical software for worldwide application. The ARTFISH/ARTSER for example, was developed by FIDI in 1994 for processing of data from sample surveys. In compiling fishery statistics, FAO noted that some data reported by national offices sometimes lack reliability. Whenever possible, FIDI verifies these data from other sources. Thus, in order to improve the system of reporting, the participants asked FAO to make available to the region their fishery statistical software, specifically ARTFISH/ARTSER. Moreover, in order to make the application effective on a wider scale in the region, they stressed that adequate training must be provided.

SEAFDEC, for its part, published annually since 1978, the Fishery Statistical Bulletin for the South China Sea Area with the objective of providing reliable and comparable fishery statistics with standardized definitions and classifications. The compilation of the data for the Bulletin is however, constrained by the timing and long delay in returning the questionnaires by participating countries. The submission of incomplete information and incompatible standards and procedures by the participating countries led to the reduced value of the statistics to the users.

For the improvement of the compilation of data for the Bulletin, it was suggested that information on disposition of fish be included and that a pilot study be undertaken by the national offices in order to compile statistics on processing and post-harvest activities. The need to organize a working group to harmonize fishery statistics and relate this with statistics from other sectors of the national economy was suggested.

The SEAFDEC Department in Malaysia compiles and publishes the catch-effort statistics for the South China Sea area, based on questionnaires sent annually to participating countries such as Brunei Darussalam, Taiwan, Hong Kong, Indonesia, Cambodia, Malaysia, the Philippines, and Singapore. The compilation of data is constrained by the delayed, incomplete and oftentimes absence of returns. The participants indicated that the absence of data may not necessarily be due to their lack of interest in the activity. The collection of catch-effort statistics on a massive scale including program preparation and training of staff usually takes a lot of their time, manpower and financial resources. The participating countries however, re-affirmed their commitments to participate more actively in the collection of catch-effort statistics.

In the absence of reported capture and aquaculture production statistics for Asia and the Pacific, FIDI makes estimates using the best available information in addition to data submitted by countries. An analysis by FIDI of the trend for the period 1984 - 1995, indicated an increasing proportion of estimated rather than reported data for capture fisheries. A further serious problem is the lack of species definition for capture fisheries compared with aquaculture, or when species composition are available in some countries, these may not be reported to FAO. In order to improve the situation, it was suggested that field guides be developed by national offices tailored for their requirements. Other suggestions raised emphasized that computerization needs to be intensified, capabilities in application of information technology and data collection be improved, and decentralization of operations be facilitated. In order to accomplish these, it was suggested that coordinating bodies may be organized at the national and regional levels.

The SEAFDEC Department in Malaysia is also responsible for the collection of tuna statistics in the Southeast Asian region indicated as FAO area 71. The collection involves tuna and tuna-like species, such as tuna and bonitos, seerfishes, and billfishes, in seven participating countries, namely, Brunei Darussalam, Singapore, Thailand, the Philippines, Vietnam, Malaysia, and Indonesia. These countries have designated liaison officers who are responsible for the collection of tuna fishery statistics in their respective countries. In its initial efforts, SEAFDEC encountered several problems including the delayed response to the requirements for tuna statistics: tuna landings reported were not according to species, some liaison officers were not from statistics offices, and species identification for early stages of tuna species especially for yellowfin and big-eye were not available. In order to tackle the problems, a technical meeting of the liaison officers will be convened by SEAFDEC in Malaysia in December 1997. In order for the comprehensive statistics to be maintained, it was noted that data should also be collated for non-SEAFDEC member countries.

FAO, while formulating the Supplement on Aquaculture for the World Census of Agriculture Programme for 2000 (WCA 2000), proposed a revision of the present definition of aquaculture for statistical purposes. Although the participants raised some apprehensions about the proposed revised definition, specifically the inclusion of crocodiles, alligators and amphibians, they agreed to consider the new definition in order to cover in the census and regular surveys, all aspects of cultured organisms in the water as well as the activities and ownership of the reared organisms.

The Supplement has been reviewed as far as methodologies and structural information are concerned through expert and technical consultations convened by FAO. It was noted however, that the new definition of aquaculture proposed by FAO may result in delayed aggregation of capture and aquaculture statistics since some countries may need to revise the questionnaires based on the new definition. The participants considered the inclusion of the Supplement in WCA 2000, depending on their national priority. FAO will publish the Supplement for worldwide dissemination before the end of 1997.

The participants recognized the need to compile and analyze socio-economic data for the fishery sector for management purposes. They also recognized the need to determine the minimum data to be collected on regular basis. Such data may be collected by sample surveys based on the frame provided by the agriculture census. FAO also presented a case study on the collection of national economic accounts for planning and management purposes. The compilation of national accounts can be facilitated through the fishery statistics data that has been compiled by the participating countries.

FAO and SEAFDEC, together with other organizations in the region, noted the increasing concerns on the lack of timeliness and reliability of the data reported by the participating countries. In order to overcome such problems, they suggested that fishery statistics capabilities in the region be strengthened at the national level together with the development of regional mechanisms for data exchange. Areas for regional cooperative action were identified which would adopt and apply common methodologies and tools in compiling fishery and aquaculture statistics.

The participants after raising the major issues relevant to their efforts in compiling and processing the data, identified actions that should be taken at the national and regional levels. From the proposed actions, the following recommendations were formulated by the participants, directed to their respective countries as well as to regional and global organizations concerned with fishery statistics.

I. <u>For National Action</u>

1.1 In order to improve coverage and consistency, it was agreed as a priority effort that, disposition of fish production for food and non-food uses should be monitored and reported. This activity shall however need the guidance and assistance of international and regional organizations concerned with fishery statistics.

1.2 In connection with 1.1, it was recognized that statistics on commodity production and trade are required in order to construct national food balance sheets for assessing per caput fish supply. In addition, fish consumption statistics should also be obtained through surveys.

1.3 In order to make reliable statistics available to the users readily and timely, data processing should be automated to speed up the collation and dissemination of capture fishery and aquaculture statistics. Software packages such as ARTFISH were deemed useful.

1.4 To facilitate accessibility and availability of fishery statistics, national interagency communication as well as liaison with international bodies on statistical matters be improved. This could be accomplished through the establishment of national working group(s) comprising fisheries and other statisticians, as well as technical specialists.

REPORT OF THE
FAO/SEAFDEC REGIONAL WORKSHOP ON FISHERY STATISTICS

Bangkok, Thailand
19-21 August 1997

INTRODUCTION

1. The FAO/SEAFDEC Regional Workshop on Fishery Statistics was convened by the SEAFDEC Secretariat in collaboration with the Food and Agriculture Organization (FAO) of the United Nations in Bangkok, Thailand from 19 to 21 August 1997. The Workshop aimed to: review the current status of fishery and aquaculture statistics in Asia; recommend ways and means of improving the collection, compilation, and dissemination of fishery and aquaculture statistics; and discuss regional efforts in order to strengthen the application of statistics in fisheries and aquaculture in the region.

2. The Regional Workshop was organized in conjunction with the First Session of the APFIC Joint Working Party on Fishery Statistics and Economics (JWP) which was conducted from 22 to 23 August 1997. The JWP also reviewed the recommendations of the Regional Workshop for follow-up by the JWP during its inter-sessional period from 1993 to 1999.

3. The Regional Workshop was attended by more than 50 participants and observers from participating countries in Asia as well as from international and regional organizations working on fisheries and aquaculture in the region. Officers from FAO as well as from the SEAFDEC Secretariat and Departments in Thailand, Malaysia and the Philippines also attended the Regional Workshop.

4. The list of participants who attended the Regional Workshop appears as Annex A while the list of documents presented at the Workshop appears as Annex B.

5. The Agenda of the Regional Workshop, as adopted which appears as Annex C, comprised ten major items, namely, current status of fishery and aquaculture statistics; FAO Fishery Statistics Programme; SEAFDEC Fishery Statistical Bulletin; catch and effort statistics; tuna fishery statistics; aquaculture statistics; socio-economic statistics; improvements of the collection, compilation and dissemination of fishery and aquaculture statistics; regional cooperation in strengthening the application of fishery and aquaculture statistics; and conclusion and recommendations.

6. The Secretary-General of SEAFDEC, *Mr. Udom Bhatiyasevi*, welcomed the participants and observers to the Workshop. He referred to the current problems and international initiatives that required the assessment of the present status of fishery and aquaculture statistics in the region and the identification of areas where attention and support should be focused. He stressed the importance of statistics as a tool for sound resource management and fishery policy planning. He appreciated the efforts made by FAO and SEAFDEC in improving the collection, collation, and analysis of fishery and aquaculture statistics in the region. His welcome address appears as Annex D.

7. The Assistant Director-General and Regional Representative for Asia and the Pacific of FAO, *Dr. Soetatwo Hadiwigeno*, in his opening remarks emphasized the important role that timely and accurate statistics can play in order to guide planners and policy-makers in formulating strategies for sound management and sustainable use of aquatic resources. He commended the continued cooperation of FAO and SEAFDEC in supporting the development of fisheries and fishery statistics in the region. His opening remarks appear as Annex E.

CURRENT STATUS OF FISHERY AND AQUACULTURE STATISTICS

a. National Fishery and Aquaculture Statistics

8. A review of the statistical systems was made from the national reports presented by 12 participating countries, namely, Brunei Darussalam, Bangladesh, China, Indonesia, Japan, Korea, Malaysia, Myanmar, the Philippines, Chinese Taipei, Thailand, and Vietnam. The presentations focused on the current status of fishery and aquaculture statistics, constraints encountered in compiling statistics in their countries, and efforts planned for the improvement of collecting, compiling and disseminating statistics. The summary of the issues raised indicated the need to harmonize and standardize concepts and methodologies for the collection of capture fishery and aquaculture statistics. As an example for collecting aquaculture statistics, the participants noted that the definitions of freshwater, brackishwater and marine environments need to be standardize.

9. In order to maximize the benefits from compiling fishery and aquaculture statistics, the participating countries indicated the need to collect data on fish processing and trade as these are lacking in their current statistics. The need to breakdown number of fishers and fishfarmers by full-time or part-time or occasional, and by gender in order to account for the total employment in the fishery sector was noted; and the need to improve the accessibility and availability of statistics to the end-users, were also recognized. The participants emphasized that these issues can be tackled with in their respective countries, with guidance and technical assistance from regional and international organizations concerned with fishery and aquaculture statistics in the region.

10. A brief review of the current status of national fishery and aquaculture statistical systems in Asia is included in this volume of the Report. The country reports presented by the 12 participating countries, together with all the other papers presented in the Workshop, are included in Volume II of the Report.

(i) *Brunei Darussalam*

11. Fishery and aquaculture statistics in Brunei Darussalam, collected by its Fisheries Department, involve five sections, namely, marine fisheries, aquaculture, enforcement, post-harvest, and marketing. The data collected include employment in the fishery sector, fish production, fish trade, and gross domestic product for fishery. However, the data are collected only at major landing and main market sites.

12. The Fisheries Department of Brunei Darussalam is embarking on projects aimed at increasing production from capture fisheries as well as from aquaculture in order to reduce the country's dependence on imported fish. New areas have been developed for aquaculture at the same time maintaining as far as possible the coastal resource environmental balance.

(ii) *Bangladesh*

13. The Fisheries Resources Survey System Project of Bangladesh implements a statistical system for the collection and processing of fisheries data. The data are collected through catch assessment surveys of the fisheries sub-sectors such as the open water, close water, and marine waters.

14. Fish production data are classified into production from inland waters such as inland open water (capture) and inland close water (culture), and production from marine fisheries which include industrial and artisanal fisheries. The inland open water is further classified into rivers and estuaries, sundarban, depression, Kaptai Lake, and flood lands while inland close water is classified as ponds and ox-bow lakes (baors). Industrial fishing includes trawl fishing using shrimp trawler and fish trawler, while artisanal includes gill net fishing, set bag net fishing, long-line fishing, trammel net fishing, and other gear fishing.

