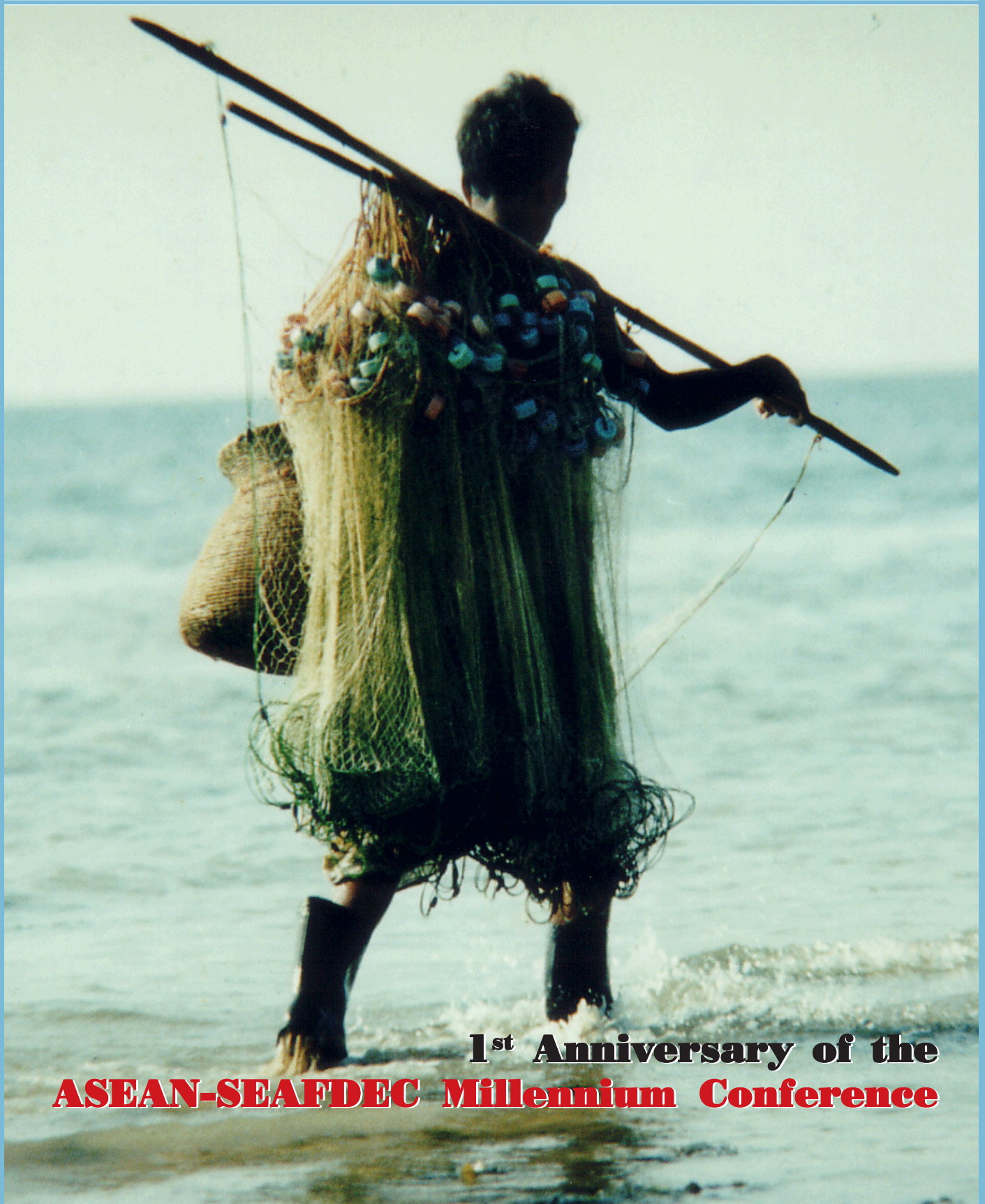


FISH *for the* PEOPLE

A Special Publication for the Promotion of Sustainable Fisheries for Food Security in the ASEAN Region

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**1st Anniversary of the
ASEAN-SEAFDEC Millennium Conference**



Southeast Asian Fisheries Development Center

EDITORIAL

The Southeast Asian Fisheries Development Center (SEAFDEC) is an inter-governmental organization that has existed in the Southeast Asian region for the past 35 years, providing technical support to its Member Countries in achieving sustainable fisheries and aquaculture. In 1998, after 30 years of its successful operations, SEAFDEC adopted a new Strategic Plan that reflects the changing status of fisheries in the region. The Strategic Plan provides a valid basis and set of guidelines for further development of SEAFDEC policies and programs in harmony with those developed at the global level.

In line with our new Strategic Plan, SEAFDEC is now developing programs that involve more directly a broader spectrum of fisheries stakeholders, from policy makers within government structures, to researchers and fisheries resource users, both within and beyond the region. The purpose of this publication, *Fish for the People*, is to present issues on sustainable fisheries in the ASEAN region to this wider spectrum of stakeholders. It takes its name from the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: "Fish for the People" (the Millennium Conference), and commemorates the first anniversary of that important event.

Three times a year, *Fish for the People* will provide information on the progress of the programs following up on the main outcomes of the Millennium Conference, namely the adopted Resolution and Plan of Action, which can be regarded as a common regional fisheries policy and guidelines.

The four SEAFDEC technical Departments will continue to publish various technical

documents related to their respective programs. *Fish for the People* is published by the SEAFDEC Secretariat, and focuses on issues related to regional policy and the concepts that need to be considered in the development of programs contributing to sustainable fisheries in the region. *Fish for the People* will aim to use readable, straightforward language, to ensure that articles are broadly accessible to a diverse audience of readers.

Since the aim of *Fish for the People* is to present regional policy related issues, all articles presented or cited in this publication should be based on a technical consensus within

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the ASEAN region, previously reached at the various fora promoting these priority programs. The publication is not therefore produced as a platform for personal ideas or debates. Although authors in this first publication are all involved in SEAFDEC programs, we will invite contributions from authors interested in achieving sustainable fisheries in the ASEAN region. In this way, we hope to establish the intended policy and momentum.

Like any new publication, there have been difficulties in producing the first issue of *Fish for the People*. We hope to gradually improve the quality of our publication, as the editorial and publication teams of the Secretariat learn from the experience. We hope to give you more readable articles, closer to the objectives we have set ourselves for *Fish for the People*. Feedback from our readers, using either the attached form or email, will be most useful in helping us improve coming issues.

We trust you will find this publication useful, despite its shortcomings, and wish you pleasant reading.

The Editors



FISH *for the* PEOPLE is a special publication produced by the Southeast Asian Fisheries Development Center (SEAFDEC) every four months as part of the ASEAN-SEAFDEC Special 5-year Program to promote sustainable fisheries for food security in the ASEAN region.

Anyone wishing to submit an article for the publication is requested to send it to the Editors in Chief at the SEAFDEC Secretariat. The Editors reserve the rights to accept and/or abridge articles to the available space.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of SEAFDEC concerning the legal status of any country, territory, city or area of its authorities, or concerning the legal status of fisheries, marine and aquatic resource uses and the delimitation of territorial waters.

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1st Anniversary of the ASEAN-SEAFDEC Conference: “Fish for the People”

by Suriyan Vichitlekarn

Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”

The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People” was held in November 2001. The conference was in response to widespread regional concern over unsustainable fisheries practices, which may negatively affect future fish supplies for food security and the economic and social well-being of people in the ASEAN region. Attention focused on fisheries issues of specific concern to the ASEAN region, the goal being to coordinate policies and actions within the region and harmonize these with policies and actions at the international level.



*Opening ceremony of the Millennium Conference
on 19 November 2001*

The Conference was the culmination of over two years of collaborative efforts by ASEAN-SEAFDEC Member Countries, together with SEAFDEC, the ASEAN Secretariats and FAO. The conclusions and recommendations on various important issues, reached through consultative processes at both national and regional levels, formed the basis for deliberation at the Conference, as well as for the formulation of the Resolution and Plan of Action on Sustainable Fisheries in the ASEAN Region (Page 7-11), which could be considered as the ASEAN fisheries common policies and guidelines.

The conference itself is the beginning of long-term work to meet the challenges of achieving sustainable fisheries and food security in the region. Through its Resolution and Plan of Action, the conference has provided regional policy direction and guidance as well as various technical documents. A ‘Follow-up Program on the Contribution of Sustainable Fisheries for Food Security for the ASEAN Region (2002-2005)’ was formulated to pursue the initiatives launched by the conference.

The Follow-up Program aims at assisting ASEAN Member Countries in the implementation of the Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN region together with the recommendations from the Technical Session. The program also aims to provide benefit to all ASEAN Member Countries, emphasizing support for the least developed countries in the region to minimize disparities and to achieve coordinated efforts toward sustainable fisheries.

“A Follow-up Program on the Contribution of Sustainable Fisheries for Food Security for the ASEAN Region (2002-2005) was formulated”

Considering the nature and competence of the organizations, SEAFDEC has been viewed as a policy and technical organization, while ASEAN is considered a political organization. Mutual benefits, especially from activities conducted in the fields of fisheries can therefore be derived by their Member Countries. To enhance the effectiveness of the implementation of fishery programs in the ASEAN Region, close collaboration between ASEAN and SEAFDEC is considered essential. The ASEAN-SEAFDEC Fisheries Consultative Group (FCG) was established in 1999 as a strategic alliance to pool resources and avoids duplication of effort in response to this requirement.

The FCG is mandated to identify important regional and international fisheries issues, to provide technical assistance to ASEAN for the formulation and implementation of common policies, and to assist Member Countries in formulating common positions on regional or international fisheries issues. Through this collaborative mechanism, a joint program of planning and review has been conducted every year. It is envisaged that, supported by ASEAN and SEAFDEC Member Countries, these programs will increase the benefits to the promotion of sustainable fisheries in the region. In order to assist ASEAN Member Countries in the implementation of the outcome of the Conference, it is therefore important that the follow-up program is integrated into this regional fisheries collaborative mechanism.

“... it is therefore important that the follow-up program is integrated into this regional fisheries collaborative mechanism”

ASEAN-SEAFDEC FCG Programs

Considering the priority issues identified before and after the conference, a number of regional fisheries programs (Page 12) have been established under the ASEAN-SEAFDEC FCG mechanism to promote sustainable fisheries and ensure food security in the ASEAN region. These include the Special Five-year Program on the Contribution of Sustainable Fisheries for Food Security for the ASEAN Region, considered as support to the implementation of the Resolution and Plan of Action.

What progress has been made in the one year since the establishment of the regional fisheries policy towards sustainable fisheries and food security in the region?

1. Upgrading of Traditional Fish Processing Industries in Southeast Asia

This program aims primarily to upgrade traditional fish processing industries in the region, with particular emphasis on fermented fish products. This has been done through improved processing technology and the introduction of quality management systems such as

the Hazard Analysis and Critical Control Point (HACCP). It is expected that this program will provide a basis for future development of other traditional fish products in the region.

2. Promotion of Mangrove-friendly Aquaculture in Southeast Asia

In order to promote sustainable aquaculture, the program aims at developing sustainable culture technology packages particularly for shrimp farming that have the least negative impact on mangroves and their environment. Once fish culture technology packages develop, the program plans to disseminate them in the region through demonstration and training. This also includes verification and pilot demonstration, research and preparation of instructional materials for dissemination.

3. Conservation and Management of Sea Turtles in Southeast Asian Countries

Populations of sea turtles are decreasing throughout the region. This program aims at establishing a regional approach towards the conservation and management of this resource. Program activities include studies on the biology of sea turtles and their populations, habitats and nesting ground loss and degradation, and other potential threats with the goal of developing an effective management plan for sea turtles populations in the region. Regular workshops on Southeast Asia Sea Turtle Associative Research (SEASTAR) will also be held for sea turtle scientists to meet and discuss research findings for future development.