15. The Fisheries Ministry of Bangladesh nor its Department of Fisheries conducts a fishery census. The absence of a fishery and aquaculture statistical system in these offices may be the reason behind the country's inadequate catch and effort statistics, and fish processing data. One major problem encountered in recording catch and effort statistics is the fishers' practice of disposing by-catch and trash fish in fishing spots and also using part of their catch for domestic consumption. These data have not been properly recorded. On the other hand, the lack of proper recording of processing data by processors may have contributed to the inaccurate statistics in this field.

16. Bangladesh is planning to implement a project titled "Strengthening of Fisheries Resources Survey System" which aims to: establish a database for monitoring fishery resources assessment, conduct a frame survey/fishery census for inland fisheries, and evaluate the effectiveness of the program. The project is also envisioned to establish and introduce a statistical model for fishery and aquaculture data collection up to the "thana" level.

(iii) *China*

17. The compilation of fishery and aquaculture statistics in China is undertaken at each level of the fishery administrative departments, from the Ministry of Agriculture of the central government to the local governments. The Division of Fishery Statistics and Information of the Department of Fisheries, Ministry of Agriculture, is responsible for the compilation of fishery and aquaculture statistics and the publication of the Yearbook of Fishery Statistics of China.

18. The fishery production of China is broken down according to sources, i.e., into production from marine capture fishery, inland capture fishery, and aquaculture. Data from marine capture includes catch from China's various sea regions, while production from inland capture includes catch of major species such as fish, shrimps, crabs, shellfish, etc. Data from marine aquaculture includes production of fish,

shrimps, crabs, shells, and seaweeds, while production from freshwater fish culture includes carps, bream, and tilapia. During the discussion, the representative from China expressed the need for technical assistance from external source in order that the compilation and processing of their data would become more comprehensive.

(iv) *Indonesia*

19. In Indonesia, fish production data are collected through the fishery production and socio-economic surveys conducted by the Sub-Directorate of Data and Statistics of the Directorate General of Fisheries (DGF), which also processes and compiles production data into a yearbook fishery statistics. The fishery production survey, conducted annually, covers fishery inventory of fishing establishments, fishing boats or area of fishponds and fishing units, and disposition of catch. In addition, the DGF together with the Provincial Fishery Services conducts fishery socio-economic surveys in selected areas covering marine fishing, brackishwater and freshwater culture as well as fishing and fish culture in open waters.

20. The fish production data is reported according to marine fishery which includes capture and culture, and inland fishery comprising capture in open waters and culture in inland waters. Data from culture in inland waters are classified into brackishwater culture, freshwater pond culture, cage and pen culture, and paddy-cum-fish culture.

21. Moreover, catch and effort statistics are collected and compiled through the fishery production survey. As a sub-activity, an industrial tuna long-line survey is now being developed to support collection of catch and effort data for tuna fisheries. The representative from Indonesia indicated the need to improve the collection of their catch and effort data specifically, its economic impact and distribution, adding that, the collection of such data is constrained by the number and quality of personnel at the local level.

22. The Central Bureau of Statistics (CBS) of Indonesia conducts agricultural census once every ten years, the last census was conducted in 1993. The census covered all sectors of agriculture including fisheries. On the other hand, the DGF regularly analyzes and publishes export and import data from the CBS database. One major problem encountered by the DGF is the improvement of their data collection and compilation in view of the financial and manpower constraints currently being experienced by the country.

(v) *Japan*

23. The Statistics Department of the Department of Agriculture, Forestry and Fisheries of Japan conducts various surveys on fisheries such as production structure, fishery production, fishery economy, and marketing. The production structure survey includes fisheries census which is conducted every five years while the fisheries movement survey is conducted annually except when a census is conducted on that year.

24. The fishery production survey covers marine fishery production and inland water fishery production while the fishery economy survey covers fishery household and fishing enterprise, fishing companies, and fixed assets for fishing. On the other hand, the fishery marketing survey is conducted in landing and consuming areas, and covers chilled fishery products and fish processing.

(vi) *Korea*

25. The Ministry of Marine Affairs and Fisheries of Korea collects fishery and aquaculture data which are compiled and published by the Ministry of Agriculture and Forest. On the other hand, the National Fisheries Research and Development Institute collects data for scientific purposes including catch and effort statistics, and biological data for some commercially important fish species.

26. Fishery and aquaculture data are collected through the national fisheries statistical surveys that include basic statistics on household in the fishing industry, fishery production survey, fishery household financial status survey and survey on production of processed fishery products. Specifically, fishery production survey covers coastal, offshore, shallow-sea culture, deep sea fishing, and inland water fisheries.

27. The Agriculture and Fisheries Statistics Information Bureau of the Ministry of Agriculture and Forestry of Korea conducts fishery census every ten years in order to collect numerical information on the production systems of fisheries, employment and living conditions of fishery workers for fishery policy formulation. The fishery census is focused on marine fisheries, inland fisheries as well as on fishery and related facilities.

(vii) *Malaysia*

28. The Department of Fisheries of the Ministry of Agriculture of Malaysia collects, compiles, processes and reports fishery and aquaculture statistics, while the Department of Statistics Malaysia collates and reports trade data on fish and fishery products. Fish production data are classified into production from marine capture fisheries, aquaculture, inland water bodies fishery as well as fisheries trade. The data from marine capture, aquaculture, and inland water bodies are published in the Annual Fisheries Statistics-Volume 1, while the data from fisheries trade are published in the Annual Fisheries Statistics-Volume 2.

29. Malaysia introduced in 1989, the Log Book System in order to undertake a detailed enumeration of deep sea fishing vessel activities. The system serves as a monitoring and assessment mechanism of the performance of deep sea fishing vessels. In addition, cost and earning surveys for fishery enterprises are also carried out annually by the Department of Statistics Malaysia while trade data of fish and fish products are collected by the Royal Customs and Excise Department.

30. Aquaculture statistics are classified into freshwater aquaculture and brackish/marine aquaculture; and into aquaculture systems such as pond culture in freshwater and brackish/marine, cage culture in freshwater and brackish/marine, freshwater culture in disused mining pools, freshwater culture in tanks, and culture of cockles, eel, mussels, and milkfish.

31. Data from inland fisheries are derived from capture fisheries in public water bodies such as rivers, lakes, disused mining pools, and reservoirs. These data are categorized into catch data by species. The representative from Malaysia expressed the need to take into consideration in collecting fishery production data, the local capability specifying that countries in the region generally can not afford to tax people on the ground too much.

(viii) *Myanmar*

32. The Department of Fisheries of the Ministry of Agriculture and Forest of Myanmar is responsible for the management of fisheries, conservation of resources, providing extension services, conducting researches, and the compilation of the national statistics in fisheries. The Planning and Statistics Section of the Department of Fisheries compiles data on fish production from freshwater and marine fisheries.

33. Data from freshwater fisheries are classified into production from fish culture, leasable fisheries, open fisheries, and flood fisheries. On the other hand, production data from marine fisheries are classified into onshore, inshore, and offshore fisheries. It was however reported that there is a low reliability of the present fishery and aquaculture statistics of the country which may not be suitable for fishery management purposes. There is however, a collected effort of the government starting in 1996 to strengthen their data collection and compilation capabilities.

(ix) *Philippines*

34. The Philippine Statistical System comprises various statistical agencies whose primary functions are generation, processing, analysis and dissemination of official statistics. Under this system is the Agricultural Statistical System with the National Fishery Statistical System as one of its subsystems. The various statistical activities in the Philippines are coordinated by the National Statistical Coordination Board which is the highest policy-making and coordinating body on statistical matters.

35. Various government agencies in the Philippines are involved in the generation of fishery and aquaculture statistics, the most important are the National Statistics Office (NSO) and the Bureau of Agricultural Statistics (BAS). The NSO conducts census of fisheries every ten years while BAS conducts regular inter-censal production surveys as well as compiles, analyzes and officially disseminates fishery and aquaculture statistics.

36. Regular fishery surveys are conducted by BAS including the every other-day collection of data on commercial and municipal fish catches unloaded at sample landing centers in 65 provinces of the Philippines. Data collected are volume and price of fish catch, price by fishing ground, by fishing gear and by species. Starting in July 1997, data on catch-effort were collected by BAS.

37. For the aquaculture data, BAS conducts semestral surveys in 23 top-producing provinces in the Philippines. The data include total production, prices, harvest area, farm practices and major inputs which are provided by key informants.

38. There are other Philippine agencies that also generate fishery and aquaculture data. These are the Bureau of Fisheries and Aquatic Resources (BFAR), Bureau of Agricultural Research (BAR), Philippine Fisheries Development Authority (PFDA), National Agriculture and Fishery Council (NAFC), and the Chamber of Fisheries and Aquatic Resources (CFAR). Recognizing the need to improve accuracy of their fisheries data, the Philippine Government pooled their resources together in order to

establish electronic access to all fishery and aquaculture data. For this reason, the Philippine Fisheries Information System (PHILFIS) has been revived to serve as a repository of fisheries data and center of a well-distributed fishery network information system.

(x) *Chinese Taipei*

39. The Taiwan Fisheries Bureau (TFB) is responsible for the processing of fishery and aquaculture statistics for Taiwan (Chinese Taipei) area while the Fifth Division conducts survey system, methodology, program tabulation as well as compilation and publication of the fishery and aquaculture data. The sub-district offices of fishermen associations and fish markets complete the forms following the standard methods in the fishery statistical handbook, and forward the data to the TFB.

40. The TFB conducts socio-economical survey using purposive sampling in order to collect data from households and fishing companies. On the other hand, the collection of aquaculture data is done through a geographical information system using air photo, pond survey by purposive sampling, and registered licenses. The aquaculture statistics reported annually served as reference of basic fishery and aquaculture statistics.

41. The fisheries management information system makes use of licensed data of registered fishing boats and reference data acquired from fishermen. For the fish market information system, information is gathered from auction data of products in the consumer markets which are sent daily to TFB by telephone for processing and dissemination.

42. Agricultural, forestry, fishery, and husbandry censuses are being carried out every five years by the Directorate-General of Budget Accounting and Statistics of the Executive Yuan. The TFB also collects fish processing data which include canned products, frozen and cold storage products, smoked, dried and salted products, dried/seasoned, fish fin, mullet roe, fish paste, etc. Taiwan has a long-range plan to

improve its fishery statistical system which includes automation of data processing and training of enumerators.

(xi) *Thailand*

43. The National Statistics Office (NSO) of the Office of the Prime Minister of Thailand, coordinates and sets standards for all statistical activities. The NSO also conducts census covering population, agriculture, fisheries, industry, etc. The Fisheries Statistics Sub-Division, Fisheries Economic Division of the Department of Fisheries (DOF), Ministry of Agriculture and Cooperatives is responsible for the development of fishery and aquaculture statistical collection system, the implementation of fishery statistical surveys, and the compilation of the fishery statistical yearbook.

44. The NSO and DOF conducts marine fishery census in order to establish a sound fishery and aquaculture statistical system. The latest census in 1995 aimed to collect data on basic economic structure of marine capture fishery and coastal aquaculture, as well as on socio-economic characteristics of fishery establishment, fishery employees' households and demographic characteristics of fishermen, and to provide data for a sampling frame of a related survey.

45. Production from marine fishery is based on the results of the marine fishery production survey conducted by DOF. Data collected from the survey include production from major fishing methods or fishing gear, production from fishing gear used by fishing communities other than the major fishing methods, production from coastal aquaculture, and production from particular fishing methods other than the first three methods mentioned above.

46. The marine fishery production survey is subdivided into Log Book survey, fishing community survey, coastal aquaculture survey, and specialized survey. Efforts are now being made to decentralize the collection and compilation of data using computer systems.