4. Regionalization of the Code of Conduct for Responsible Fisheries

The program has been developed with the aim of assisting ASEAN Member Countries in the implementation at the national level of the Code of Conduct for Responsible Fisheries. The program highlights a collaborative regional learning process through regional consultations, focusing on regional fisheries specificities and priorities. Following the main thematic issues of the Code, the program has four phases: fishing operations, aquaculture, fisheries management, and post-harvest technology and trade. The program's initial aim is the development of regional

guidelines reflecting the regional consultations and the identification of follow-up actions to further promote the implementation of the Code.

5. Development of Fish Disease Inspection Methodologies for Artificially-bred Seeds

Infectious diseases threaten the sustainability of aquaculture. This program was developed as an extension to the program for the Promotion of Mangrove-friendly Aquaculture in Southeast Asia. It aims to promote healthy and wholesome trading of aquaculture products through the establishment of standardized diagnostic methods for important diseases and a surveillance and disease control system.

6. Fish Trade and Environment

This program was developed to promote sustainable fish trade in the region through the investigation of common issues related to fish trade and environment in the region. The program provides a basis for regional deliberation to establish effective management plan and measures, as well as to develop common positions among the ASEAN Member Countries in the promotion of regional fish trade. So far, the program has identified several major issues for investigation. These include fisheries subsidies, eco-labelling, sanitary and phytosanitary (SPS) measures, dealing with antibiotic residues in farmed shrimps, and sea turtle and shark related issues.

7. Coastal Resource Management

The aim of this program is to establish practical locally based approaches to sustainable coastal fisheries management, the rehabilitation of coastal resources, and poverty alleviation. A pilot project on coastal resource management has been implemented in a selected district in Thailand. Program activities include baseline studies on coastal fisheries of the pilot areas, development and promotion of a locally based coastal fisheries management framework through capacity building, and the rehabilitation and enhancement of coastal resources.

8. Special Five-year Follow-up Program on the Contribution of Sustainable Fisheries for Food Security in the ASEAN Region

COMPONENT I: Fisheries Management

Toward Decentralized Management for Sustainable Fisheries in the ASEAN Region

This project aims at addressing fisheries management frameworks that will ensure the stable fish supplies and food security necessary for achieving sustainable fisheries in the region. The project approach focuses on mobilizing knowledge, expertise and experience on the decentralization of fisheries management and rights-based fisheries already existing in the region. It will then develop guidelines as regional references for the promotion of the decentralization of fisheries management and rights-based fisheries as a strategy to improve existing national fisheries management frameworks.



Fisheries management is an important component of the Special Five-year Follow-up Program

Improvement of Fishery Statistical Systems and Mechanisms

This project aims primarily at improving national fishery statistical systems in ASEAN Member Countries. The project focuses on the development of regional references for human resource development on fishery statistics at all levels. These regional references could be promoted through mobilizing relevant expertise and

experience within and beyond the region. The project also aims to promote a fishery statistical system using standardized definitions and terminology, as well as statistical classification, in order to facilitate the compilation of fishery statistics at both the regional and global levels.

Responsible Fishing Gears and Practices

This project centers on the promotion of selective fishing gears, particularly in coastal areas. Research studies and demonstration works will be used to improve selectivity and reduce the destructive impact of major fishing gears on resources and habitats in the region. The project particularly highlights the promotion of Juvenile and Trash Excluder Devices (JTEDs) to reduce the capture of immature cohorts of commercially important species.

Resource Enhancement

As part of attempts to enhance coastal resources in response to their continuous degradation in the region, this project aims to promote resource enhancement tools such as artificial reefs as well as some selected stationary fishing technologies and aquaculture facilities. With regard to the sustainability of resource enhancement, the project will be promoted under the rights-based fisheries principle, with the active involvement of local communities and fishers.

Identification of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region

In response to the needs for effective management tools for capture fisheries in the Region, this project investigates practical indicators for sustainable fisheries. This also includes usage of the identified indicators and promoting data and information collection to support the indicators. The project will promote pilot sub-projects on the use of various indicators in different fisheries to draw practical experience, which will be used as a basis to develop regional guidelines on the use of indicators for sustainable development and management of fisheries in the region.

Information Gathering for Capture Inland Fisheries in ASEAN Countries

This project addresses the importance and usage of data and information to support the sustainable management of inland capture fisheries. The project emphasizes in particular required data gathering, analysis and presentation. It is expected that the project will develop various approaches for different inland water bodies, such as lakes and reservoirs, for the formulation of a Standard Operational Procedure (SOP) to be used for regional guidance and reference in the management and development of this sector.

Harvesting of Under-exploited Resource

As a strategy to tackle the increasing demand for fish and fishery products, this project was developed to investigate the possibility of developing new fisheries and increasing production from currently under-exploited fisheries in a sustainable manner. The project will identify key under-exploited resources and their potential as well as appropriate fishing and handling techniques and possible promotion of these fisheries through research and information collection by putting emphasis on fish resources in both the Eastern Indian Ocean and the Western Central Pacific regions. These stocks have so far been identified mainly as pelagic species, such as tunas, scads, mackerel and squid.

COMPONENT II: Aquaculture

Aquaculture for Rural Development

This project aims at promoting appropriate aquatic species and responsible technologies for aquaculture in both freshwater and marine systems, to contribute to rural development in the region. It comprises four major components: freshwater aquaculture of indigenous



Aquaculture is the second component of the Special Five-year Follow-up Program

species, promotion of integrated agri/aquaculture systems, coastal aquaculture for poverty alleviation, and small-scale sea farming.

Supply of Good Quality Seeds

Within the region, there is a need for both quality seed in aquaculture and for stock enhancement programs. This project aims to identify, verify and disseminate appropriate broodstock management and seed production technologies for potential freshwater and marine species. The project focuses on existing capabilities and current regional needs in aquaculture. Activities include pilot demonstrations, technology verification and on-site training.

COMPONENT III: Utilization of Fish and Fishery Products

Maximizing the Utilization of Fish Catch

The project aims to promote the use of under-utilized marine and freshwater fish species for the development of value-added products. Studies to maximize the use of fish catch will be conducted, particularly in the areas of preliminary processing trials and actual production, as well as product shelf life. The outcomes will be used to formulate a regional manual for further dissemination.

Fish Quality and Safety Management Systems

In response to the increasing requirements for safely consumable fishery products, this project aims to improve aspects of laboratory practices in the region, through harmonizing and validating laboratory test procedures to bring them into line with international standards. The project also expects to establish a network of lead laboratories and good laboratory practices to be implemented in each ASEAN Member Country.

9. Information Collection for Sustainable Pelagic Fisheries in the South China Sea

This program was developed as part of an attempt to promote sustainable development and management of pelagic fisheries in the region. It addresses the importance of collecting information on the exploitation of pelagic fish resources. The program focuses on the status of operation and catches of purse seines in order to determine the possible existence of under-exploited

resources, the biological characteristics of some selected species exploited by purse seines, and maximizing the utilization of the catches.

10. Digitized Atlas

In utilizing and making accessible fisheries data and information, geo-informatics technology is an important tool to support the development and management of fisheries in the region. The digitized atlas program aims to establish an integrated data management system on fisheries, accessible through a user-friendly map-based interface on the Internet. The program involves a wide range of data and information on, among other things, fishery statistics, geographical information, cases studies, and their analysis, and research data and outcomes.

11. Application of HACCP in the Fish Processing Industry in Southeast Asia

In line with international trends and the need to comply with regulations of importing countries, the Hazard Analysis and Critical Control Point (HACCP) system has been endorsed for ensuring food safety in ASEAN Member Countries. This program was developed to assist ASEAN Member Countries in further promoting the implementation of HACCP programs. HACCP not only needs to be used for export fish and fishery products but also for those traditionally consumed domestically. The program aims to document HACCP applications in fish processing industries of ASEAN Member Countries, and to provide a useful platform for sharing of information and experiences among Member Countries on HACCP applications.



The Ministerial Session of the Millennium Conference

The Resolution on Sustainable Fisheries for Food Security for the ASEAN Region

We, the Ministers of ASEAN-SEAFDEC Member Countries who are responsible for fisheries, met in Bangkok, Thailand on the occasion of *The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”, on 24 November, 2001,*

Recalling the principles of the ASEAN Vision 2020 and the initiatives agreed upon by the ASEAN Member Countries under the Hanoi Plan of Action;

Recognizing the importance of sustainable fisheries for food security and the livelihoods and well-being of the ASEAN people;

Noting the provisions of international declarations and instruments on food security, fisheries, ocean governance, trade, and the aquatic environment;

Conscious of the growing demand for fish and fishery products and the need to secure sustainable fish supplies for food security for each ASEAN Member Country;

Aware of the increasing pressures on ASEAN’s aquatic environment and fisheries resources from fisheries and non-fisheries activities, that may negatively impact on the livelihoods of the ASEAN people, in particular the poor and disadvantaged segments of society;

Considering the benefits of current and future fisheries cooperation among ASEAN-SEAFDEC Member Countries to promote sustainable fisheries in ASEAN Member Countries; and,

Deciding that the issues identified through the national and regional participatory processes in preparation for the above Conference and those identified at the Conference should be given priority;

DO HEREBY RESOLVE, without prejudice to the sovereign rights, obligations, and responsibilities of our countries under relevant international laws and arrangements, to:

1. Formulate regional guidelines to implement the Code of Conduct for Responsible Fisheries, taking into account the specific social, economic, cultural, ecological and institutional contexts and diversity of ASEAN fisheries;
2. Cooperate to identify constraints and enhance collaboration among government agencies, which have responsibility for fisheries and fisheries-related issues, in order to harmonize policies, plans and activities which support sustainable fisheries at the national and regional levels;
3. Acknowledge the need for enhanced human resource capabilities at all levels and encourage greater involvement by stakeholders to facilitate consensus and compliance in achieving sustainable fisheries;
4. Mobilize regional technical cooperation to reduce disparities and promote solidarity among ASEAN Member Countries;
5. Encourage effective management of fisheries through delegation of selected management functions to the local level;
6. Recognize the need to progressively replace “open access” to fisheries resources with “limited access regimes” through the introduction of rights-based fisheries which may also facilitate the management of fishing capacity and promote the use of responsible fishing gears and practices;

7. Strengthen national fishery statistical systems and maximize their use for fisheries planning and management and develop standard definitions and classifications to facilitate regional fishery statistics and information exchanges;
8. Emphasize the importance of inland fisheries and aquaculture in planning and policy formulation to improve food security and the livelihoods of rural people;
9. Work towards the conservation and rehabilitation of aquatic habitats essential to enhancing fisheries resources;
10. Mitigate the potential impacts on the environment and biodiversity, including the spreading of aquatic animal diseases, caused by the uncontrolled introduction and transfer of non-indigenous and exotic aquatic species;
11. Promote the maximum utilization of catch, including the reduction of discards and post-harvest losses to increase fish supply and improve economic returns;
12. Increase aquaculture production in a sustainable and environment-friendly manner by ensuring a stable supply of quality seeds and feeds, effectively controlling disease, promoting good farm management and transferring appropriate technology;
13. Promote aquaculture for rural development, which is compatible with the rational use of land and water resources, to increase fish supplies and improve the livelihoods of rural people;
14. Improve post-harvest technologies to ensure fish quality assurance and safety management systems, which are appropriate for small and medium-sized enterprises in the Region, taking into account the importance of traditional fish products and food security requirements;
15. Strengthen the joint ASEAN approaches and positions on international trade in fish and fishery products indigenous to the Region by harmonizing standards, criteria and guidelines; and
16. Increase the participation and involvement of ASEAN Member Countries in international fora to safeguard and promote ASEAN interests;

AND DO HEREBY DECIDE, that the Resolution be implemented as soon as possible and use the ***Plan of Action*** adopted by the ASEAN-SEAFDEC Senior Officials as a result of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”, held November 19-24, 2001, in Bangkok, Thailand, as a guideline for formulating and implementing programs, projects, and activities through appropriate ASEAN-SEAFDEC mechanisms.



The Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region

Guided by the Resolution on Sustainable Fisheries for Food Security for the ASEAN Region, and the need to formulate regional guidelines for the Code of Conduct for Responsible Fisheries, the Senior Officials adopted the following Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region to be used as a guideline to develop programs, projects and activities for the implementation of the Resolution.

A. FISHERIES MANAGEMENT

1. Establish and implement comprehensive policies for innovative fisheries management, such as the decentralization of selected fisheries management functions to the local level, the progressive introduction of rights-based fisheries management through licensing and community fishing rights, the improvement of vessel registration systems and the development of supporting legal and institutional frameworks.
2. Ensure local consensus building on innovative management measures through consultative processes and create close monitoring mechanisms to support and implement these measures.
3. Take measures to prevent unauthorized fishing and eliminate the use of illegal and destructive fishing gears and practices by building awareness of their adverse impacts, the development and promotion of responsible and selective fishing gears and practices, enforcing regulations and encouraging alternative means of livelihood.
4. Optimize the use of inshore waters through resource enhancement programs such as promoting the installation of artificial reefs and structures, encouraging coordinated and effective planning for coastal fisheries management programs, undertaking environmental impact assessment studies, restocking of commercially important fish species and developing human resources for the implementation of such programs.
5. Review the issue of excess fishing capacity at the national level and recommend where appropriate, measures to improve the registration of fishing vessels, the introduction of right-based fisheries and the reduction of the number of fishing boats and level of fishing effort using government incentives.
6. Formulate guidelines to promote the use of practical and simple indicators for multi-species fisheries as a substitute for classical fisheries management models within the national fisheries management framework, with particular regard to facilitating timely local level fisheries management decisions.
7. Investigate the potential of under-utilized fisheries resources and promote their exploitation in a precautionary manner based upon analysis of the best available scientific information under right-based fisheries regimes.
8. Develop and maintain freshwater fisheries through inter-agency coordination of multiple-use water resources and trans-boundary inland fisheries management, promoting awareness of the importance of freshwater fisheries for local food security, rehabilitating and restoring habitats for migratory freshwater fish, restocking indigenous fish species to enhance productivity and encouraging culture-based freshwater fisheries where appropriate.
9. Coordinate and decentralize the collection and use of fisheries related statistical data between the national fisheries and other authorities including those responsible for food security, trade, vessel registration, aquaculture and rural development.
10. Maximize the use of national fisheries statistical systems by focusing on clear objectives and timely

results directly related to fishery management decision-making and planning processes.

11. Apply, where appropriate, regionally standardized definitions and classifications for statistical data to facilitate regional compilation, analysis and data exchange.
12. Develop national statistical mechanisms on inland fisheries and aquaculture in order to provide a basis for their development and the exchange of statistical data and related information, with particular emphasis on the catchment approach in international river basins.

B. AQUACULTURE

1. Ensure that national policies and regulatory frameworks on aquaculture development are directed toward sustainability and avoidance of conflicts by incorporating consultations with stakeholder groups, implementing aquaculture zoning, considering social and environmental impact, and also regulating rights of access to, and use of, open water sites for mariculture.
2. Ensure production of high quality seeds on a consistent and sustainable basis by providing government support for public and private hatchery development and research, developing domesticated broodstocks and fish reproductive technologies, and promoting responsible collection and use of wild broodstock and seed.
3. Promote good farm management practices that reduce effluent pollution load and comply with relevant effluent standards through appropriate treatment.
4. Reduce the risks of negative environmental impacts, loss of biodiversity, and disease transfer by regulating the introduction and transfer of aquatic organisms in accordance with the Regional Guidelines on the Responsible Movement of Live Aquatic Animals and Plants.
5. Improve the efficient use of aquatic feeds by regulating the quality of manufactured feed and feed ingredients, providing guidelines on farm-level food conversion ratios and levels of aquaculture effluents, and supporting research into developing suitable alternative protein sources to reduce dependence on fish meal and other fish based products.
6. Improve capabilities in the diagnosis and control of fish diseases within the Region by developing technology and techniques for disease identification, reliable field-side diagnostics and harmonized diagnostic procedures, and establishing regional and inter-regional referral systems, including designation of reference laboratories and timely access to disease control experts within the Region.
7. Formulate guidelines for the use of chemicals in aquaculture, establish quality standards and take measures to reduce or eliminate the use of harmful chemicals.
8. Build human resource capabilities for environment-friendly, healthy, wholesome and sustainable aquaculture through closer public and private sector collaboration in research and development, paying particular attention to the emerging need for skills in biotechnology, and effectively implementing aquaculture education and extension services.
9. Promote aquaculture as an integrated rural development activity within multiple-use of land and water resources available through inter-agency coordination in policy formulation, project planning and

implementation, stakeholder consultation, extension services and technology transfer.

C. SUSTAINABLE UTILIZATION OF FISH AND FISHERY PRODUCTS

1. Introduce and provide support for the development of technologies to optimize the utilization of catch and reduce post-harvest losses, wastes and discards in industrial and small-scale fisheries and processing operations through improved processing facilities, on-board and on-shore handling, storage and distribution of fish and fishery products.
2. Promote the production and preserve the diversity of traditional fish products by assisting producers to secure stable supplies of quality raw materials, to meet food safety requirements and to improve product identity, nutritive value and marketing.
3. Encourage relevant control agencies to coordinate their activities at all levels in applying appropriate legislation regarding the quality and safety of fish and fishery products.
4. Develop and apply fish quality and safety management systems that ensure food safety and support the competitive position of ASEAN fish products on world markets through the implementation, validation and verification of Hazard Analysis and Critical Control Point (HACCP) based systems and improved laboratory practices, and adapting quality and safety management systems so that they may be applied to small and medium enterprises in the ASEAN Region.
5. Promote and conduct training programs to upgrade the technical skills and competencies of personnel in the public sector and the fish processing industry in the ASEAN Region.

D. FISH TRADE

1. Strengthen ASEAN trade policy on fish and fishery products through regional collaboration by harmonizing product standards and sanitary measures with international standards wherever appropriate, working towards harmonised guidelines for fish inspection and quality control systems among ASEAN Member Countries, strengthening fish inspection and quality control systems with regard to food safety and exchanging information on risk analysis.
2. In collaboration with international technical organizations such as the Food and Agriculture Organization of the United Nations (FAO) and the World Trade Organization (WTO), assess the impact of government subsidies on fisheries, particularly on the needs of small-scale fisheries in the ASEAN Region and sustainable fisheries.
3. Anticipate and address the potential impacts of eco-labelling of ASEAN fish and fishery products.

E. REGIONAL AND INTERNATIONAL POLICY FORMULATION

1. Enhance regional collaboration by developing guidelines, criteria and standards on important fisheries issues to strengthen ASEAN policies and positions and harmonize them with international initiatives and arrangements.
2. Increase participation and involvement of ASEAN Member Countries in international fora and technical committees such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Codex, FAO, Office International des Epizooties (OIE), Regional Fisheries Bodies, and WTO to safeguard and promote ASEAN interests, recognizing that international fisheries policies are increasingly discussed and agreed upon at the global level.

Programs under ASEAN-SEAFDEC FCG Mechanisms

1. Upgrading of Traditional Fish Processing Industries in Southeast Asia
2. Promotion of Mangrove-friendly Aquaculture in Southeast Asian Countries
3. Conservation and Management of Sea Turtles in Southeast Asian Countries
4. Regionalization of the Code of Conduct for Responsible Fisheries (RCCRF)
5. Development of Fish Diseases Diagnostic Inspection Methodologies for Artificial-bred Seeds
6. Fish Trade and Environment
7. Coastal Resource Management
8. Special 5-year Program

Component I: Fisheries Management

- 8.1. Toward Decentralized Management for Sustainable Fisheries in the ASEAN Region
- 8.2. Improvement of Fishery Statistical Systems and Mechanisms
- 8.3. Responsible Fishing Technologies and Practices
- 8.4. Resource Enhancement
- 8.5. Identification of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region
- 8.6. Information Gathering for Capture Inland Fisheries in ASEAN Countries
- 8.7. Harvesting of Under-exploited Resource

Component II: Aquaculture

- 8.8. Aquaculture for Rural Development
- 8.9. Supply of Good Quality Seeds

Component III: Utilization of Fish and Fishery Products

- 8.10. Maximizing the Utilization of Fish Catch
- 8.11. Fish Quality and Safety Management Systems
9. Information Collection for Sustainable Pelagic Fisheries in the South China Sea
10. Digitized Atlas
11. Application of HACCP in the Fish Processing Industry in Southeast Asia

Conclusion

Achieving sustainable fisheries and food security in the ASEAN region is a major challenge for all Member Countries. The Resolution and Plan of Action on Sustainable Fisheries in the ASEAN region and programs to support its implementation have been established, but the journey to achieving identified regional goals has just begun. Strong commitment, support and close cooperation among ASEAN Member Countries, coupled with collaborative technical support between regional and international organizations, are major driving forces to ensure “fish for the people” for generations to come.

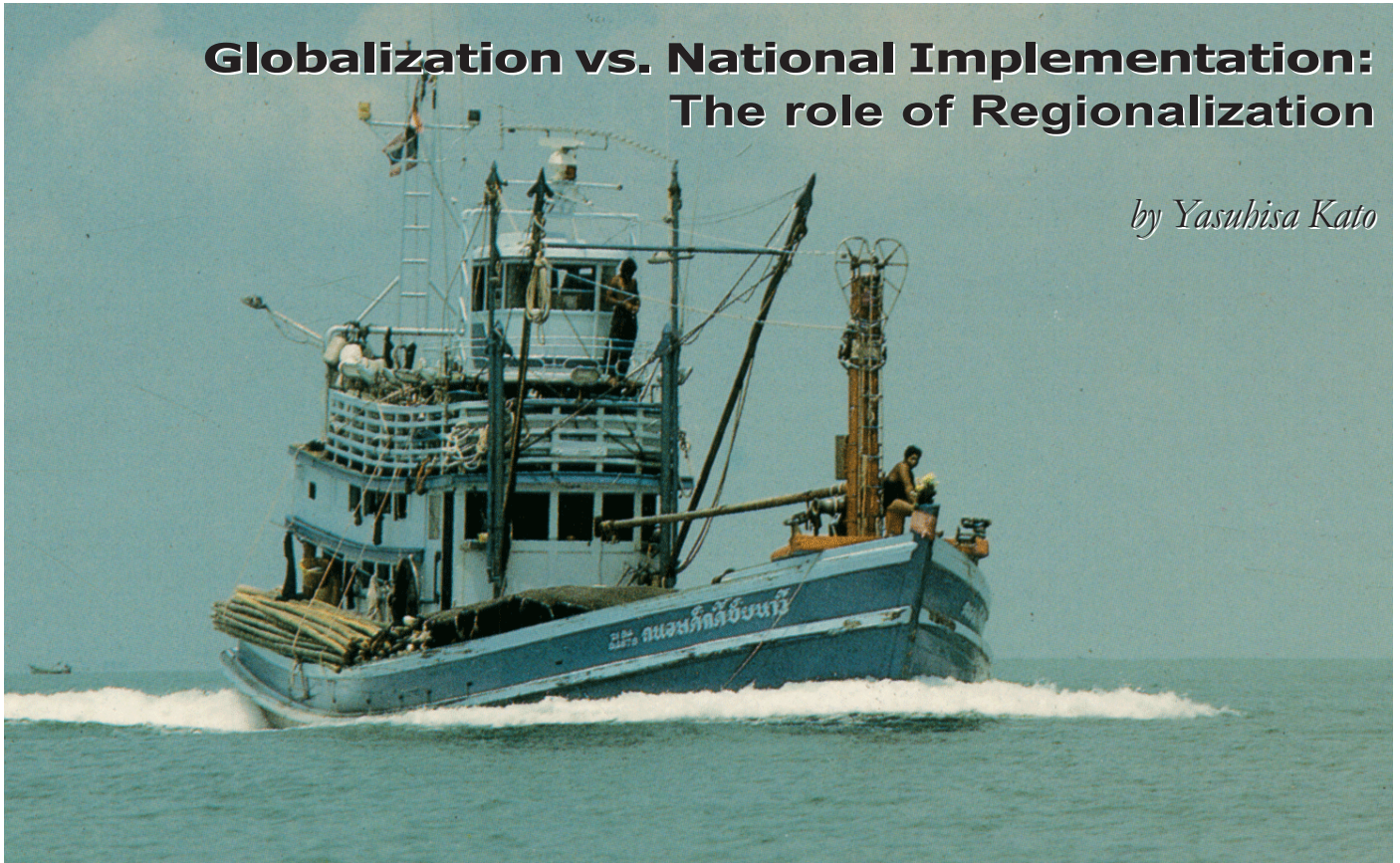
About the author

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Globalization vs. National Implementation: The role of Regionalization

by Yasuhisa Kato



Regulating fisheries

International fisheries societies have elaborated various global instruments to regulate fisheries. These have often consisted of codes of conduct and international plan of actions, in addition to international fisheries related laws, in order to promote a concerted and coherent approach to the sustainable use of aquatic resources. These initiatives are based on global concerns about the impacts of unregulated fisheries industries on aquatic environments. The pace of such initiatives has accelerated since the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992, when international societies discussed various elements affecting global environment, including aquatic ecosystem.

One outstanding achievement has been the formulation of the Code of Conduct for Responsible Fisheries (CCRF), coordinated by the Food and Agriculture Organization of the United Nations (FAO). The CCRF set out principles and an international standard of behaviour to ensure the sustainable exploitation of aquatic resources. The formulation of

the CCRF was an important step toward the global sustainability of fisheries, as it provides a comprehensive framework and principles to guide countries in taking appropriate actions.

The development of the CCRF was mostly the work of the developed fishing nations, and the Code therefore reflects primarily the concerns and situations of fisheries of these countries. Less consideration is given to fisheries issues in developing countries. Reasons for developing countries' failure to become actively involved in such global exercises has been analysed in other articles, and will not be further addressed here. However, it can be argued that most developing countries wish to fully mobilize their fisheries sectors in line with short-term economic development objectives. To some extent, this might explain the reluctance to quick adoption by developing countries of the CCRF.

Limitations of CCRF to developing countries

Developing countries generally have less technical and financial capabilities than developed nations. The

prevalence of poverty, especially in rural areas, may hinder developing countries from taking appropriate actions on issues demanded by global instruments like the CCRF, even though they might wish to do so. Three issues are common and specific to developing countries, and may have to be considered in the implementation of the CCRF:

1. The structure of fisheries. The main fishing industries in developing countries are categorized as small scale or coastal fisheries. In the case of ASEAN Member Countries, 95% of fishers are involved in this sub-sector. Management of these sub-sectors is fundamentally different from large scale, industrial fisheries.

2. The ecological situation. Fisheries resources throughout the tropics are typically multi-species. Most fishers rely on the harvest of different species for their livelihood and only rarely on one particular target species. As a consequence, there are no clear definitions and understandings of the by-catch issue. In addition, ecological factors in the tropics, such as fecundity, replenishment, migration or productivity, are very different from those in temperate waters. The monsoon and topographical conditions such as coral reefs and mangrove areas are unique to the tropics and provide the basis of the ecological specificity. These factors underline a need for different approaches and methodologies for assessing aquatic resources and ways to manage fisheries in developing countries.

3. Socio-economic and cultural factors. Most developing countries, especially in the ASEAN region, have traditionally developed their own culture on fish as food, as can be seen in the tremendous diversity of local fisheries products. Another specificity that needs to be considered is the socio-economic integration of fisheries into local communities, especially for small scale and coastal fisheries. Taking these factors into account is necessary in order to provide an appropriate management basis for fisheries in developing countries.

In this connection, it is imperative for regional specificity to be accommodated into the CCRF, especially since the Code was prepared based upon the situation in the developed fishing nations. Regionalization will supplement the global instruments with either national or even regional needs. If this is done, global instruments can be used practically as a valid framework and guidelines for countries with these specificities.

When the international community seriously considers achieving sustainable fisheries through the implementation of the CCRF, the effective implementation of such global initiatives in developing countries will be one of the most important and critical issues. Although there is no appropriate aggregation of



Small scale or coastal fisheries still involve 95% of the fishermen in the ASEAN Countries

statistical data on fisheries production by developed and developing countries, it can be roughly estimated that about 70% of the global fisheries production is currently harvested in developing countries; the ASEAN region itself produces some 11% of global fisheries products. It is clear therefore that global sustainable fisheries will not be achieved unless developing countries take effective actions in line with the CCRF requirements.

“It is imperative for regional specificity to be accommodated into the RCCRf”

Normally, governmental promotional work comprises the provision of appropriate policy framework and technical clarifications. The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People” was held in November 2001 with the participation of more than 800 people from inside and outside of the region. The conference adopted a ‘Resolution and Plan of Action on Sustainable Fisheries for Food Security for the Region,’ that has been accepted by ministers responsible for fisheries in ASEAN Member Countries. The Resolution and Plan of Action is considered as a common regional fisheries policy for ASEAN alongside the CCRF. Such governmental commitments to promoting sustainable fisheries both in the region and at the country level make promotional activities on the CCRF much easier to enact.

SEAFDEC has also been implementing the Regionalization of the Code of Conduct for Responsible Fisheries (RCCRF) as an ASEAN-SEAFDEC collaborative program in order to accommodate regional priorities, needs and specificity, and to clarify technical issues. The existence of the regional policy framework together with these technical clarifications has greatly enhanced the regional and national awareness of the CCRF.

Regionalization of the Code of Conduct

Developing regional guidelines for the CCRF took two years of preparatory work, including the Millennium Conference. By way of follow-up, SEAFDEC organized a Technical Consultation Meeting on the

Regionalization of the Code of Conduct for Responsible Fisheries (RCCRF) in Kuala Lumpur in October 2002. More than 50 participants were invited to participate, the majority being policy makers and technical and legal experts from ASEAN-SEAFDEC Member Countries. The preparation of the regional guidelines of Article 7 of the CCRF on Fisheries Management was finalized during the meeting; other already completed regional guidelines are on Article 8 (Fishing Operations) and Article 9 (Aquaculture Development).

Many complex social, economical, financial, cultural and political reasons exist for promoting the actions contained in the CCRF. Before potential users start investigation, the relevant government sector is usually responsible for the application of the CCRF to the national context, evaluating the text in terms of relevance to that country. If found to be even slightly inappropriate, the government will consider its implementation as an issue of low priority, since it has various development priorities to accommodate, within limited financial provisions. Given such conditions, the CCRF, despite the various excellent ideas it contains, may not be considered as an important document and eventually will be shelved, never to be used as an action-oriented document for daily reference and actions, as intended.

Formulating regional guidelines

In this regard, the regionalization of the CCRF program aimed to first formulate regional guidelines. This was then to be followed by various promotional works, including human resource development activities in collaboration with ASEAN Member Countries, not



Participants of the Technical Consultation Meeting on the RCCRF at Kuala Lumpur in October 2002

to attempt creating a separate regional CCRF. During the Kuala Lumpur meeting, participants were invited to provide their national priorities and needs for the draft guidelines, paragraph by paragraph, prepared by the regional experts, in line with Article 7 of CCRF. The participants were also requested to provide their comments on three specific issues:

1. Whether the articles of the CCRF were applicable for national implementation as originally proposed;
2. Whether the articles of the CCRF could be applicable if additional technical explanations and clarifications were provided; and
3. Whether new paragraphs would be required if national priorities and needs were to be included.

The Regional Guidelines (RCCRF) must be considered as a supplementary document to support the implementation of the CCRF at the regional and national levels.

In addition to the original important issues and areas, other more regional issues and priorities were highlighted in the Regional Guidelines. These were:

1. Coastal and inland fisheries
2. Decentralization of selected fisheries management authorities and responsibilities to the local level
3. Introduction of rights-based fisheries
4. The management of fishing capacity
5. Improvement of national fisheries statistics
6. Responsible fishing gears and practices



Regional Guidelines for Responsible Fisheries in Southeast Asia: responsible fishing operations and responsible aquaculture, now available as SEAFDEC publications

7. Resource enhancement, and
8. Fisheries management of multi-species fisheries resources using indicators.

Through the regionalization process, ASEAN Member Countries were able to seriously discuss issues contained in the CCRF and accommodate national and regional needs and priorities. ASEAN Member Countries were able to internalize required issues and identify issues for implementation in their national plans. It is also important that ASEAN Member Countries were able to substantiate their policies on sustainable fisheries through these processes.

“Ideally, the coherent globalization of sustainable fisheries would be promoted through the analysis and compilation of regional needs and priorities”

SEAFDEC will continue to work with ASEAN Member Countries to regionalize any future global fisheries initiatives, and to support their implementation through harmonizing national and regional needs and priorities with the various global requirements.

Although initiatives on regionalization were defined originally by ASEAN Member Countries, this process will also be important in other similar tropical regions and countries. A similar process could be undertaken in these regions. Ideally, the coherent globalization of sustainable fisheries would be promoted through the analysis and compilation of regional needs and priorities. However, current technological and economic disparities among regions may make this difficult to accomplish. More than ever, regionalization has to be considered a necessary step towards the harmonization of global, regional and national needs and priorities.

About the author

Yasuhisa Kato, Ph.D. in population dynamics and marine ecology, was President of Overseas Agrofiseries Consultants Co., Ltd (1976-1985). Moving to the Fisheries Department of the Food and Agriculture Organization (FAO), he was Director of the Operation Services from 1985 to 1994 and of the Policy and Planning Division from 1994 to 1997. Since 1997, he is Special Advisor for the Southeast Asian Fisheries Center (SEAFDEC), based at the Secretariat, Bangkok.

Innovative Fisheries Management for the ASEAN Region: Is Decentralization the Right Answer?

by Pouchamarn Wongsanga

Traditionally, most ASEAN Member Countries have managed their fisheries sector in a centralized manner. At present, these centralized management authorities delegate only very limited management functions and responsibilities to the local level. This system has prevented the effective support and involvement of stakeholders, as well as the integration of fisheries management within local development and planning processes.

Toward decentralization of fisheries management

The current centralized system of management in the ASEAN region has been unable to effectively manage fisheries under a regime of open-access, common property fisheries resources. This is due to the small-scale and subsistence nature of fisheries in the tropics, with fishers mostly targeting several species using a variety of fishing gear.



There is growing recognition that the delegation of certain functions and responsibilities to local levels can promote effective fisheries management, particularly in regard to coastal and small-scale fisheries. Under the broad concept of decentralization, two closely related institutional processes can be considered. The first is the decentralization of selected government fisheries management functions to a local level. The second is the process of enlisting the cooperation and involvement of fishermen, fishing communities, and other stakeholders, in the management process. It is becoming clear that there is a close linkage between the establishment of rights-based fisheries and the decentralization process, particularly at the community level.

“... there is a close linkage between the establishment of rights-based fisheries and the decentralization process, particularly at the community level”

To ensure sustainable fisheries with stable fish supplies and all the associated benefits, these innovative fisheries management concepts are urgently needed to overcome the present ineffective fisheries management and to prevent further deterioration of fisheries resources. The proposed solution could be the establishment of effective and innovative fisheries management systems, possibly through decentralized fisheries management and the allocation of fishing rights. This will give resource users a responsibility in managing their fisheries in a sustainable way, as well as a sense of participation and custodianship.