(xii) *Vietnam*

47. The Ministry of Fisheries of Vietnam collects fishery and aquaculture statistical data from the provinces. However, it was reported that collection of data has been insufficient and the data may not reflect the production capability of the entire economic sectors engaged in fishery activities.

48. It was stressed that one of the most important tasks for improving the fishery management capability of Vietnam is to strengthen the fishery and aquaculture statistical system. This would require institutional strengthening as well as development of trained and skilled manpower.

b. FAO Fishery Statistics Programme

49. The FAO Fishery Information, Data and Statistics Unit (FIDI) is responsible for collation of a comprehensive global fishery and aquaculture statistics. FIDI collates data obtained from national reporting offices which, whenever possible, is verified from other sources. FAO has developed fishery and aquaculture databases for nominal catch and landings, aquaculture production, fishery commodities, fleet statistics, employment, and apparent consumption of fish and fishery products. The fishery statistical software, ARTFISH/ARTSER programs on MS DOS version 2.0 were developed by FIDI in 1994 in order to process and analyze data obtained from sample surveys operating with varying sampling scenario and estimation approaches.

50. The data management component of the software, ARTFISH, is intended for collection of data through sampling stratified by space and time, and the derivation of total estimates for catch, fishing effort, prices and values. The reporting component, ARTSER is mainly for consolidated tabulations, graphical presentations and interfaces with commonly used application software. The system also comes with other statistical services such as ARTPLAN for designing and evaluating sample

surveys, ARTHELP which provides help and tutorial components, and ARTBIEC which covers additional bio-economic components for processing/analysis of socio-economic and biological data.

51. FAO is dependent on the data provided by national sources. Despite corrected actions done by FIDI, some data are inaccurate and this can often be attributed to the unsustained system of data collection. In order to bridge the gap between nationally submitted statistics and the FIDI databases, and enhance the capacity of the national offices to collect and analyze fishery statistical data, FAO has provided technical assistance to many countries. However, such assistance is limited to development of generic computer software, formulation of methodological guidelines in applied fishery and aquaculture statistics, and training at national level on integrated fishery statistical systems, particularly on catch and effort statistical surveys.

52. It was also emphasized that FAO's assistance which depends on the priorities of the national governments, does not include financial support which the national governments may have to avail from other sources. FAO also envisioned to collaborate more actively with fishery institutions in participating countries or at regional level in the development of computer software packages.

53. In a related development, recent international initiatives related to fishery and aquaculture statistics which had occurred since the 1994 Regional Workshop on Fishery Information and Statistics in Asia, were reported by FAO. Such initiatives indicated increased concern for the improvement of current fishery management approaches, and particularly the collection of reliable fishery and aquaculture data. The UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks, for example, specified the roles and responsibilities of regional fisheries agencies and flag states in the collection and exchange of data necessary to meet stock assessment requirements and support management objectives for straddling fish stocks and highly migratory fish stocks. The Code of Conduct for Responsible Fisheries, on the other hand, stressed the essential need for reliable data as basis for effective fishery management and policy making.

54. FAO also reported on their follow-up actions to the recommendations from the 1994 Regional Workshop on Fishery Information and Statistics in Asia. Specifically, FAO had discussed with the SEAFDEC Marine Fisheries Research Department on how to improve compatibility between their respective commodity classifications, taking into account particular requirements for the Southeast Asian region. FAO has also developed a catch and effort data collection and processing system for artisanal fisheries which has already been implemented in several countries. FAO completed disaggregation of total fishery production statistics into capture fishery and aquaculture components for the period 1984-1995, which have been distributed through FAO's package AQUACULT PC. Work on the disaggregation of data for 1950-1983 is being carried out at present. The participants were informed that FAO's databases "WAICENT" comprising FAO statistics and FAO information, can already be accessed through the INTERNET.

55. In the discussion, FAO reiterated their observation that some data reported by national offices lack reliability, which in some cases, the data are either not reported on time or not reported at all. In order to improve the system of reporting, the participants asked FAO to make available to the region their fishery statistical software, specifically ARTFISH/ARTSER, and for the effective application of the software, it was stressed that distribution of the software must come with adequate training for the users.

c. SEAFDEC Fishery Statistical Bulletin

56. At the regional level, SEAFDEC publishes annually the Fishery Statistical Bulletin for the South China Sea Area since 1978, with the objective of providing reliable and comparable fishery and aquaculture statistics with standardized definitions and classifications to facilitate the exchange of information for management of fishery resources and planning of various fishery development programs for countries bordering the South China Sea area. Since the compilation of

data is not yet possible for Vietnam and Cambodia, data for these countries have been derived from the FAO Yearbook of Fishery Statistics. It was reported that the compilation of data for the Bulletin is constrained by the long delay in returning the questionnaires by participating countries. In addition, the submission of incomplete data and incompatible methodology reduces the usefulness of these statistics.

57. The participants however noted one significant strength of the Bulletin which is the detailed production data by small-scale fisheries and on trash fish production. During the discussion, SEAFDEC assured the participants that it will exert efforts to continue improving the collection of data for the Bulletin.

58. As a follow-up action to the recommendations from the 1994 Regional Workshop on Fishery Information and Statistics in Asia, SEAFDEC in collaboration with FAO, revised the classification of fishery commodities on disposition of catch, fish processing and exports by fishery commodity. In order to expedite of the publication of the Bulletin, SEAFDEC reiterated its request for participating countries to return the questionnaires within the indicated submission period.

59. In order to include data on the disposition of fish in the Bulletin, a pilot study may be undertaken by the national offices to compile statistics on processing and post-harvest activities. In this regard, the need to organize a working group to harmonize guidelines for fishery and aquaculture statistics collection and relate this with statistics from other related sectors of the economy, was suggested.

d. Catch and Effort Statistics

(i) *Present Status*

60. In 1993, the responsibility of compiling and publishing the catch-effort statistics for the South China Sea Area was transferred from the SEAFDEC Training Department in Thailand to the Marine Fishery Resources Development and

Management Department (MFRDMD) in Malaysia. MFRDMD sends out questionnaires, which were revised from the previous format, annually to participating countries, comprising Brunei Darussalam, Hong Kong, Indonesia, Cambodia, Malaysia, the Philippines, Singapore, Chinese Taipei, Thailand, and Vietnam. From the returned questionnaires, the data are compiled and published by MFRDMD. The last questionnaires sent out by MFRDMD were for the data in 1993.

61. The participants recognized the need to collect catch and effort statistics as this is used as basis for assessing the importance and efficiency of fishing operations. However, the collection of catch and effort statistics in the region by MFRDMD, is constrained by the lack of information submitted by participating countries. This could be attributed to the statistical systems in many countries which may still be at various stages of development.

62. While examining the reasons for such constraints, some participants indicated that the lack of data may not necessarily be due to their lack of interest in this activity. The need for catch and effort statistics in measuring the input-output of fisheries as well as in determining the index of stock abundance, was recognized. However, it was stressed by some countries that the collection of such statistics on a national scale would require much of their resources, including training of staff. In addition, some of the participating countries are archipelagic islands which made collection of regular samplings nearly impossible.

(ii) *Quality of production statistics*

63. For the compilation of capture fishery and aquaculture production statistics, the participants were apprised that FAO makes use of the questionnaire FISHSTAT NS1 for total national production statistics and the FISHSTAT AQ for aquaculture production statistics. For countries that are not able to provide the complete or reliable data, FIDI would make estimates based on the best available information. The proportion of the total production which is estimated provides an indicator of the quality of statistical system employed by the reporting countries.

64. In discussing the quality of capture fishery and aquaculture statistics for Asia and the Pacific, the difficulties in collecting catch and effort statistics in small-scale fisheries were noted. From the report presented by FAO, an analysis of the trends in Asia and the Pacific Region for the period 1984 to 1995 showed that inland and marine production from capture fisheries indicated an increasing amount of estimated data as compared to production data from aquaculture. In addition, the proportion of aggregated species groups was clearly on the rise in marine and especially inland capture fisheries.

65. Although the present trend may indicate a deterioration of the quality of capture fishery production statistics in recent years, the participants attributed this to the grouping of species items for which data for capture fishery were estimated, i.e., marine fishes *nei* and freshwater fishes *nei* as well as skipjack and yellowfin tunas. The trend for aquaculture on the other hand, was better since most production was reported for individual species.

66. While confirming the need for accurate and timely statistical data from artisanal fisheries in view of its rapid development, FAO presented the results of case studies in the implementation of data collection methods for this particular sector. In such studies FAO noted that in most countries in Asia, the degree of exploitation of the fish resources by the artisanal sector has not been accurately reported. In some cases, reports seemed to indicate that the level of exploitation of this sector in recent years has not been significantly higher than in the past. In order to verify the real situation, FIDI facilitated the development of data collection methods and computer-assisted systems for the statistical monitoring of artisanal fisheries.

67. FAO also noted that one of the major constraints in monitoring statistics from artisanal fisheries is the size of the target statistical area which could extend over several morphological and climatic zones, types of water bodies, type of resources, and exploitation practices. FAO added that the initiatives of most national institutions in data collection such as censuses, sample-based activities, and sampling schemes

may be limited to some extent and may lack the necessary statistical and computerization standards. Finally, the degree of computerization may not be very extensive.

68. Thus, in order to improve management of data collection from this particular sector, FAO suggested some guidelines on the collection of fishery and aquaculture data for artisanal fisheries which the participants were asked to consider. The salient points of the guidelines included a caution which indicated that a census approach may not be generally applicable in the statistical monitoring of artisanal fisheries for operational and logistic reasons. Well defined sampling schemes should be used instead for the estimation of total catch, fishing effort and species composition.

69. FAO also pointed out that standard statistical methodology, well-planned operational approaches and application of standard computer software are essential components in sample-based survey programs. FAO suggested that a typical approach may be to implement sampling surveys combined with a frame survey in order to obtain the derivation of the estimated data for catch and fishing effort.

70. The sample-based survey programs should be dynamic and flexible so that it could easily adapt to the changes in the artisanal fisheries without methodological and software implications. FAO also emphasized that survey programs operate more effectively if the field operations and computerization of data are performed in a decentralized manner with the headquarters being responsible only for coordinating and supporting the entire statistical monitoring system.

71. It was also pointed out that national institutions should provide sufficient budget to cover operational and logistical expenditures in the implementation of the prototype system and its progressive expansion at national level.

72. The participants were informed that FAO has developed a standardized data collection methods and software packages for the statistical monitoring of artisanal fisheries. The ARTFISH/ARTSER package which includes ARTPLAN, a survey

planner that can assist in the design of sample surveys, ARTHELP for tutorial and help, and ARTBIEC for bio-economic data.

73. While recognizing the need to improve the current situation, the participants suggested that field guides be developed by the national offices tailored for their requirements. A field guide prepared for Myanmar was taken as an example. The participants also confirmed that computerization of data needs to be intensified, the capabilities in application of information technology and data collection methods improved, and decentralization of operations facilitated. They added that all these may be facilitated through coordinating bodies on statistics at the national and regional levels.

(iii) *Nationality of catch*

74. FAO apprised the participants on the decision of the United Nations Statistical Commission in 1954 to assign the fish catch to the country of the flag flown by a fishing vessel, which is still being adopted by the participating fishery organizations of the Coordinating Working Party on Fishery Statistics (CWP) of FAO. However, at present, national authorities and international agencies are experiencing difficulties in certain cases in assigning the nationality of fish catches.

75. The considerable increase in the number of international joint-venture arrangements in world fisheries, both in number and economic importance, have become a source of difficulty in assigning the nationality of the fish catch. This situation has resulted in an increasing number of ambiguous or incorrect recording of catch reports submitted to FAO.

76. This problem which recently has become more serious is further complicated when some countries recorded joint venture activities within their own exclusive economic zones (EEZs) under their national catches, regardless of the flag of the vessels concerned. The situation tends to distort the catch statistics and confuses the requirements for statistical and management purposes.

77. For this reason, the CWP reaffirmed that the flag vessel catching the fish should be the overriding factor in deciding the nationality of the fish catch, and that the responsibility of reporting catches lies with the flag nation. CWP also recommended that the label (country) under which catches are reported may be designated by an agreement between the two (or more) countries concerned. In the absence of an agreement, the flag country of the vessels making the catch should always take precedence.

78. Thus the CWP encouraged the establishment of reporting arrangements between the countries whose vessels catch the fish and those in whose waters the fishes are taken. Such arrangements should specify that nations reporting the catches report the data by vessels of different flag states separately. This will facilitate the deduction of double counting or non-reporting of data by the flag states.

79. During the discussion, the participants agreed to apply the standard conventions for Asia and the Pacific in reporting the nationality of fish catch and considered the procedure of assigning the nationality of the catch as recommended by the CWP and presented to the Workshop by FAO.

80. In another development, FAO also reported on activities related to recording of data on fish by-catch as well as on fish discards. These are aimed at improving the regional and global estimation of the discarded component of the catch. The 1996 Technical Consultation on Reduction of Wastage in Fisheries organized by FAO, recommended that data on fish discards be collected nationally for the individual fisheries. A study on shark catches and by-catches was undertaken by FAO, in response to a request from the Convention on International Trade in Endangered Species (CITES). In this regard, FAO planned to convene in 1998 an expert consultation on biological and trade status of sharks in order to prepare technical guidelines and a draft plan of action for intergovernmental consultation.

81. After noting that data on nominal catch discard are not collected nationally by most countries in the region, FAO asked the participants to consider including in their statistical system the collection of data on fish by-catch as well as the discarded component of the fish catch. This will hopefully make a more comprehensive global collection and compilation of data.

e. Tuna Fishery Statistics

82. The participants were apprised on the responsibility of the collection of tuna fishery statistics in the Southeast Asian Region which was transferred in June 1996 from the Indo-Pacific Tuna Development and Management Programme (IPTP) to SEAFDEC through its department in Malaysia. This activity is not intended to duplicate the efforts of the South Pacific Commission (SPC) which collects tuna statistics in part of FAO fishing area 71. Three major groups of tuna and tuna-like species are included in the collection, namely, tunas and bonitos, seerfishes and billfishes.

83. Seven participating countries are presently involved in the SEAFDEC/ MFRDMD activity: Brunei Darussalam, Indonesia, Malaysia, the Philippines, Thailand, Singapore, and Vietnam. These countries have designated liaison officers who are responsible in the collation of tuna statistics in their respective countries. Inclusion of non-SEAFDEC member countries, e.g., China, Korea, Myanmar, and Chinese Taipei, in future activities needs to be considered in order to obtain a comprehensive coverage.

84. The SEAFDEC/MFRDMD activity compiles data for landing statistics of tunas by gear type and species, by type and number of tuna boats, and catch-effort statistics. Special forms modified by MFRDMD are used by participating countries in providing the statistics. From the data format, it is envisioned that the activity could produce charts and maps on tuna landings by area and gear types for the whole Southeast Asian region.

85. The collection of tuna statistics by MFRDMD is however constrained by many factors including the delayed responses to the questionnaires, insufficient or no species detail in landing records, lack of statistical background with some nominated liaison officers, and lack of species identification for juveniles and young tunas, especially for yellowfin and big-eye. While recognizing the need to improve the collection of tuna statistics, the participants suggested that as much as possible, SEAFDEC should complete the collection of tuna statistics, not only for its Member Countries but also for non-member countries fishing in FAO fishing area 71 (excluding the SPC area).

86. The participants also noted that the assignment of liaison officers should be a long-term commitment on the part of the participating countries in order to ensure that compilation of tuna statistics is sustained. They also suggested that closer cooperation between SEAFDEC and the Indian Ocean Tuna Commission (IOTC) and IPTP, as well as SPC should be established. SEAFDEC may also participate in some appropriate activities of CWP especially those that deal with the collection of tuna statistics in the region.

87. The representative from MFRDMD informed the participants that a technical meeting of the designated liaison officers will be convened by MFRDMD in Malaysia in December 1997. The meeting shall aim to formalize procedures for data collection, data format and the expected outputs for dissemination. Issues relating to the format of the questionnaires as well as the planned computerization of data collection and data transfer, and the use of automation tools will also be discussed during the technical meeting.

f. Aquaculture Statistics

88. FIDI which has been systematically collecting and disseminating global aquaculture production data, noted that many countries in Asia have exerted much

efforts in improving their collection and processing of aquaculture information. From the data compiled, FAO continues to conduct a review of the mechanisms for collecting data and the coverage as well as the quality of data on aquaculture production provided by the countries to FAO. This is aimed at improving the quality and relevance of the data to future national and global needs.

89. In the review process, FAO oftentimes noted that monitoring of aquaculture statistics needs to encompass the various facets of culture from seed production to harvest. The need to harmonize terminology and the difficulty of some national authorities to classify fishery production as "aquaculture" or "capture fisheries," were recognized. The aggregated reporting of unclassified or incompletely identified organisms and inappropriate methodologies in collecting aquaculture information are also among the important issues being addressed by FAO.

90. The participants were also apprised on FAO's effort to facilitate through FIDI, the development of two separate databases, one for capture fisheries which included marine and inland capture fisheries, and the other for aquaculture production. Using the existing databases on aquaculture and total fish production, FAO completed the separation of the data for capture fisheries and aquaculture for the period 1984-1995, and plans to extend the separation for the complete time series. It is envisioned that reporting by countries of separate statistics for both these databases will start in 1998, thus eventually achieving a total separation of the FAO aquaculture and capture fishery statistics.

91. In this connection and in order to have a complete delineation of the activities that could be categorized as capture fisheries or aquaculture, FAO has proposed a refinement of the definition of aquaculture for statistical purposes. The latest proposed revised definition states that "*Aquaculture is the farming of aquatic organisms including crocodiles, alligators, amphibians, finfishes, molluscs, crustaceans and plants where farming refers to their rearing up to their juvenile and/or adult phase under captive conditions. Aquaculture also encompasses individual, corporate or state ownership of the organism being reared and harvested*

in contrast to capture fisheries in which aquatic organisms are exploited as a common property source, irrespective of whether harvest is undertaken with or without exploitation rights."

92. This proposed revised definition encompasses three components which must be fulfilled in order that an activity can be classified as aquaculture. These are: the cultured organism, the activity involved, and ownership of the reared organism. Considering these components of the proposed revised definition of aquaculture and in order to facilitate disaggregation of data, FAO formulated a revised classification table for various aquaculture and capture fishery practices, a modification from the 1992 CWP table. The definition of aquaculture necessitated continuous refinements by FAO because of new aquaculture practices. Structural information on aquaculture is lacking in many countries.

93. In another development, since aquaculture has been closely related with other farming activities and in order that collection of production data from aquaculture could be improved, FAO was asked through various fora, to consider the inclusion of aquacultural activities in the World Census of Agriculture Programme for 2000 (WCA 2000). Such inclusion may be either in the global addendum or as a regional addendum for the Asia and Pacific Region. The idea was for the countries to take advantage of the large-scale agriculture census which could include collection of useful data on aquaculture.

94. FAO facilitated the formulation of the Supplement on Aquaculture for the WCA 2000, now being finalized for publication before the end of 1997. The main purpose of the Supplement is to provide guidelines for countries who would like to expand the scope and coverage of their census of agriculture or census of fisheries as well as for an independent aquaculture census to include the collection of structural information on this emerging important economic sector, aquaculture.

95. The participants were informed that in order to review the contents of the draft Supplement, FAO convened expert and technical consultations. The Supplement,

which includes data collection methodologies for aquacultural structural information, covers two types of holdings which conduct aquacultural activity. The agri-aqua holding as an agricultural holding engaged in agriculture as well as aquaculture, and the aquaculture holding which is an economic unit predominantly or solely engaged in aquaculture.

96. In the discussion on the proposed revised definition of aquaculture presented by FAO, the participants raised some concerns especially on the inclusion of crocodiles, alligators, and amphibians, as these may have some implications on conservation efforts. After weighing the pros and cons, the participants agreed that the proposed revised definition of aquaculture in the Supplement on Aquaculture for WCA 2000 was generally acceptable to them.

97. It was also noted in the discussion that some countries in Asia have already started to disaggregate aquaculture data from capture fisheries. However, still there were some countries which indicated that they may not be able to provide disaggregated data until the national survey forms be adopted to the revised definition of aquaculture.

98. In the discussion on the classification table which categorized activities as either aquaculture or capture fisheries, a concern was raised on the hatcheries. Specifically, the concern was on the stage of the hatchery production which could be considered aquaculture or capture fisheries. In order to address the issue and to correctly record the corresponding data, FAO agreed to review and modify where necessary its FISHSTAT AQ questionnaire which includes the aquaculture statistics for outputs from hatcheries.

99. The participants agreed to adopt the norms and standards included in the Supplement on Aquaculture for WCA 2000. However, the participants were of the view that the immediate integration of the Supplement on Aquaculture for the WCA 2000 would depend on their national priority.

g. Socio-economic Statistics

100. Since the development of socio-economic statistics in the area of fisheries has lagged behind other aspects, the need for renewed attention on the compilation and analysis of socio-economic data on the fisheries sector, was recognized. In this regard, FAO presented a review of socio-economic data and information required for fishery management and development.

101. FAO stressed that a comprehensive fishery information system would require description of the structures of the activities in the fishery process, the flow of products, services and other factors. The system should also identify linkages among its basic components, that is social (e.g., fishing community) and productive units (e.g., fishers, processing plants, fishfarms), resource units (e.g., stocks, fishing areas), and marketing units (e.g., wholesaler, retailer). The flow of the products may be followed quantitatively or financially in order to capture information on profits and rents from fisheries and aquaculture as the case may be.

102. In addition, fish abundance and distribution, fish stocks, fishing power and labor skills, domestic and foreign market demand, are among the major factors influencing production. The identification and collection of the data from these major factors would need a long process.

103. FAO recognized that a wealth of socio-economic information exists regionally in the Asia and Pacific region. However, they noted that the systematic collection and dissemination of socio-economic fishery and aquaculture data may not have been pursued by many countries in the region. For example, although censuses are used by some countries to collect fishery and aquaculture statistics, these are infrequent and may not capture enough up-to-date information on small fishing or aquaculture units. Sampling may be a solution as it has the advantage of reducing the implementation cost and minimizing the probability of error in data collection. Sampling could also

capture information on small-scale fishing communities where seasonality of fishing necessitates the fishers to diversify their sources of income.

104. For this reason, FAO suggested that national governments review their statistical programs to determine whether changes are required within the system. The process however, may require the participation of research workers in economics and other interested parties requiring data for fishery management and administration.

105. FAO emphasized that there are advantages and benefits that could be derived by intensifying the analysis of socio-economic data from surveys originating outside the fishery sector, i.e., population surveys, labor surveys. Conversely, the participation of fisheries administration in the national statistical programs would maximize the benefits that could be derived from the surveys and ensure correct understanding of the complexity of fisheries.

106. In the discussion, the participants recognized the need to determine the minimum data requirements to be collected on regular basis for management planning purposes. This is in view of the limited human and financial resources available in many countries in the region. Thus, it was pointed out that in the case of socio-economics, information may be collected by sample survey, based on the frame provided by a census.

107. In a related development, the representative from FAO informed the participants that FAO in cooperation with other agencies, is formulating guidelines on integrated environmental and economic accounting in fisheries. The objective of the guidelines is to facilitate and promote the more widespread inclusion of the fisheries sector in national accounts including the compilation of appropriate environmental satellite accounts. This is envisioned to open avenues for a better appreciation of the interrelationship between the production of fish primarily for direct human consumption, the creation of income and employment opportunities, and the physical flow and quality of environmental goods and services.