The Millennium Conference and regional fisheries common policy

The goal of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People” was to formulate an

appropriate regional fisheries policy, as well as to identify and prioritize actions to be implemented by fisheries sector in the region. A major outcome of the Millennium Conference was the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region, a commitment by ASEAN Member Countries to the implementation of this regional fisheries policy.

Resolution Number 5 calls for Member Countries to adopt a regional policy of decentralization of fisheries management to “encourage effective management of fisheries through delegation of selected management functions to the local level.” Resolution Number 6 addresses rights-based fisheries, by “recognizing the need to progressively replace ‘open access’ to fisheries resources with ‘limited access regime’ through the introduction of rights-based fisheries which may also facilitate the management of fishing capacity and promote the use of responsible fishing gears and practices.”

“Resolution Number 5 calls for Member Countries to adopt a regional policy of decentralization of fisheries management”

The Plan of Action elaborated at the Millennium Conference set out programs, projects and activities for the implementation of the Resolution. The innovative approaches were mentioned in Part A – Fisheries Management as to “establish and implement comprehensive policies for innovative fisheries management, such as decentralization of selected fisheries management functions to the local level”, “the progressive introduction of rights-based fisheries management through licensing and community fishing rights, the improvement of vessel registration systems and the development of supporting legal and institutional frameworks”, and “ensure local consensus building on innovative management measures through consultative processes and create close monitoring mechanisms to support and implement these measures.”

It is therefore necessary for ASEAN Member Countries to develop appropriate policy for fisheries management and to implement an effective management plan and actions in line with the adopted regional policy to improve the current fisheries management.

What is decentralization?

Decentralization of fisheries management is a generic term that describes the delegation of selected fisheries management responsibilities and functions to local government, community organizations or institutions. Decentralization is especially applicable in ASEAN Member Countries, where millions of small-scale fishers operate along the coasts. The proposed management system will facilitate closer contact and support with fishers and stakeholders, and will make government support services more effective.

Due to the diversity of fisheries in terms of resources, physical geography, patterns of exploitation, and scales of exploitation, it is difficult to successfully promote a single approach to fisheries management. For ASEAN Member Countries, where the majority of fisheries are categorized within the coastal and small-scale sub-sectors, the required management actions should be specific to local conditions and to particular fisheries, whatever governing management policy and plans might be. In order to accommodate such requirements, the delegation of selected fisheries management functions and responsibilities can be justified as an essential part of the fisheries management policy.

“... it is difficult to successfully promote a single approach to fisheries management”

Because of the nature of open access to common fisheries resources, capture fisheries require public intervention to regulate resources use and to avoid



Participatory approaches with local stakeholders are the key to decentralization and right-based fisheries

overfishing. However, it should be understood that such a decentralized process cannot be effectively promoted unless major structural changes in the public sector, both at the central and local levels, with appropriate human resource development for all fisheries stakeholders, are implemented.

Rights-based fisheries, a necessity?

A rights-based fishery is defined as a fishery in which the right to fish or use fishery resources is granted to resource users and regulated by the competent authority. In return, the holders of the fishing rights have obligations to comply with the rules and regulations of the rights-based management system. Under this system, fisheries inputs such as numbers of fishing vessels or fishers, the types of fishing gear, the fishing season and fishing grounds will be effectively controlled in the conditions locally agreed, in a transparent manner with full stakeholder participation.

Effective decentralization of fisheries management may require policy changes supported by appropriate legislation and strengthening of local institutions and processes. The institutional requirements and roles of local governments, fishing communities and stakeholder organizations also need to be clearly defined.

With this in mind, four recommendations were adopted at the Millennium Conference in order to promote decentralization of fisheries management in the Region (Box 1).

Implementation of rights-based fisheries will also require substantial changes in fisheries policy and in the practical management and administration of fisheries. Key policy issues include the setting of criteria for the allocation of fishing rights and licences, the determination of the nature and conditions of the rights being created, the legal ownership of the resource and associated waters, and the responsibility for the administration and control of rights-based management regimes.

Changes in the management and administration of these fisheries include the registration of fishing vessels and the introduction of a licensing scheme for industrial vessels. In the case of scattered coastal and small-scale

Box 1. Recommendations adopted at the Millennium Conference to promote Decentralization of Fisheries Management in the ASEAN Region

- 1 Investigate and examine the feasibility and viability of the policy on decentralization of fisheries management authority, responsibility and function to appropriate local government institutions for industrial fisheries and small-scale coastal fisheries sub-sectors:
 - a) Formulate appropriate national policy on decentralization of fisheries management in collaboration with relevant agencies;
 - b) Determine the types of fisheries management authority, responsibility and function that can be delegated and shared with the local institutions;
 - c) Determine the appropriate local institutions that can be authorized and can accept the mandate to manage the fisheries in their area of jurisdiction;
 - d) Determine the need for human resources development to prepare the local resource users and their community to assume greater responsibility for managing the fisheries in their local area; and
 - e) Develop local consensus through greater coordination among the different agencies involved with responsibility in fisheries and coastal resources management.
- 2 Prepare a comprehensive fisheries management program under the above decentralization policy to further clarify various issues. These include detailed Terms of Reference for both central government and local institutions in fisheries management, as well as human resources development.
- 3 Clarify and provide appropriate legal framework, mandate and responsibility to the different fisheries management authorities at both central and local levels.
- 4 Conduct a step-by-step development plan of fisheries management decentralization, especially for the gradual transfer of selected management authority, responsibility and function to the local governments and non-government institutions. This must be especially conducted where greater coordination and cooperation between the central and local institutions are required, with the full support of the central government offices.

fisheries, granting local communities exclusive fishing rights over adjacent waters and fishery resources is seen as the most practical approach. Such measures will also require some decentralization of fisheries management authority and functions, both to local government institutions and to local communities through co-management arrangements. Improved fisheries management capacity will be required at all levels in order for rights-based fisheries regimes to successfully manage fisheries in the region.

A set of recommendations was adopted at the Millennium Conference to promote rights-based fisheries in the region (Box 2).

Learning from outside the region?

It is well known that Japan has developed a successful coastal fisheries management system with delegation of some responsibilities and functions to either local government or local institutions known as ‘fisheries cooperatives’. In order to investigate the factors and conditions related to Japan’s successful coastal fisheries management system, SEAFDEC organized a regional seminar in Japan on coastal fisheries management in November 2002, with visits to several fisheries cooperatives.

Although the need to improve fisheries management systems in ASEAN Member Countries is widely recognized, policy makers in these countries often encounter difficulties in implementing changes. Successful cases to which they could refer and mechanisms to use in their own countries could ease



Box 2. Recommendations adopted at the Millennium Conference to promote Rights-based Fisheries in the ASEAN Region

1. Define the duration, transferability and exclusivity of fishing rights in a clear manner; and
2. Examine alternatives for funding the introduction and maintenance of rights-based fishing regimes.

For small-scale/coastal fisheries:

- a) Investigate the most appropriate mechanism to establish self-regulatory fisheries management systems, taking into account the various local factors.
- b) Identify the most appropriate system of fishing rights (user-rights), and try them out through pilot projects to verify their effectiveness in local situations.
- c) Study the most appropriate community-based institutions, and evaluate the feasibility to delegate the management responsibilities and grant appropriate rights.
- d) Develop human resource capacity through government support in order for these community-based institutions to take up additional responsibilities.

the process of improvement of fisheries management. The seminar discussed current systems and important characteristics of coastal fisheries management in Japan, as well as factors that contributed to successful implementation of the system. The possibility of applying the principles of the Japanese case to the ASEAN region was also raised during the Seminar.

As a result of the seminar, it was accepted that the general design principles of the Japanese community-based coastal fisheries management system could be used as a basis for further development of coastal fisheries management in the ASEAN Region, taking into account the following key considerations:

- A limited access regime is a relevant form of management for the ASEAN region, and is considered a prerequisite for the development of community-based fisheries management systems.

- Decentralization of certain management functions and rights-based fisheries, including licensing and a fishing rights system, should be used as a basis in developing innovative systems for coastal fisheries management.
- Institutional arrangement for coastal fisheries management should be established, taking into consideration the different roles and functions among the central government, local government and fishers' organizations.
- The multiple functions of fishers' organizations, including extension, research, marketing, and co-management aspects should be promoted in collaboration with other relevant agencies. Fishers' organizations should be actively involved in decision-making processes, particularly for the formulation and implementation of local management measures.
- Current legal instruments related to coastal fisheries management should be reviewed. Studies on legal modification to support the implementation of decentralization of management and rights-based fisheries should be conducted.
- Research and development activities should be prioritized and carried out to support decentralization of management and right-based fisheries. Where appropriate, regional collaborative arrangement should be encouraged.

“...it was accepted that the general design principles of the Japanese community-based coastal fisheries management system could be used as a basis for further development of coastal fisheries management in the ASEAN Region”

In order to clarify feasible options for improving fisheries management, with a focus on coastal small scale fisheries, and to substantiate the applicable policy on innovative fisheries management in the region, it is expected that the planned Regional Technical Consultation will further address three issues:

1. Identification of applicable mechanisms developed in other regions through review of relevant literature;
2. Identification of applicable mechanisms developed in the ASEAN region through a questionnaire-based survey of relevant government sectors of ASEAN Member Countries; and
3. The outcomes of the Japan seminar will form the basis for further discussion at the “Regional Technical Consultation on the Promotion of the Innovative National Fisheries Management System” in early 2003, the objective of which is to develop regional guidelines for decentralization of management and rights-based fisheries.

Conclusion

Decentralization of fisheries management and rights-based fisheries are innovative coastal fisheries management approaches to tackle the current situation in the ASEAN region of unsustainable fisheries practices. The decentralization of fisheries management is not merely a question of policy reformulation by national fisheries agencies, but is closely related to the overall structure of government and public services, in terms of the powers and functions delegated to provincial, district, municipal, or local levels. This implies devolution of the roles and responsibilities of fisheries administration to local levels and the promotion of the active participation of stakeholders. As the geographical extent of a fisheries management unit may



Participants of the Japan Seminar visiting fisheries cooperatives

not match conventional administrative boundaries, there will inevitably be additional questions of competence and coordination.

Pilot projects and a review of experiences in and perhaps beyond the region may assist the choice of approaches, and within broad national frameworks, will help the progressive construction of a cost-effective legal and administrative framework to accommodate the specific needs of each local fishery. Clear definitions or characterization of management units, strong stakeholder organizations with active and broad-based participation, the existence of traditional management regimes, and moderate levels of resource exploitation are all important factors that may contribute to the successful decentralization of fisheries management. The introduction of rights-based fisheries in replacement of the open-access regime will complement the more sustainable management of fisheries resources to achieve food security in our region. It is important to clearly define fishing rights in regard to duration, transferability and exclusivity. In order to effectively define and allocate fishing rights, rights-based fishery management regimes must be based on accurate information on each fishery. The decentralization of fisheries management is therefore perceived as a necessary activity for successful implementation of rights-based fisheries. Co-management mechanisms, together with the granting of exclusive fishing rights to community-based institutions, may also be promoted for small-scale and coastal fisheries under a decentralized fisheries management system.

About the author

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Fisheries resources throughout ASEAN have been intensively exploited or overexploited in certain parts of each country. Excess fishing capacity and the depletion of some fish stocks are major concerns. The production of fish meal by using juvenile fish of economic importance but categorized as ‘trash,’ because of the application of non-selective fishing gears and the low market value of these components of the catch, has further deteriorated fish stocks. These juveniles typically comprise a large part of the composition of ‘trash’ fish catches. All these elements underline the urgent need to manage fisheries in the region in a more sustainable way.

The ASEAN-SEAFDEC Plan of Action

During the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”, a key output was the adoption by Ministers responsible for fisheries in

ASEAN Member Countries of ‘The Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region’ as a common regional fisheries policy.