108. As an example, FAO presented the results of a case study on the preparation of national economic accounts for fisheries in Norway. The study indicated that national accounts statistics give an overall view of the contribution of fisheries to the economy of the country.

109. FAO stressed that a proper system of accounts could provide policy-makers with reliable measure of the contribution of the fisheries industry, for example, to the national economy. Thus, for the fisheries sector, the system of accounts may form a framework for analyzing the mutual relationship between production activity, income originating from production and the use of income for consumption and capital accumulation.

110. In the case study, the Norwegian resource accounts were mainly material accounts, comprising those for reserve in nature including the material flow of resources from extraction until their use. The stock accounts in the case study, showed how the stocks change due to either recruitment and growth, revaluation, natural death or extraction. In addition, the framework for analysis used in the study for both economic and environmental policies, and consistency in behavioral and other key assumptions, were secured. This implied that linking physical resource accounts and environmental statistics to economy-wide models would provide a better and more comprehensive information on the value of natural resources and environmental services.

111. Another example cited was the report on the dramatic change in shrimp culture in Thailand. The report indicated that the Government of Thailand conducted its third marine fishery census in 1995 in view of the rapid expansion of shrimp farming and aquaculture in the country. The main objective of the census was to collect data on basic economic structure of marine capture fishery, coastal aquaculture and socio-economic characteristics of fishery households, fishery employees' households, fishermen and aquaculture workers. The study was done in order to also assess the status of shrimp culture in Thailand through the results of the marine fishery census.

The study was also presented as an example of aquaculture in a national economic account.

REGIONAL COOPERATION FOR FISHERY STATISTICS AND AQUACULTURE PROGRAM

112. Fishery and aquaculture statistics are generally collected and compiled into national and regional yearbooks to demonstrate changes in fishery production from the previous year compared with that of a given period of time. Recognizing that fishery and aquaculture statistics is an essential input to formulation of the sector management policies and plans, regional and international organizations, such as FAO, SEAFDEC, and APFIC, facilitate the compilation and utilization of fishery and aquaculture statistics in the region through their regional fishery and aquaculture statistics program. The basic function of such programs is generally to facilitate cooperation and coordination in the compilation, processing, analysis, packaging, and utilization of fishery and aquaculture statistics for development and management of fishery resources.

113. The regional statistics programs undertake tasks designed to address issues and needs common among participating national programs, while facilitating regional cooperation in compilation and application of fishery and aquaculture statistics. These programs usually consist of several closely linked components that serve the needs of target users in the sector. FAO presented a paper which discussed a conceptual framework of a regional fishery and statistics information program.

114. Although many regional and international organizations are active in facilitating the compilation and utilization of fishery and aquaculture statistics and information in the region, there has been an apparent increasing concern about timeliness, reliability and compatibility or comparability accessibility, and availability of fishery and aquaculture data and information. There has also been a growing awareness and concern on fishery and aquaculture statistics not adequately utilized for management purposes.

115. Some of the key reasons cited for underutilization of fishery and aquaculture statistics include: weak national/local capacity to collect and compile data; incomplete or incorrect or unreliable data; poor accessibility and availability; lack of relevant and usable information; and insufficient channeling of information to target user groups. During the discussion, the participants noted the benefits of cooperative action among the countries in the region, particularly in the areas of harmonizing guidelines, definitions and methodologies; development of common and compatible tools, e.g., software for data compilation, processing and analysis; strengthening regional mechanisms for data exchange and training of trainers. Such regional cooperation and collaboration could ensure the benefits of shared expertise and resources, and availability of comparable data for management and development purposes.

116. In view of the main issues and constraints raised, the participants agreed on the priority areas that need regional cooperative action. These areas include: facilitating the adoption and application of common technologies and tools for data collection such as ARTFISH/ARTSER; development of tools for the compilation and processing of aquaculture statistics, including aquaculture structure data; and facilitating the improvement of statistics for fisheries management framework. The Asia-Pacific Fisheries Commission (APFIC) has indicated their support in the latter.

IMPROVEMENTS OF THE COLLECTION, COMPILATION AND DISSEMINATION OF FISHERY AND AQUACULTURE STATISTICS

117. After reviewing the current status of fishery and aquaculture statistics in the region, the participants raised the following issues relevant to their efforts and suggested some follow-up actions:

a) The need to harmonize and standardize concepts and methodologies for collection of aquaculture statistics. The guidelines for the inclusion of aquaculture in the WCA 2000, as indicated in its Supplement on Aquaculture, need to be considered at the regional level.

b) Reporting the processing and trade data may be initially done through the estimation of the amount of fish used for domestic consumption and also the amount of fish for export. Countries may also wish to conduct a specialized study to prepare food balance sheets.

c) Each country may have to classify the number of fishers either full-time, part-time, or occasional, as this will facilitate the reporting of the total population in the fishery sector. The gender may also be classified so that the role of women in fisheries can be assessed. Countries may wish to undertake this activity on a routine basis.

d) The improvement of the accessibility and availability of statistics was raised. It was suggested that countries make use of the FAO computer software, like the ARTSER, wherever possible.

118. The dissemination of FAO software, like ARTFISH, which is a new system should be accompanied with appropriate training of the direct users in the region.

119. A serious delay in providing the national statistics by the participating countries for the SEAFDEC Bulletin was noted. The organization of a statistical working group within each country may facilitate the coordination of statistical activities of different agencies as well as the harmonization of standards and methodologies within the fishery sector and in other sectors such as trade, commerce, and industry.

120. The collation of catch and effort statistics undertaken by SEAFDEC/ MFRDMD is greatly constrained by poor returns of the questionnaires from the participating countries.

121. A lack of species detail especially in inland capture fisheries was reported. The use of local field guides, like the one prepared for Myanmar, could improve the collection of data from capture fisheries, particularly for the economically important species.

122. The participants recognized the need to apply standard conventions as reaffirmed by the CWP in determining the nationality of fish catch. They supported

the suggestion of CWP that countries may establish a reporting system for fish catch from areas where vessels catch the fish and those whose waters the catches have been taken in order to minimize double counting of the catch. It was suggested that nations reporting the catches should also report catches by vessels of different flag states separately in order to detect possibilities of double counting or non-reporting of fish catch.

123. The guidelines for the collection of data on artisanal fisheries imply the need for computerization of the statistical system and improvement of skills and capabilities in data collection and statistical methodologies. As a tool for effective data collection, it was considered necessary to have a carefully designed survey forms for the purpose.

124. In relation to the compilation of tuna fishery statistics by SEAFDEC, the following issues were raised:

a) data were not classified by species;

b) there is a need to establish close linkage with appropriate offices so that the assignment of liaison officers are on long-term basis for sustainability;

c) the need to conduct training on the methodologies and application of tools used in collecting data;

d) the need for a good field guide for species identification;

e) the possibility of also collecting statistics from non-members such as China and Chinese Taipei; and

f) the need to maintain linkage between SEAFDEC and IPTP/IOTC and SPC.

125. In order to strengthen collaboration with other agencies working on tuna statistics, the participants suggested that SEAFDEC could also consider participating in some of the appropriate activities of CWP.

126. The participants considered the inclusion of aquaculture in the WCA 2000 depending on their country's priority. In any case, the participants saw the need for structural information on aquaculture which may be collected whenever possible; and the need to harmonize and standardize measurements and methodologies. In a related development, the need for FAO to revise FISHSTAT AQ in order to consider stages in hatchery production was also recognized.

127. In the compilation of socio-economic statistics for fisheries, the following issues were raised by the participants:

a) for management planning purposes, the minimum data to be collected should be determined;

b) there may be too much focus on socio-economic statistics on the micro level, when the need is to focus more on macro level statistics;

c) a national survey may not be sufficient to identify local conditions, thus, special studies may have to be undertaken and coordination and linkages with related agencies be established;

d) food balance sheets can be used for the verification of the consistency of national fishery and aquaculture statistics; and

e) the participants noted concern as to the competence of the national fisheries departments to collect and compile socio-economic data.

RECOMMENDATIONS

128. The participants discussed and recommended the following in order to improve the collection, compilation and dissemination of capture fishery and aquaculture statistics in the region. These recommendations were directed to their respective countries as well as to regional and global organizations concerned with fishery and aquaculture statistics.

I. For National Action

1.1 In order to improve the coverage and consistency, it was agreed as a priority effort that, disposition of fish production for food and non-food uses should be monitored and reported. This activity shall however need the guidance and assistance of international and regional organizations concerned with fishery and aquaculture statistics.

1.2 In connection with 1.1, it was recognized that statistics on commodity production and trade are required in order to construct national food balance sheets for assessing per caput fish supply. In addition, fish consumption statistics should also be obtained through surveys.

1.3 In order to make reliable statistics available to the users readily and timely, data processing should be automated to speed up the collation and dissemination of capture fishery and aquaculture statistics. Software packages such as ARTFISH were deemed useful.

1.4 To facilitate accessibility and availability of fishery and aquaculture statistics, national interagency communication as well as liaison with international bodies on statistical matters should be improved. This could be accomplished through the establishment of national working group(s) comprising fisheries and other statisticians, as well as technical specialists.

1.5 Noting the poor responses by participating countries to the questionnaires on catch and effort statistics, countries were encouraged to fulfill their commitments to this activity of SEAFDEC/MFRDMD.

1.6 In view of the lack of definition for species in statistics, the difficulties in species identification at primary data collection level and the need to improve species details in statistics, particularly for the economically important species, countries were asked to give attention to the preparation of local taxonomic field guides similar to the field guide prepared for Myanmar.

1.7 Recognizing the need for the harmonization of fishery and aquaculture statistics, careful attention should be given to the design of survey forms for primary data collection taking into account the local characteristics. Primary data collected should be verified locally by the enumerators.

1.8 To respond to the need for harmonized aquaculture statistics, countries were asked take note of the need to collect aquaculture structure data according to the Supplement on Aquaculture to the WCA 2000.

II. For Regional and Global Action

2.1 For the collection of tuna statistics, species identification guide for young tuna in the region should be prepared in order to solve the problem of identifying the species of tuna at their early stages of development, especially for yellowfin and bigeye tunas.

2.2 For consistent statistics on production and post-harvest processing, guidelines to standardize the collection of statistics on capture fishery production as well as the production of fishery commodities at national level consistent with international standards, be prepared.

2.3 In relation to the need for quantitative structural information on aquaculture, the guidelines contained in the Aquaculture Supplement being prepared by FAO for the WCA 2000 be made available as soon as possible for worldwide implementation.

2.4 As noted during the discussion, FAO should review and revise where necessary its FISHSTAT AQ questionnaire to include necessary information such as specifications of the life stages in hatchery outputs.

2.5 In order to improve the quality and utilization of fishery and aquaculture statistics in the region, regional organizations and international bodies, in collaboration with FAO, should initiate appropriate activities to support and complement national efforts on fishery and aquaculture statistics. In this relation, special attention should be focused on the following:

a) facilitating the application and adoption of common methodologies and tools such as ARTFISH/ARTSER package;

b) development of software for compilation, processing and analysis of aquaculture statistics; and

c) facilitating the improvement of statistics for fishery management and framework as recommended by APFIC/COMAF, particularly for catch and effort statistics.

CONCLUDING MATTERS

129. After the presentation of the status as well as the suggested actions for the improvement of the collection, compilation, and dissemination of fishery and aquaculture statistics, representative from other regional organizations and international agencies attending the Workshop, were asked to apprise the participants on their activities and initiatives in relation to the compilation of fishery and aquaculture data.

130. In addition to FAO and SEAFDEC which organized the Regional Workshop, other regional and international organizations represented during the Workshop were: AIT, ICLARM, INFOFISH, MRC, NACA, and SEAPOL. The representatives of these organizations informed the Workshop on their activities related to fishery and aquaculture statistics.