One of the priorities in the Plan of Action is to formulate guidelines to promote the use of practical and simple indicators for multi-species and multi-gear fisheries, which characterize fisheries in Southeast Asia. Indicators can be practically and widely used to understand the status and trends of fisheries, a critical basis for any required actions in fisheries management.

Limitations of classical fisheries resource assessment models

Classical fisheries resource assessment models, such as the Maximum Sustainable Yield (MSY), have been widely used in the region to evaluate resource levels, but have met with limited success. Most such models were originally developed for the assessment

of fisheries resources in temperate areas. Temperate fisheries basically target single species, according to the seasons, as there is a limited numbers of commercial species with large fisheries stocks. In contrast, fisheries in tropical areas target many species in relatively small quantities, a specificity of tropical ecosystems. In other words, fish catches in temperate regions predominantly are composed of a limited numbers of species, or even only one species, while catches in tropical fisheries are composed of many species without any dominant species. Hence, models such as MSY were developed based on different assumptions, and may not be appropriate for the assessment of fisheries resources in our tropical countries.

This problem also relates to what kinds of management measures will be taken by national fisheries management authorities. There are two major fisheries management options: input control and output control.

“Alternative methods must therefore be used as a basis for fisheries management in the ASEAN region”

MSY has normally been processed to estimate the Total Allowable Catch (TAC), which is used as a target reference point for management actions. In most cases, MSY or TAC has been mainly used for output control methods. In other words, TAC is set and once it is reached, all fisheries units are stopped until the following season. However, the Millennium Conference concluded that for many fisheries in the region, the application of output control is impractical. The multi-species and multi-gear composition of most fisheries in the region means that assessment of the resources is difficult and setting of catch limits problematic. Furthermore, the collection of catch information from scattered landing points is difficult, and in the absence of effective monitoring, controlling and surveillance (MCS) systems, fishers are likely to exceed limits on catches. On the other hand, the application of fish quotas will anyway only encourage discards of smaller or less valuable fish.

Alternative methods must therefore be used as a basis for fisheries management in the ASEAN region. To achieve this goal, a wide range of simple and practical indicators can be developed to understand the status

and trend of fisheries for effective management in this region.

Use of scientific hypotheses and assumptions may be needed for research, but must be simplified for use with fisheries management, as fisheries managers are neither scientists nor researchers. In addition, the resource users – the fishers themselves – who know the resource level in non-scientific terms, will not be convinced of the importance of the outcomes of a resource assessment tool if those outcomes are too sophisticated. Models based on inadequate hypotheses and assumptions, or not based on the data and information collected, will eventually result in low compliance levels with the management measures, which might then need to be forcibly imposed.

Recently, there has been an argument internationally about the practicability of single species management models. These models may have limited application to the comprehensive assessment of fisheries resources and as tools for assisting ecosystems management, even though practical methodologies have been developed. Although several indicators have been used by both developed and developing countries, it is generally considered that MSY is the only indicator for evaluating fisheries resources theoretically and scientifically. Some countries have complained that appropriate management measures have not been implemented because they do not have enough data and information to calculate MSY.

The establishment of close monitoring mechanisms on fishing operations has helped fisheries

What is an indicator?

An indicator is a pointer used to track changes in a fishery. Indicators can be used to predict or provide warning on potential problems. Indicators as a tool can provide supplementary information to improve management for sustainable fisheries. They can be used to formulate fishery management policies and frameworks, but also to facilitate timely management actions at local, national and international levels.

Several indicators should be used to track and monitor progress towards sustainability. These include indicators that reflect broader ecological, social, economical and institutional objectives.

managers to understand that many simple data and types of information can indicate a resource status and trend. In this connection, it might be suggested that the unavailability of data and information to calculate MSY should not be used as an excuse to delay the development of national management policy and measures. Therefore, the application of a wide range of appropriate indicators should be considered as a new concept for the sustainable development and management of fisheries in the ASEAN region.

What information is required to develop an indicator?

In the past, fisheries managers have not been sufficiently concerned with collecting different types of usable information, probably because they believed that fisheries could only be managed through the scientific evaluation of resources, including the calculation of MSY. In other words, western scientists considered that fisheries could not be managed without knowing the size of fisheries resources. The terminology of “resource management” has been widely used. However, it should be noted that fisheries resources cannot be managed; what we need to do instead is to manage the fishers and fishery industries.

“... fisheries resources cannot be managed; what we need to do instead is to manage the fishers and fishery industries”



In this regard, ‘fisheries management’ instead of ‘resource management’ is a more appropriate term. Of course, ideally we would prefer to assess the size of fisheries resources, but the assessment of the size of multi-species stocks is at this moment not possible. Therefore, we should take immediate management actions to achieve sustainable fisheries even without knowing the size of certain fisheries resources.

If we intend to manage the fishing capacity, we have to collect various statistics, such as the numbers of fishing boats. To understand the situation and trends in fisheries resources, we have to collect information on the amount of fish landed and on the numbers of boats involved in catching, in order to calculate the catch per unit effort (CPUE). Changes in CPUE can be used to understand exploitation levels, and to provide a guide for appropriate action to be taken by fisheries managers. In temperate regions, CPUE might be difficult to use, especially due to the fact that particular species reach marketable sizes at a particular

time of the year, because of the clearly delimited period of the spawning season. This problem is less pronounced in tropical areas as spawning take place continuously all year round, and eventually recruitment to a marketable population will also be continuous.

Several other data, which in the past were not considered important, must be re-evaluated to determine if these can be used for management purposes. Socio-economic data such as the number of fishers, number of crews, the per capita fish consumption, or incomes could also be used to understand the status of fisheries.

Potential indicators for sustainable fisheries management in ASEAN Countries

A First Regional Technical Consultation on Indicators for Sustainable Fisheries Management in the



ASEAN Region was held by SEAFDEC in collaboration with other agencies, including FAO, in Hai Phong, Vietnam, from 2-5 May 2001. During the meeting, several potential indicators to be used as tools for sustainable fisheries management in ASEAN Countries were identified:

1. Fleet or fishing capacity indicators, including the number of fishing boats, fishing power in terms of horse power or gross tonnage, fishing time, and type and number of fishing gear;
2. Harvesting or resource indicators, including landing volume, CPUE, biomass, catch composition, number of species caught, fishing ground, average fish size, and size of mature fish; and
3. Economic and social indicators, including landing value, Revenue per Unit Effort (RPUE), export and import (in quantity and value), per capita fish consumption, investment in fisheries, number of fishers, number of employees in the fishery sectors, and fishers' profits.

The effective use of such indicators will require a substantial amount of data to be collected over a long period of time. Some of the data may already have been collected, but might not fully be utilized in support of management actions. National fisheries statistics data are usually not used for fisheries management, as fisheries managers have not seriously considered their importance. Therefore, ASEAN Member Countries need to have a clear policy to re-evaluate and fully use the various data and types of information at their disposition as new management tools.

Pilot projects and participatory approach

SEAFDEC held the Second Regional Technical Consultation on the Use of Indicators for the Development and Management of Capture Fisheries in the ASEAN Region in Kuala Terengganu, Malaysia, from 16-18 September 2002. At the meeting, five pilot projects located in Brunei Darussalam, Indonesia, Malaysia, Philippines, and Vietnam were prepared. Each country selected local sites and particular fisheries to be targeted. The particular fisheries to be studied are trawl fisheries in Brunei Darussalam and Malaysia, a ring net fishery in the Philippines, a 'mini' purse seine fishery in Indonesia, and a small-scale fishery in Vietnam. These pilot projects will be implemented under the Special Five-year Project of SEAFDEC from 2002-2005.

“The success of the use of indicators for fishery management will depend very largely on the active participation of stakeholders, whose close collaboration must be established”

Technical officers from each country will compile existing data and relevant information. Fisheries management plans will be developed together with the local communities and stakeholders through consultations at the selected local sites. The success of the use of indicators for fisheries management will depend very largely on the active participation of stakeholders, whose close collaboration must be established to find out issues, problems and constraints.



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Selective Fishing Gears and Practices In the ASEAN Region

by *Bundit Chokesanguan*

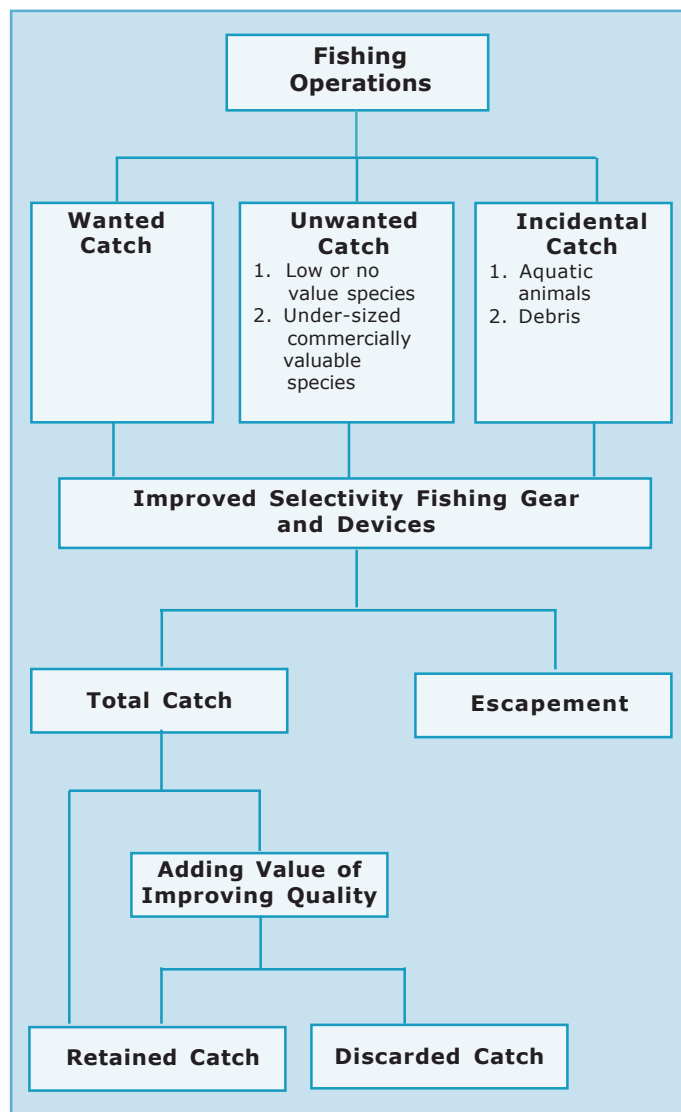
Introduction

Due to the multi-species composition of fisheries resources, particularly for coastal and demersal stocks in tropical areas, including the ASEAN region, the concept of target catch (meaning a target of marketable size or species) is not clearly perceived by resource users in their fishing operations, and is hard to apply for regulatory purposes. What this means is that fishers are generally not targeting specific species, whether their catches are used for local markets or for household use.

Related to the notion of target species, the term ‘by-catch’ has been universally accepted as a negative component of catch in normal fisheries practices. Many large industry fisheries have tended to discard by-catch throughout their operation due to economic and management reasons. In tropical areas, the issue of by-catch is more complicated, as fisheries depend on multi-species resources.

In this regard, SEAFDEC, in collaboration with ASEAN Member Countries, has taken up the challenge of clarifying these problems and identifying appropriate management measures to alleviate them. This will require consideration of the characteristics of tropical fisheries and ecosystems, and of existing fishing practices. Initiated activities are related to the implementation of the FAO Code of Conduct for Responsible Fisheries (CCRF) and the Program of “Regionalization of CCRF” to produce Regional Guidelines on the Code. During the series of regional technical consultations, organized under the Program, a conceptual diagram was developed to promote a clear understanding of fishing operations in the region

In order to distinguish and clarify the different fisheries problems in the region from those common in temperate regions, the term “unwanted and incidental catch” has been used instead of by-catch. Required research and demonstration works have been



Conceptual Diagram showing the Linkages among the Terminology for Activities related to Fishing Operations

conducted, with the application of appropriate selective fishing gear technologies.

By-catch reduction exercises in the ASEAN region, meaning the reduction of unwanted and incidental catch, have focused on trawl fishing gears and devices, in recognition of the environmental impact of this form of fishing. In the figure above, two areas were identified

for improvement. First, the reduction of the “unwanted catch”, targeting so-called “trash fish” and juveniles of commercially valuable species, must be considered as an important research objective, which may have positive impacts on fisheries resources if successful.

The second priority area is to reduce “incidental catch”, including mammal, birds, and especially marine turtle species. These are considered as a priority group for research and management work in the region. The incidental catch of marine turtles has a severe negative effect on the population of these endangered species, with significant trade implications. The United States has unilaterally imposed a ban on trawled shrimp exportation due to its concern that marine turtles could be incidentally caught by shrimp trawls.

Juvenile and Trash Fish Excluder Devices (JTEDs)

The catch of juvenile and trash fish is a serious problem in fisheries. Whereas unwanted catch was once seen as a nuisance rather than a waste of valuable resources, it is now recognized as negatively affecting fisheries resources. Such catch may be of only low present economic value to fishers, but may be of high economic return in the future, if these fish are allowed to survive and grow to their commercial size. In order to ensure a sustainable future in fisheries resources, avoidance of these catches is a priority.

Research on JTEDs was initiated by the Training Department (TD) of SEAFDEC in 1998. Originally,

two types of JTEDs were developed to be attached to the upper part of the cod end of the trawl fishing gear. The devices were a rectangular shaped window and a semi-curved window, both of which were made of a stainless steel frame of 80 x 100 cm. The frame is covered with ‘soft’ separator gratings made of 8mm-polyethylene rope to separate the small catch from the larger catch. Different intervals between these soft separator gratings were set to investigate the level of escape from the net. After testing the effectiveness of these devices, many other types of JTEDs have been developed based on the outcomes of the series of tests and demonstration works in the field. The effectiveness of the used technologies has also been evaluated for ‘soft’ and ‘hard’ gratings, or the use of the square mesh net compared with the diamond shaped mesh net.

Another research study aimed to estimate the performance of JTEDs in fishing operations. The effects of deformation of net for the performance of JTED were investigated during the testing, taking into consideration the towing speed of the trawl net, catch loading and water ‘drag’, all of which might be factors influencing the escape potential of JTEDs. Since 1998, the TD has carried out many sea trials and experiments on the release of juveniles and immature commercial fish species using various kinds of JTEDs. These trials and experiments have been carried out in the waters off Prachuab Kiri Khan and Chumpol Province, in the Gulf of Thailand; off the coast of Maura Town, Brunei Darussalam; and off Cat Ba Island in Hai Phong Province, Vietnam. More recently, in September 2001, sea trials and experiments were carried out in the coastal

waters of Alor Setar, Kedah State, Malaysia. During these various tests and research works, a new JTED developed by SEAFDEC/TD was used.

Although species composition of catch differs between daytime and night time, with more pelagic species



A new type of Juvenile and Trash Excluder Device, developed by SEAFDEC/Training Department



Grids of various shapes and sizes used as components of the JTEDs and TEDs

caught during daytime operations, the outcomes of these trials and experiments were generally encouraging. Species caught during the test operations were *Rastrelliger brachysoma*, *Atule mate*, *Nemipterus sp.*, large shrimp species (*Penaeus sp.*), *Loligo sp.*, and *Sepioteuthis sp.* Two kinds of bar spacing were tested, 20mm and 12mm. In the case of the 20mm bar spacing, about 73% of catch were released through the gratings and collected in the cover net, which was specifically attached to investigate the escaped catch, but needs to be removed in real fishing operations, while only 35% were released for the 12 mm bar spacing.

Trash fish groups, which are mainly composed of juveniles of *Siganus sp.*, represented the highest escapement levels, with about 87% and 70% of catch for 20mm and 12mm bar spacing respectively. About 63% and 44% of pelagic fish and shrimp species were

also released through the 20mm bar spacing, while less than 10% of pelagic and shrimp species were released in the case of the 12mm bar spacing. On the other hand, 100% of crabs, such as swimming crab which comprised 2-3% of the total catch, were not released in any cases. 100% of medium-sized and large (>120mm fork length) *Rastrelliger brachysoma* were retained in the cod end for 12mm bar spacing, while 40% of these fish escaped in the case of 20mm. In the case of *Nemipterus sp.*, size selection devices showed good results, retaining only large size (>110 mm fork length) during the daytime operation, but retaining also smaller sizes during night time operation, possibly due to differences in species behavior between day and night time. JTED were shown to be ineffective for squids and shrimps, due to these species behavior in the net.

In conclusion, JTEDs with 12mm bar spacing have been shown to be an acceptable size selection for fish species, but not for squids and shrimps. This highlights the need for more research work, especially on species behavior in the net, to appropriately select commercially valuable “unwanted catch”.

A Regional Practical Workshop on Selective Fishing Devices was organized in May 2002. This workshop was in association with the FAO/GEF project to promote selective fishing devices under their Responsible Fishing Technologies and Practices Program. A demonstration on JTEDs was conducted for participants, and showed similarly good results. Subsequent to the workshop, Indonesia was selected as a country where such devices may be beneficial, as the Indonesian Department of Fisheries had a project on demonstration and training in Sorong in Irian Jaya on By-catch Reduction Devices (BRDs) and turtle excluder devices for their fishers. The demonstrations and experiments were also held in the waters off Bintuni Bay, in Irian Jaya, and in the Arafura Sea between Papua New Guinea and Indonesia.

It is believed that continuous improvement of the performance of JTED is important to contribute to the achievement of sustainable fisheries in the Southeast Asian region. This work will also encourage fishers to better understand JTEDs and to change their attitude towards improving their fishing practices through encouraging a long-term strategic perspective on fish populations.



Turtle Excluder Devices (TEDs)

The problem of incidental catch of marine turtles is another issue recently addressed by SEAFDEC's TD. A commonly advanced solution is Turtle Excluder Devices (TEDs). The devices are composed of a simple inclined grid mounted at the entrance of the cod end of the trawl net. Large incidental catch, such as marine turtles, which cannot pass through the grid, will be released through the opening of the net set in the lower part of the inclined grid, while other species, smaller than the grid intervals, pass and are retained in the cod end.

The Thai/TD design of the TED named as the Thai Turtle Free Device (TTFD), has been promoted to prevent the catch of marine turtles. As a countermeasure to the US imposed shrimp embargo, these devices have been immensely successful at least in Thailand, where the embargo has now been lifted.

But despite various efforts exerted by governments and SEAFDEC, fishers, especially shrimp trawlers, are in general reluctant to use these devices continuously. This resistance to attach such devices to fishing nets appears to be due to a fear that the device may reduce the effectiveness of trawl operations, and concerns that some shrimps may also escape through the opening of the net.

SEAFDEC, in collaboration with ASEAN, has decided to start a comprehensive program to understand the impact of fisheries on marine turtle populations. It is believed that comprehensive collection of information will provide a valid base for future appropriate management and conservation programs for marine turtles. In particular, the program should cover the level of incidental catch, distribution and migration areas and routes, together with research work related to hatchery operations. It is also important to continuously promote the wide usage of TEDs for fisheries, to prevent the incidental catch of marine turtle.

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Assessing JTED efficiency is an essential preliminary step for the ASEAN Region



Aquaculture Development in the ASEAN Region

by Narumol Thapthim, Saadiab binti Ibrahim and Vu Dzong Tien

There are different types of aquaculture. *Mariculture* and *brackish water aquaculture* tend to be more capital intensive. These operations may not be owned by members of rural communities, which often lack capital and the technological and marketing skills and capacities required. A broad range of marine and brackish water enterprises exist, from intensive shrimp farms to traditional seaweed culture. *Freshwater aquaculture* can be understood as a part of an integrated approach to land, water and farm management, and includes farming systems ranging from industrial production to household level rice fish culture.

Globally, salmon and shrimp have received most publicity, but these products represent less than 10% of the global aquaculture production by weight. By comparison, carp and tilapia account for about 50% of global aquaculture production, most of which goes into domestic food supplies in developing countries. The contribution of aquaculture to rural development in Southeast Asia can substantially increase these figures.

Small scale coastal aquaculture frequently involves mollusks, which require less investment and therefore present less risks.

Aquaculture in ASEAN

In recent decades, aquaculture has contributed to national development for countries in the ASEAN region in three ways. First, it is an important producer of affordable high quality animal protein for domestic consumption. Second, by producing high-value commodities for export, it earns valuable foreign exchange. Third, it provides livelihoods and generates employment.

ASEAN Countries have great potential for aquaculture. Several factors contribute to this potential, including the variety of species cultured, ecosystems,



climate and availability of technical manpower. However, improvements are needed in several areas, including supply of good quality seed, breeding technology and marketing strategy. Inadequate supplies of feed, fertilizers and hormones, weak fisheries extension systems, and outbreaks of disease have also been identified as problems for the development of the aquaculture sector in this region. Most critically, funds for the rural poor to invest in aquaculture, and so diversify and improve their livelihoods, are frequently unavailable.

Despite a long tradition of aquaculture in Asia, there is now increasing competition among resource users for declining fisheries resources. As aquaculture responds to the pressures to supply more aquatic products, this situation will be further exacerbated. It is therefore critical to ensure the sustainability of aquaculture by reducing its negative impacts on the environment.

Rural aquaculture

Rural aquaculture implies low-cost production with extensive and semi-intensive technologies appropriate to the limited resource base of small-scale households. Rural aquaculture makes an essential contribution to local livelihoods; small fish cages and pens in lakes, reservoirs and coastal lagoons are common in many countries. Small-scale operators, including many women and children, dominate seaweed farming and oyster and mussel culture. Production is frequently a low-value enterprise, but rural aquaculture is not necessarily limited to producing food fish for local distribution: culture of freshwater ornamental fish is also a common small-scale industry.

The effectiveness of aquaculture technologies used in rural areas depends on local social, economic, and environmental factors. Rural aquaculture therefore needs to be considered in a holistic and integrated way, built into a strategic planning process for rural aquaculture development. In addition, the promotion of aquaculture in rural areas should consider the potential of indigenous species and available water sources. Many non-governmental and international organizations support the development of small-scale aquaculture systems that can be easily integrated into existing farming systems.

Potential and constraints on rural aquaculture in the region

Southeast Asia has great potential for further rural aquaculture development, with large areas of inland waters that are presently only partially utilized. For example, Indonesia uses less than 20% of its potential pond area for fish culture. Because rural aquaculture is labour intensive, it also contributes to employment generation.

However, rural aquaculture faces several critical issues. These include identifying means to promote small-scale aquaculture, defining the role of commercial aquaculture in rural areas, and finding ways to integrate commercial and small-scale aquaculture into rural societies.



Culture of red snappers in small floating cages



Development of fish breeding technologies and techniques are an essential step for a widespread aquaculture development.

ASEAN policy and SEAFDEC's plan of action for promoting rural aquaculture

As most aquaculture activities in rural areas are important aspects of rural development, ASEAN Member Countries need to take necessary actions and formulate appropriate policies to ensure the successful and sustainable development of aquaculture.

The Millennium Conference's Resolution and Plan of Action highlighted that aquaculture production in the region might be increased by ensuring a stable supply of good quality seeds and feeds, by effectively controlling disease, by promoting good farm management, and by transferring appropriate technology to local fish farmers. Because aquaculture is compatible with the rational use of land and water resources, its application for rural development should be promoted and made to contribute positively to national food security and the improvement of rural people's livelihoods.

Future aquaculture development must ensure that the sector is effectively integrated into rural economies and societies. Special attention should be given to the integration of aquaculture within other farming systems under sustainable farming management. Since the natural supply of fry and fingerlings is no longer sufficient to sustain aquaculture development in many rural areas, promoting artificial seed production technology will also become increasingly necessary.