131. The representative from the International Center for Living Aquatic Resources Management (ICLARM) expressed his gratitude for the invitation to attend the Workshop. He informed the participants of an upcoming project of ICLARM which shall receive financial support from the Asian Development Bank, and which aims to develop a fishery resource database. He welcomed the plans for the development of a regional database for fisheries and aquaculture, and expressed the hope for a more active collaboration among regional agencies for the implementation of such database.

132. The representative from the Intergovernmental Organization for Marketing Information and Technical Advisory Services for Fishery Products in Asia and the Pacific Region (INFOFISH) thanked FAO and SEAFDEC for the invitation to attend the Workshop. He informed the participants that INFOFISH will extend its full support to the outcome of the Workshop.

133. The representative from the Mekong River Commission (MRC) thanked the organizers for inviting MRC to the Workshop. He informed the participants that MRC will launch a project on strengthening the information system in the Mekong Basin (basinwide). He added that the project aims to establish a common system for collection, processing, analysis, and application of the fisheries data by the four countries of the lower Mekong basin. The countries involved in the project are Cambodia, Lao PDR, Thailand, and Vietnam.

134. The representative from the Network of Aquaculture Centres in Asia-Pacific (NACA) thanked FAO and SEAFDEC for the invitation to attend the Workshop. He commended the development of ARTFISH/ARTSER by FAO and also welcomed the plans for the development of a regional database for fisheries and aquaculture.

135. The representative from the South-East Asian Programme in Ocean Law (SEAPOL) thanked the organizers for the inviting SEAPOL to the Workshop. He said that he followed the discussions closely and commended FAO for the development of databases for fisheries production and particularly for artisanal fisheries.

136. To formally close the Workshop, the SEAFDEC Secretary-General thanked the participants and observers for their active participation in the deliberations. He assured the Workshop that SEAFDEC will respond to the statistics needs of the region especially those concerning artisanal fisheries and aquaculture, when and where possible.

137. On behalf of FAO, FIDI Senior Fishery Statistician, *Dr. Richard Grainger*, also thanked the participants and observers for their presentations and their active participation in the workshop discussions. He assured the participants that FAO will continue to develop fishery and aquaculture databases for the improvement of the compilation and processing of fishery and aquaculture statistics in the region. He invited the participants of the Workshop to attend the First Session of the APFIC Joint Working Party on Fishery Statistics and Economics (JWP) convened immediately after the Workshop. Participants of the Workshop who are not members of the JWP were encouraged to attend the First Session of JWP as observers.

140. The Regional Fisheries Officer of the FAO Regional Office for Asia and the Pacific (RAP), *Dr. Veravat Hongskul*, thanked the organizers for the success of the Workshop as well as the participants and observers for their contributions to the Workshop deliberations. As the Secretary of the APFIC Secretariat, he also invited the participants of the Workshop to attend the First Session of the JWP which would consider further some of the recommendations of the Workshop.

Annex A

LIST OF PARTICIPANTS

Abdul Halidi Salleh

Head, Marine Fisheries Section
Department of Fisheries
Ministry of Industry and Primary Resources
P.O. Box 2161
Bandar Seri Begawan 1921, Brunei Darussalam
Tel: (673-2) 383067
Fax: (673-2) 382069
E-mail: ikanbl1@brunei.bn

An, Doo-Hae

Fisheries Scientist
Distant Water Fisheries Resource Division
National Fisheries Research and
Development Institute
Ministry of Marine Affairs and Fisheries
Shirang-ri, Kijang-Kun
Pusan 619-900, Republic of Korea
Tel: (82-51) 720-2334
Fax: (82-51) 720-2339
E-mail: dhan@haema.nfrda.re.kr

Bambang Wahyudi

Chief
Sub-Directorate of Data and Statistics
Directorate General Fisheries
Ministry of Agriculture
Gedung B Lt. 5
Jl. Harsono RM. No. 3, Pasar Minggu
Jakarta 12550, Indonesia
Tel: (62-21) 7827254
Fax: (62-21) 7803196
E-mail: Statikan@rad.net.id

Banik, Rakhal C. Kangsa

Senior Scientific Officer
Department of Fisheries
Ministry of Fisheries and Livestock
Ma tshya Bhaban, Room No. 604
1 Park Avenue
Dhaka 1000, Bangladesh
Tel: (88-2) 955-4867

Baticados, Didi B. (Ms.)

Associate Researcher
SEAFDEC Aquaculture Department
P.O. Box 256
5000 Iloilo City, Philippines
Tel: (63-33) 335-1009, 336-2937, 336-2965
Fax: (63-33) 335-1008
E-mail: tms-seafdec@phil.gn.apc.org
SEAFDEC@mozcom.com

Bhatiyasevi, Udom

Secretary-General
SEAFDEC
P.O. Box 106, Chatuchak Post Office
Bangkok 10900, Thailand
Tel: (66-2) 940-6326 to 29
Fax: (66-2) 940-6336
E-mail: SEAFDEC@mozart.int.co.th

Boonchuwong, Pongpat

Senior Economist
Fisheries Economics Division
Department of Fisheries
Ministry of Agriculture and Cooperatives
Phaholyothin Road
Bangkok 10900, Thailand
Tel: (66-2) 940-6130 to 45 Ext. 4700
Fax: (66-2) 562-0580

Bueno, Pedro B.

Information Specialist
Network of Aquaculture Centres in Asia-Pacific (NACA)
P.O. Box 1040
Kasetsart Post Office
Bangkok 10903, Thailand
Tel: (66-2) 561-1728 to 9
Fax: (66-2) 561-1727
E-mail: Pbueno<naca@mozart.inet.co.th

Cadiz, Urbana B. (Ms.)

Statistician I
Bureau of Agricultural Statistics
Department of Agriculture
Ben-Lor Building, 1104 Quezon Avenue
Quezon City, Philippines
Tel: (63-2) 371-2067
Fax: (63-2) 371-2086
E-mail: da.bas@gain.psdn.iphil.net

Chaijaroen, Tasnee (Ms.)

South-East Asian Programme in Ocean Law Policy and Management (SEAPOL)
c/o Sukhothai Thammathirat Open University
Academic Building 2 (3rd Floor)
Pathumtani , Thailand

Cho, Yong-Ja (Ms.)

Information Specialist
FAO Regional Office for Asia and the Pacific
Maliwan Mansion, Phra Athit Road
Bangkok 10200, Thailand
Tel: (62-2) 281-7844
Fax: (62-2) 280-0445
E-mail: yongja@ksc15.th.com

Garces, Len R.

Research Associate
Aquatic Environments Program
International Center for Living Aquatic Resources Management (ICLARM)
MC P.O. Box 2631
0718 Makati City, Philippines
Tel: (63-2) 817-5163, 817-5255
Fax: (63-2) 816-3183
E-mail: L.Garces@cgnet.com

Gonzales, Gloria P. (Ms.)

Information Officer
SEAFDEC Secretariat
P.O. Box 106, Chatuchak Post Office
Bangkok 10900, Thailand
Tel: (66-2) 940-6326 to 9
Fax: (66-2) 940-6336

Grainger, Richard

Senior Fishery Statistician
Fisheries Information, Data and Statistiscal Unit
FAO
Via delle Terme di Caracalla
00100 Rome, Italy
Fax: (39-6) 5705-3605
E-mail: Richard.Grainger@fao.org

Hongskul, Veravat

Senior Fishery Officer
FAO Regional Office for Asia and the Pacific
Maliwan Mansion, Phra Athit Road
Bangkok 10200, Thailand
Tel: (66-2) 281-7844
Fax: (66-2) 280-0445
E-mail: Veravat.Hongskul@field.fao.org

Horng Chaur-Lian

Leader, Section III
Fisheries Statistics Division
Taiwan Fisheries Bureau
8 Sec. 1, Chung Hsiao E. Road
Chinese Taipei (Taiwan)
Tel: (886-2) 321-9511, 321-9451 Ext. 531
Fax: (886-2) 321-2647

Johari, Ibrahim B.

Fisheries Officer
SEAFDEC/MFRDMD
Fisheries Garden, Chendering
21080 Kuala Terengganu, Malaysia
Tel: (60-9) 6175-135
Fax: (60-9) 6175-136

Kongkeo, Hassanai

Coordinator
Network of Aquaculture Centres in Asia-Pacific
(NACA)
P.O. Box 1040
Kasetsart Post Office
Bangkok 10903, Thailand
Tel: (66-2) 561-1728 to 9
Fax: (66-2) 561-1727
E-mail: naca@mozart.inet.co.th

Kongton, Amphon

Assistant Program Officer
SEAFDEC Secretariat
P.O. Box 106, Chatuchak Post Office
Bangkok 10900, Thailand
Tel: (66-2) 940-6326 to 9
Fax: (66-2) 940-6336

Korn, Mads

Aquaculture Educational Specialist
AIT-DANIDA Outreach, SERD-AASP
Asian Institute of Technology (AIT)
P.O. Box 4, Klong Luang
Pathumthani 12120, Thailand
Tel: (66-2) 524-5786
Fax: (66-2) 524-6200, 524-5218
E-mail: korn@ait.ac.th

Liu Qian-fei

Program Officer
Division of International Cooperation
Bureau of Fisheries
Ministry of Agriculture
No. 11 Nongzhanguan Nanli
Beijing 100026, People's Republic of China
Tel: (86-1) 6419-2913
Fax: (86-1) 6419-2468, 6419-2913

Ma Ma Lay (Ms.)

Planning & Statistics Officer
Department of Fisheries
Ahlone Township
Yangon, Myanmar
Tel: (95-1) 220625

Matics, K.I. (Ms.)

Fisheries Project Officer/Editor
Mekong River Commission (MRC) Secretariat
Pibultham Villa, Kasatsuk Bridge
Rama I Road
Bangkok 10330, Thailand
Tel: (66-2) 225-0029 Ext. 505
Fax: (66-2) 225-2796
E-mail: wolfgang@mozart.inet.co.th

Mieng, Tran Thi (Ms.)

Economic Engineer
Planning and Investment Department
Ministry of Fisheries
10 Nguyen Cong Hoan, Ba Dinh
Hanoi, Vietnam
Tel: (84-4) 832-5614
Fax: (84-4) 823-4285, 834-5303

Nambiar, K.P.P.

Director
Intergovernmental Organization for Marketing Information and Technical Advisory Services for Fishery Products in the Asia and Pacific Region (INFOFISH)
P.O. Box 10899
50728 Kuala Lumpur, Malaysia
Tel: (60-3) 291-4466
Fax: (60-3) 291-6804
E-mail: infish@po.jaring.my
infish@tm.net.my

Nhat, Le Xuan

Researcher
Institute of Fisheries Economics & Planning
Ministry of Fisheries
10 Nguyen Cong Hoan, Ba Dinh
Hanoi, Vietnam
Tel: (84-4) 831-0982
Fax: (84-4) 832-5303

Olalo, Celestino C.

Chief
Crop, Livestock, Poultry & Fisheries
Statistics Division
Bureau of Agricultural Statistics
Department of Agriculture
Ben-Lor Building, 1104 Quezon Avenue
Quezon City, Philippines
Tel: (63-2) 371-2067
Fax: (63-2) 371-2086
E-mail: da.bas@gain.psdn.iphil.net

Pornpatimakorn, Somnuk

Head, Information and Extension Division
SEAFDEC Training Department
P.O. Box 97, Phrasamutchedi
Samut Prakan 10290, Thailand
Tel: (66-2) 425-8040 to 5
Fax: (66-2) 425-8561
E-mail: SEAFDEC@mozart.inet.co.th

Puttaraksar, Narong

Editor, SEAPOL Newsletter
South-East Asian Programme in Ocean Law
Policy and Management (SEAPOL)
c/o Sukhothai Thammathirat Open University
Academic Building 2 (3rd Floor), Room #2320
Pakkred, Nonthaburi 11120, Thailand

Raja Bidin bin Raja Hassan

Research Officer
Marine Fishery Resources Development and
Management Department (MFRDMD)
Southeast Asian Fisheries Development Center
(SEAFDEC)
Fisheries Garden, Chendering
21080 Kuala Terengganu, Malaysia
Tel: (60-9) 6175-135
Fax: (60-9) 6175-136
E-mail: rbidin@dof.moa.my

Rana, Krishen

Aquaculture Statistician
Fisheries Information, Data and Statistical Unit
FAO
Via delle Terme di Caracalla
00100, Rome, Italy
Fax: (39-6) 5705-3605
E-mail: Kausik.Rana@fao.org

Recide, Romeo S.

Director
Bureau of Agricultural Statistics (BAS)
Department of Agriculture
Ben-Lor Building, 2nd Floor
1104 Quezon Avenue
Quezon City, Philippines
Tel: (63-2) 371-2050, 928-8450
Fax: (63-2) 371-2086, 926-8966
E-mail: da.bas@gaia.psdn.iphil.net

Sam Nuov

Project Officer
Mekong River Commission (MRC)
Kasatsuk Bridge, Rama I Road
Bangkok 10300, Thailand
Tel: (66-2) 225-0029
Fax: (66-2) 225-2796

Saranyapipat, Rungtiwa (Ms.)

Head, Information and Statistics Section
Information and Extension Division
SEAFDEC Training Department
P.O. Box 97, Phrasamutchedi
Samut Prakan 10290, Thailand
Tel: (66-2) 425-8040 to 5
Fax: (66-2) 425-8561
E-mail: SEAFDEC@mozart.inet.or.th

Seo, Byoung-Gyu

Deputy Director
EDPS and Statistics Office
National Fisheries Research and
Development Institute
Ministry of Maritime Affairs and Fisheries
Jimsol Bldg., 826-14 Yoksam-dong
Kangnam-gu
135-080 Seoul, Republic of Korea
Tel: (82-2) 3466-2144
Fax: (82-2) 3466-2045

Shimomura, Masao

Deputy Secretary-General
SEAFDEC
SEAFDEC Secretariat
P.O. Box 106, Chatuchak Post Office
Bangkok 10900, Thailand
Tel: (66-2) 940-6326 to 9
Fax: (66-2) 940-6336
E-mail: SEAFDEC@mozart.int.co.th

Siar, Susana S. (Ms.)

Associate Researcher
SEAFDEC Aquaculture Department
5021 Tigbauan
Iloilo, Philippines
Tel: (63-33) 336-2937, 336-2965
Fax: (63-33) 335-1008
E-mail: tms-seafdec@phil.gn.apc.org
seafdec@mozcom.com

Siddiquin, M. Khalid

Chief, Statistics Development Section
Statistics Division
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
UN Building
Bangkok 10200, Thailand
Tel: (66-2) 288-1653
Fax: (66-2) 288-1082
E-mail: Siddiqui.unescap@un.org

Silpachai, Damrong

Policy and Program Officer
SEAFDEC Secretariat
P.O. Box 106, Chatuchak Post Office
Bangkok 10900, Thailand
Tel: (66-2) 940-6326 to 9
Fax: (66-2) 940-6336

Siriratrakul, Ruamporn (Ms.)

Chief, Fisheries Statistics Section
Economic Statistics Division
National Statistical Office
Larn Luang Road
Bangkok 10100, Thailand
Tel: (66-2) 281-0333 Ext. 1804
Fax: (66-2) 281-8617

Soetpannuk, Sonthikan

Statistician
SEAFDEC Training Department
P.O. Box 97, Phrasamutchedi
Samut Prakan 10290, Thailand
Tel: (66-2) 425-8040 to 5
Fax: (66-2) 425-8561
E-mail: sonthi@mozart.inet.co.th

Som, Hiek

Senior Statistician
FAO Regional Office for Asia and the Pacific
Maliwan Mansion, 39 Phra Athit Road
Bangkok 10200, Thailand
Tel: (66-2) 281-7844
Fax: (66-2) 280-0445
E-mail: Hiek.Som@field.fao.org

Sulit, V.T. (Ms.)

Special Assistant to the Chief
SEAFDEC Aquaculture Department
Tigbauan 5021
Iloilo, Philippines
Tel: (63-33) 335-1009
Fax: (63-33) 335-1008
E-mail: SEAFDEC@mozcom.com

Suzuki, Norimichi

JICA Expert (Fishery Statistics)
Center of Agricultural Data, Ministry of Agriculture
Gedung E Lantai 3
Jl. Harsono RM. No. 3, Ragunan
Jakarta 12550, Indonesia
Tel: (62-21) 789-0785, 780-7601
Fax: (62-21) 780-7601
E-mail: suzuki-n@indo.net.id

Thalathiah Bt. Haji Saidin (Ms.)

Head, Fisheries Information & Management System
Ibu Pejabat Perikanan
Department of Fisheries Malaysia
Wisma Tani, 8 & 9th Floors
Jalan Sultan Salahuddin
50628 Kuala Lumpur, Malaysia
Tel: (60-3) 298-2011 Ext. 3610
Fax: (60-3) 2910305
E-mail: Kcsmpp01@dof.moa.my

Trong, Nguyen Van

Project Officer
Mekong River Commission
Kasatsuk Bridge, Rama 1 Road
Bangkok, 10300, Thailand
Tel: (66-2) 225-0029
Fax: (66-2) 225-2796

Visser, Theo

Associate Professional Officer
Fishery Information and Statistics
FAO Regional Office for Asia and the Pacific
Maliwan Mansion, Phra Athit Road
Bangkok 10200, Thailand
Tel: (66-2) 281-7844
Fax: (66-2) 280-0445
E-mail: Theo.Visser@field.fao.org

Waiyasilp, Marina (Ms.)

Fisheries Economics Division
Department of Fisheries
Phaholyothin Road, Bangkhen
Bangkok, 10900Thailand
Tel: (66-2) 579-8208
Fax: (66-2) 562-0580

Wang, Jimping (Ms.)

Statistician
Division of Fisheries Information and Statistics
Ministry of Agriculture
No. 11 Nongzhanguan Nanli
Beijing 100026, People's Republic of China
Tel: (86-1) 6419-2913
Fax: (86-1) 6419-2448

Wanothyarnchai, Saowanee (Ms.)

Secretary to the Secretary-General and
Assistant Information Officer
SEAFDEC Secretariat
P.O. Box 106, Chatuchak Post Office
Bangkok 10900, Thailand
Tel: (66-2) 940-6326 to 9
Fax: (66-2) 940-6336

Wetchagarun, Kachornsak

Head, Training Division
SEAFDEC Training Department
P.O. Box 97, Phrasamutchedi
Samut Prakan 10290, Thailand
Tel: (66-2) 425-8040 to 5
Fax: (66-2) 425-8561

Wongsanga, Pouchamarn (Ms.)

Head, Socio-economics Section
SEAFDEC Training Department
P.O. Box 97, Phrasamutchedi
Samut Prakan 10290, Thailand
Tel: (66-2) 425-8040 to 5
Fax: (66-2) 425-8561
E-mail: SEAFDEC@mozart.inet.co.th

Yamaguchi, Reiko (Ms.)

Secretary to the Deputy Secretary-General
SEAFDEC Secretariat
P.O. Box 106, Chatuchak Post Office
Bangkok 10900, Thailand
Tel: (66-2) 940-6326 to 9
Fax: (66-2) 940-6336
E-mail: SEAFDEC@mozart.inet.co.th

Zalinge, Nicolaas Van

Chief Technical Adviser
Mekong River Commission
Kasatsuk Bridge, Rama I Road
Bangkok 10300, Thailand
Tel: (66-2) 225-0029
Fax: (66-2) 225-2796

Annex B

LIST OF DOCUMENTS

A. Working Documents

FAO/SEAFDEC/97/1	Annotated Agenda and Timetable
FAO/SEAFDEC/97/2	Follow-up by FAO to Recommendations from the 1994 Regional Workshop on Fishery Information and Statistics in Asia
FAO/SEAFDEC/97/3	Recent international initiatives with implications for fishery statistics
FAO/SEAFDEC/97/4	Current FAO fishery statistics programme
FAO/SEAFDEC/97/5	Fishery Statistics Bulletin for the South China Sea Area
FAO/SEAFDEC/97/6	Quality of capture fishery and aquaculture production statistics for Asia and the Pacific
FAO/SEAFDEC/97/6. Suppl.	Naitonality of catch
FAO/SEAFDEC/97/7	Review and the present status on the catch-effort statistics for the South China Sea Area
FAO/SEAFDEC/97/8	Guidelines for the collection of fishery data for artisanal fisheries
FAO/SEAFDEC/97/9	Experiences and case studies in the implementation of data collection methods for artisanal fisheries
FAO/SEAFDEC/97/10	Development on collation of tuna fishery statistics for the Southeast Asian region
FAO/SEAFDEC/97/11	Recent development on aquaculture statistics
FAO/SEAFDEC/97/12	Socio-economic information for fishery management and development
FAO/SEAFDEC/97/12, Suppl.	Dramatic change in shrimp culture in Thailand
FAO/SEAFDEC/97/13	Regional cooperation for fishery statistics programmes

B. Country Reports

FAO/SEAFDEC/97/CR1	Fisheries Statistics in Brunei Darussalam
FAO/SEAFDEC/97/CR2	Fisheries and fishery statistical system in Bangladesh
FAO/SEAFDEC/97/CR5	Country Report of Indonesia
FAO/SEAFDEC/97/CR6	Outline of Fishery Statistics: Japan
FAO/SEAFDEC/97/CR7 A	Status and prospect of Korean fisheries
FAO/SEAFDEC/97/CR7 B	Korean fishery statistical system
FAO/SEAFDEC/97/CR8	Country Report: Malaysia I. Current status of fishery statistical systems in Malaysia II. Current and future economic aspect of fisheries in Malaysia
FAO/SEAFDEC/97/CR9	Fishery statistics in the Philippines
FAO/SEAFDEC/97/CR10	Fishery statistics of Taiwan
FAO/SEAFDEC/97/CR11	Country Paper: Thailand I. Thailand fishery and its statistics II. General trends in the fishery sector
FAO/SEAFDEC/97/CR12	Statistical data on Vietnamese fisheries
FAO/SEAFDEC/97/CR13	Present status of fishery statistics in Myanmar

C. Information Documents

FAO/SEAFDEC//Inf. 1, Rev. 4	Provisional List of Documents
FAO/SEAFDEC/Inf. 2	Provisional List of Participants
FAO/SEAFDEC/Inf. 3	Proceedings of the Regional Workshop on Fishery Information and Statistics in Asia, Bangkok, Thailand, 18-22 January 1994, Vol. I
FAO/SEAFDEC/Inf. 4	Recent FAO activities related to by-catch and discard issues

FAO/SEAFDEC/Inf. 5	Case study of the preparation of national economic accounts: Norway
FAO/SEAFDEC/Inf. 6	Integrated environmental and economic accounting in fisheries
FAO/SEAFDEC/Inf. 7	Strengthening of Inland Fisheries Information Systems in the Lower Mekong Basin (Basinwide) Project Summary. Mekong River Commission Secretariat
FAO/SEAFDEC/Inf. 8	Regional Technical Assistance Towards Strategies and Action Plans for the Sustainable Utilization of Coastal Fish Stocks in Tropical Asia: Project Summary. ICLARM

D. Reference Documents

FAO/SEAFDEC/Ref. 1	Fishery Statistical Bulletin for the South China Sea, 1994. SEAFDEC. SEC/ST/30 (January 1977)
FAO/SEAFDEC/Ref. 2	The Catch-Effort Statistics for the South China Sea Area, 1992. SEAFDEC, MFRDMD/ST/1 (August 1997)
FAO/SEAFDEC/Ref. 3	Indian Ocean Tuna Fisheries Data Summary for 1985-1995. IPTP Data Summary No. 17 (1997)
FAO/SEAFDEC/Ref. 4	FAO Yearbook of Fishery Statistics Vol. 80: Catches and Landings, 1995. FAO Fisheries Series No. 48 (1997)
FAO/SEAFDEC/Ref. 5	FAO Yearbook of Fishery Statistics Vol. 81 Commodities, 1995. FAO Fisheries Series No. 45 (1997)
FAO/SEAFDEC/Ref. 6	1995 Marine Fishery Indicators of Thailand. National Statistical office, Office of the Prime Minister, Thailand (1997)

Annex C

AGENDA

1. Opening of the Session
2. Adoption of the Agenda and Arrangements for the Session
3. Current status of fishery and aquaculture statistics
   a. National fishery and aquaculture statistics
   b. FAO fishery statistics programmes
   c. SEAFDEC Fishery Statistical Bulletin
   d. Catch and effort statistics
   e. Tuna fishery statistics
   f. Aquaculture statistics
   g. Socio-economic statistics
4. Improvement on the collection, compilation, and dissemination of fishery and aquaculture statistics
5. Regional cooperation in strengthening the application of fishery and aquaculture statistics
6. Conclusion and recommendations
7. Closing ceremonies

ARRANGEMENTS OF THE MEETING

19-21 August 1997
Royal Princess Hotel, Bangkok, Thailand

Tuesday, 19 August 1997

0900 - 1000	Agenda 1.0	Opening of the Session Procedural Welcome Address by *Mr. Udom Bhatiyasevi* Opening Remarks by *Dr. Soetatwo Hadiwigeno*
	Agenda 2.0	Adoption of the Agenda and Arrangements for the Session **Chair:** Udom Bhatiyasevi **Rapporteur:** V. Sulit
1045 - 1200	Agenda 3.1	Current status of national fishery and aquaculture statistics: Country papers **Chair:** R. Grainger **Presentors:** Abdul Halidi Salleh, Rakhal Kangsa Banik, Lui Quian-fei, Bambang Wahyudi, Norimuchi Suzuki, Doo-Hae An **Working Documents:** FAO/SEAFDEC/97/CR 1-6
1330 - 1530	Agenda 3.1	Continuation **Chair:** R. Grainger **Presentors:** Thalathiah Bt. Haji Saidin, Ma Ma Lay, Tran Thi Mieng, Romeo Recide, Chaur-Lian Horng, Marina Waiyasilp **Working Documents:** FAO/SEAFDEC/97/CR 7-12 FAO/SEAFDEC/97 Inf. 3 **Rapporteur:** V. Sulit
1545 - 1700	Agenda 3.2	FAO Fishery Statistics Programme **Chair:** Hiek Som **Presentors:** T. Visser, R. Grainger **Working Documents:** FAO/SEAFDEC/97/2-4
	Agenda 3.3	SEAFDEC Fishery Statistical Bulletin **Chair:** Hiek Som **Presentor:** Pouchamarn Wongsanga **Working Document:** FAO/SEAFDEC/97/5 **Rapporteur:** V. Sulit
1800 - 2200		Reception hosted by SEAFDEC Secretary-General

Wednesday, 20 August 1997

0900 - 1030	Agenda 3.4	Catch and effort statistics **Chair:** Veravat Hongskul **Presentors:** Ibrahim bin Johari, R. Grainger, T. Visser **Working Documents:** FAO/SEAFDEC/97/6-9, 6 Suppl. **Rapporteur:** V. Sulit
1045 - 1200	Agenda 3.5	Tuna fishery statistics **Chair:** K.P. Nambiar **Presentor:** Raja Bidin bin Raja Hassan **Working Document**: FAO/SEAFDEC/97/10 **Rapporteur**: V. Sulit/Yong-Ja Cho
1330 - 1530	Agenda 3.6	Aquaculture statistics **Chair:** R. Recide **Presentor**: T. Visser **Working Document**: FAO/SEAFDEC/97/11 **Rapporteur:** V. Sulit
1545 - 1700	Agenda 3.7	Socio-economic statistics **Chair:** Damrong Silpachai **Presentor:** R. Grainger **Working Documents**: FAO/SEAFDEC/97/12-12 Suppl. **Rapporteur:** Yong-Ja Cho
1700 - 1800		ARTFISH demonstration by *T. Visser*

Thursday, 21 August 1997

0900 - 1030	Agenda 4.0	Improvement of the collection, compilation and dissemination of fishery and aquaculture statistics **Chair:** R. Grainger **Rapporteur:** V. Sulit/Yong-Ja Cho
1045 - 1200	Agenda 5.0	Regional cooperation in strengthening the application of fishery and aquaculture statistics **Chair:** M. Shimomura **Presentor:** Yong-Ja Cho **Working Document:** FAO/SEAFDEC/97/13 **Rapporteur:** V. Sulit
1300 - 1530	Drafting of Workshop Recommendations	
1530 - 1700	Agenda 6.0	Adoption of the recommendations **Chair:** Udom Bhatiyasevi
	Agenda 7.0	Closing ceremonies **Chair:** Udom Bhatiyasevi Richard Grainger **Rapporteur:** V. Sulit

Annex D

WELCOME ADDRESS
by
Mr. Udom Bhatiyasevi
Secretary-General
Southeast Asian Fisheries Development Center

I would like to take this opportunity to welcome all of you to Bangkok, and particularly to the Royal Princess Hotel which used to house SEAFDEC's Office of Secretary-General in its early years. Many SEAFDEC old timers will be glad that we are organizing this Workshop on the premises of our old home. This really gives us the feeling, in a traditional sense, that we are really your "host".

Allow me also to welcome you to the Regional Workshop on Fishery Statistics. As many of you are aware, this is a sequel to a series of fishery statistics workshops, the latest of which was the 1994 FAO/SEAFDEC Regional Workshop on Fishery Information and Statistics in Asia. The 1994 Workshop made several recommendations which included the need for improved statistics processing systems particularly for improved data validation and exchange using advanced technology. This time, we need to review the progress in these areas as well as discuss regional efforts in strengthening the application of statistics.

The prevailing situation facing all fishery resource managers is a grim picture painted by the continuous deterioration of physical and living marine resources. We all know that the reckless extraction or destruction of minerals, marine fishes and corals have led to the present state of concern. It is true that the seas and oceans have been so well endowed with the myriad resources, but they have to endure the consequences of greedy and selfish acts of harvesters who set high hope and expectation particularly for the outrageous amount of profit. The symptom of the "Tragedy of the Commons" has been well-known to the vast sheet of marine water, which makes it extremely difficult for anyone to exercise effective control given the extension of EEZ by most coastal nations.

When many people of various interest who have in their hands the highly destructible technology and in their heads an enormous greed, set their aims at the seas, the marine resources would inevitably come under the great plunder of all times. This grim situation is bad enough, but the worst is yet to come if effective preventive measures cannot be put in place. A few instances of crime can be said as "bad"; their endless recurrences cannot be termed anything but "worse".

Fishery statistics, like all other statistics, is an important tool for most resource managers. It is not necessarily meant for providing an exact number of an indisputable fact, but as a meaningful yardstick. Statistics can tell us how better or worse we are performing. The trend of things and its probable attributes are what planners and resource managers need to know, so that they can chart their future courses of action. The most reliable source of information could be the trend in the recent past. How can one possibly prepare coping with tomorrow if he only knows what it was like in the very immediate past?

Responsible fishing is what all coastal nations have been told and agreed upon to practice. The advocating agencies do realize the many shortcomings of fishery statistics, that is why they also promote the concept of "precautionary measures" or be on the safe side, they would say, if you don't really know the facts. If I ask all of you here: Is it really impossible to get the facts? I earnestly hope you would say "No", as FAO and SEAFDEC strongly believe that providing facts to fishery resource managers is quite possible. This is the reason why we jointly organize this Workshop.

As a planner, I do appreciate your past contribution knowing that it is very difficult to collect and analyze fishery statistics especially the empirical data. Fishery statistics is indeed complex since it has to cope with thousands of fish species, caught by some obscure methods in hardly defined geographical areas of the sea. Although the shortage of manpower and funds can be cited as reasons for not being able to achieve something, it is certainly not about statistics. It is exactly for these reasons why statistics come into being. When you cannot count something, statistics can tell you a rough but meaningful number.

For the past many years, SEAFDEC and FAO have been promoting fishery statistics in the South China Sea Area, and our efforts have been very much appreciated. Now that we are all benefiting from the advancement of information technology, we should hope to do it even better. One thing we cannot replace and will never replace, is the active involvement of the national statistics offices. I am indeed very happy that you are all here to discuss things of your own expertise. I hope you will be able to resolve the persistent hurdles and come up with practical agreement that we can work together effectively.

I would like to thank FAO, particularly the Assistant Director-General, Dr. Soetatwo Hadiwigeno; The FAO/RAP Regional Fisheries Officer, Dr. Veravat Hongskul, and other officers present here, for their hard work and warm partnership. I am confident that when FAO and SEAFDEC work together, many tangible and useful things can be done.

I hope you will spend the next few days in a fruitful discussion, so that in the end, you will produce results that would benefit all of us. With additional effort from APFIC, which organizes the next two days Meeting of the Working Party on Fishery Statistics and Economics, we can pin our hope on a better and timely statistical information for Southeast Asian fishery resource planners in the years to come.

Good day to one and all!

Annex E

OPENING REMARKS
by
Dr. Soetatwo Hadiwigeno
Regional Representative and Assistant Director-General
Regional Office for Asia and the Pacific of FAO

The Secretary-General of SEAFDEC, distinguished participants, ladies and gentlemen, good morning!

It is my privilege and pleasure to be with you this morning for the opening ceremony of the FAO/SEAFDEC Regional Workshop on Fishery Statistics as well as the First Session of the APFIC Joint Working Party on Fishery Statistics and Economics which are held together for the interest of economy and greater participation. The continued cooperation between FAO and SEAFDEC should be commended as we are both working closely for the development and management of fisheries in this region.

Being an economist myself, the need for accurate and timely statistics is well recognized. Assessment of performance in all sectors of agriculture requires reliable data in order to gain in-sight of the current status and future prospect. In using available data for fishery management, one should be well aware of the present and future trends. The era of limitless exploitation is now gone while the golden years of increasing production has passed. What we are confronted now is no longer how to further develop our fisheries but rather how to properly conserve and manage all fishery and aquatic resources to ensure future supply of fish for food security.

At the World Food Summit held in Rome in 1996, the issues on fisheries and food security were discussed. It was noted that 44 percent of stocks that have been assessed were exploited at their maximum or close to it while 25 percent are depleted. On the other hand, projections of demand for fish for food in the year 2010 are in the range of 110-120 million tons a year. Projections of supply however are less precise but the most optimistic projections fall within the range of the above demand. Disparities between supply and demand are worsened by wasteful methods of catching and processing fish. As much as 27 million tons of fish may be discarded each year. This is a painful fact for all of us concerned.

In order to guide fishery planners and policy-makers in developing a better strategy for sound management and sustainable use of aquatic resources, timely and accurate statistics are required. The compilation and dissemination of fishery statistical data related to catches, aquaculture production, trade and production of fishery commodities, fish consumption and fishing fleets are essential for policy analysis. In addition, growing statistical demands are to be met concerning high sea fisheries and fleets, fish consumption trends and the role of fish in nutrition.

I am pleased to see close collaboration between FAO and SEAFDEC in organizing this Regional Workshop to address the current status of fishery statistics in the region as well as ways and means to improve the existing statistical systems to meet the new demands for better statistics for management purposes. As FAO will continue to be the global focal point for the compilation and dissemination of fishery statistics, actions taken at national and regional levels would undoubtedly strengthen this role for mutual benefit of all concerned. I therefore wish the Regional Workshop success in its deliberation.

With these words, I wish you a very fruitful session and a pleasant stay in this "amazing" City of Bangkok.