In this regard, SEAFDEC's Aquaculture Department (AQD) has developed an Integrated Regional Aquaculture Program (IRAP) as its flagship aquaculture program component under the ASEAN-SEAFDEC Special Five-year Program. The program is intended to promote environment-friendly aquaculture development for rural people in the ASEAN region, and to assure a sustainable supply of quality seed stocks that can support sustainable aquaculture development.

The implementation of IRAP will be affected by various factors, two of which were given priority in 2002: first, the supply of good quality seeds, and second, aquaculture for rural development. These two issues are components of the ASEAN-SEAFDEC Special Five-year Program, to be implemented by AQD with the cooperation of the ASEAN Member Countries.

AQD organized a workshop on IRAP in Bangkok from 17-19 September 2002. The workshop was organized under the Aquaculture Component of the ASEAN-SEAFDEC Special Five-year Program on the Contribution of Sustainable Fisheries to Food Security in the ASEAN region. Participants included three representatives from each ASEAN Member Country, including the National Coordinator, together with projects technical officers and officers from AQD. The workshop emphasized the Aquaculture for Rural Development and Supply of Good Quality Seeds projects.

In the workshop, participants made presentations on the current situations in their countries, problems and constraints, as well as plans for aquaculture development in each country. Problems related to supply of good quality seeds were reported to be common among the member countries, and can be considered as major problems among other countries. Countries' priorities for species selected for the Good Quality Seed project vary. Some countries focus on freshwater fish and others on marine fish. Common issues identified were a lack of expertise in seed production, ineffective seed distribution networks and management, broodstock quality, hatchery management, nutrition, and outbreaks of disease.

Participants discussed these issues in the workshop, and offered proposals for overcoming identified problems and constraints. Collaboration with AQD and with other countries may solve some problems, such as the lack of expertise and management skills in seed production. Countries with experience and knowledge of particular species may offer support to other interested countries.

Programs of collaboration

AQD aims to provide assistance and expert consultation to Member Countries in need. Representatives from certain countries have already proposed to initiate collaborative studies with AQD. Since certain Member Countries have technical expertise in specific seeds production technologies that may be lacking in other countries, international collaboration could be arranged for the development of an adequate supply of good quality seed in the region. Modalities for collaboration among members will of course depend largely on the needs and expertise of interested countries.

In some instances, Member Countries can collaborate on plans for producing good quality seed for the same species. For example, Indonesia and Philippines have both selected giant freshwater prawn, and can hence work together, through the mechanism of SEAFDEC, to develop technologies for producing good quality seeds for that species.

The SEAFDEC Project on Aquaculture for Rural Development aims to test and disseminate appropriate



Meeting on Integrated Regional Aquaculture Program (IRAP) held in Bangkok in September 2002

aquaculture technologies for both freshwater and marine systems, suitable for use in rural contexts. The project will ties to be implemented under this project include on-site training on priority technologies needed by respective ASEAN Countries; and national activities through testing of technologies and pilot demonstration. This was confirmed and prioritized during the IRAP workshop.

The workshop therefore opened opportunities for Member Countries to work more closely together in developing aquaculture technologies. Since the proposed plans are for national-level activities, each country is responsible for the budget to run their own projects. SEAFDEC funds contributed by the Japanese Government are mostly to support national initiatives through the mechanism of SEAFDEC. SEAFDEC AQD will directly monitor the progress of activities and national plans discussed in the Seminar-Workshop.

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Fish Trade and Environment

The Need for Fisheries Management Measures for Sharks and to Reduce Antibiotics Residues in Farmed Shrimps

by Saadiab binti Ibrahim and Severino L. Escobar Jr.

At the recent ASEAN-SEAFDEC Regional Meeting on 'Fish Trade and Environment', held in Bangkok from 14-16 October 2002, delegates from Brunei Darussalam, Cambodia, Indonesia, Japan, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam discussed three important thematic issues: the need to develop fisheries management measures for sharks; the by-catch of marine turtles; and antibiotics residues in farmed shrimps.

In addition to ASEAN Member Countries, represented by government fisheries policy makers and technical officers from departments of fisheries or other concerned agencies, speakers from the Food and Agriculture Organization of the United Nations (FAO), the ASEAN Fisheries Federation (AFF), Taiwan and others were also invited to the meeting.

This paper focuses on two of the three issues discussed: the need to develop fisheries management measures for sharks and antibiotics residues in farmed shrimps. The marine turtle by-catch problem will be presented in the next issue of *Fish for the People*.

Sustainable management of shark fisheries – A new challenge

The long overdue recognition of the need for sustainable management of shark fisheries in the ASEAN region was acknowledged in the meeting. Delegates from Member Countries unanimously agreed to incorporate shark fisheries management measures into their respective national fisheries management policies and framework.

Why focus on sharks?

The elasmobranch biodiversity of the ASEAN region is among the richest in the world, with at least 136 species of sharks and rays, with

Indonesia being the richest country in terms of chondrichthians species in the world. Ironically, information on shark fauna in the region is scanty and poorly documented, and the status of shark populations is still largely unknown. Shark fisheries data and statistics are likewise rather limited and open to question. These shortcomings have been due to the fact that most shark species are caught as by-catch, and in rather small quantities in the course of daily fishing operations. As a consequence, information on elasmobranchs has usually been recorded as "sharks" or 'sharks and rays,' and there is no specific information on what species and quantities of sharks and rays have been caught.

Over the past two decades, exploitation of sharks has substantially increased with the lucrative demand for shark fins, particularly appreciated in Chinese cuisine. As shark fins have traditionally been preliminarily dried, processed and kept in backyards until collected, the limited amount of sharks caught on a daily basis have masked their economic importance. Many other parts of sharks' bodies, such as the skin or the liver, are tradable commodities. Sharks should be considered as highly profitable fisheries resources.



Sharks and CITES

The Convention on International Trade in Endangered Species (CITES) was intended to promote the conservation of wild animals and plants considered as endangered species. Once species are listed in Appendixes 1, 2 or 3 of CITES, depending on the level of endangerment, the member countries of the Convention are obliged to take the required actions with respect to international trade. For example, if a species is listed in Appendix 1, international trade of that species will be prohibited.

Initially, CITES focused on rare species, mainly for terrestrial animal and plants. For such fauna and flora, the level of endangerment of a population can in most cases be easily evaluated through observation. However, due to the deterioration of the global environment, the numbers of species listed in the CITES appendixes has continually increased throughout the past decade, expanding to species that are harvested from the wild, including fisheries resources.

The latest CITES Meeting held in Santiago, Chile in November 2002, agreed to include two shark species, whale sharks (*Rhincodon typus*) and busking sharks (*Cetorhinus maximus*) in CITES Appendix 2. To do so, required the support of two-thirds of Member Countries' votes, obtained after heated debates inside and outside the meeting. As a consequence, Member Countries of CITES are obliged to take regulatory

Critical issues at the Santiago CITES Meeting

What are the criteria to be used for judging which species are endangered? Compared with terrestrial animals and plants, it is very difficult to evaluate whether a species is endangered or not, since it is rarely physically visible. In the case of sharks, no scientific data and information is available in the ASEAN region.

In addition to existing national fisheries management authorities (such as ministries and department of fisheries), other governmental structures normally responsible for CITES issues in the ASEAN region (such as ministries of the environment) will have responsibilities for the management of endangered species. Management actions by such organizations might not be limited to the species, but might also cover species caught together with the threatened ones.



Shark fins remain a highly demanded product for chinese markets.

measures on the international trade of these shark species. In addition, related measures must also be taken on the management of fisheries that have the potential to by-catch these species.

Management responsibilities of shark fisheries

Under the United Nations Law of the Sea, management responsibilities have been clearly mandated to national fisheries authorities with respect to the resources within Exclusive Economic Zones (EEZ) and relevant regional fisheries management bodies for transboundary and high sea fisheries resources. The prevailing ASEAN common position, however, is that the management of commercial fisheries, including shark fisheries, should come under the purview of the FAO. The FAO has advisory and promotional roles on fisheries management at the global level, and on the Code of Conduct for Responsible Fisheries (CCRF). This ASEAN position was asserted at the 23rd Meeting of the ASEAN Ministers on Agriculture and Forestry (AMAF) in October 2001, with the recognition that CITES is not the most appropriate forum to manage fisheries.

Status and trends of shark fisheries

The International Plan of Action for the Conservation and Management of Sharks, which covers both national and international waters, has been promoted by FAO to encourage all concerned states

and fishing entities to adopt a national plan of action (a ‘Shark Plan’) for the conservation and management of shark stocks. Unfortunately, limited knowledge of shark biology, of the size and status of stocks, of the real volume of captures, and of shark population dynamics are serious constraints on national fisheries authorities’ ability to manage shark stocks in their national waters.

Hence, as a prerequisite for sustainable management of shark fisheries, the Regional Meeting on Fish Trade and Environment has agreed and endorsed that the collection and analysis of data and information, combined with efforts to understand the status and trends of shark fisheries, are important bases for the development of appropriate fisheries management policy and actions. However, based on the recognition that shark fisheries in the region are generally small in terms of daily catch and by-catch, it was considered that the creation of a separate fisheries management policy for shark fisheries might not be useful.

The International Plan of Action for sharks

ASEAN Member Countries were therefore encouraged to further pursue and implement the regional common fisheries policy adopted at ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People” held in November 2001 and the Regional Guidelines of the Code of Conduct for Responsible Fisheries. Through the development and improvement of national fisheries management plans, the required actions suggested by the International Plan of Action for Sharks will be accommodated in practical terms as follows:

- Expanding the classification of some major commercial shark species into the national fisheries statistics
- Using species composition as an indicator for better understanding the dynamics of shark fisheries
- Developing pilot projects to understand and manage shark fisheries
- Improving the coordination mechanism with industries for data collection and better

understanding of the status and trend of shark fisheries, and

- Promoting research activities to maximize the utilization of harvested sharks and to ease species identification of shark products.

Although the lack of financial resources may impinge upon the achievement of these activities, no fisheries management authorities amongst the ASEAN Member Countries should delay actions to understand and manage shark fisheries. Failure in conceiving timely and appropriate management actions on national shark fisheries management will further aggravate the political atmosphere, as seen from the debate in the CITES Meeting at Santiago. This is especially true in regard to



the current ineffectiveness of national fisheries management authorities for species such as sharks. This may lead to additional pressure for external intervention on national fisheries management, this time not limited only to shark species but open to other species and issues.

Antibiotics residues of farmed shrimp in Southeast Asia and their impact on trade

Another issue discussed at the Fish Trade and Environment meeting concerned the presence of antibiotics residues in farmed shrimps. This issue was



Shrimps are essential export commodities for many Southeast Asian Countries.

discussed at the meeting because some ASEAN Member Countries are facing huge problems in exporting shrimps. In this regard, the year 2002 will long be remembered by those involved in the shrimp farming business in Southeast Asia. Under stringent new regulations and controls on antibiotic residues from the European Union (EU), now being followed by other countries, the shrimp industry is being seriously affected.

Thailand, the biggest shrimp producer in the world, has seen its exports of frozen shrimps fall 40 percent in value and 27 percent in volume during the first six months of 2002, compared to the same period in 2001. The most important importers, such as the EU, Canada, and the USA, are now imposing new regulations for shrimp imports from Asia. Systematic examination and lower tolerance to antibiotic residues are the most notable new regulations. As a result, many shrimp shipments from Southeast Asian countries, especially Thailand and Vietnam, have been rejected.

What are the concerns about antibiotics?

The use of antibiotics for food animals raises two main issues: the risks to human health, and bacteria resistance acquisition to used antibiotics. The effects on human health of the main antibiotics found in cultured shrimps (*chloramphenicol* and *nitrofurans*) with parts per billion (ppb) amounts or less has not yet been studied in detail. These antibiotics are believed to be associated with increased risks of cancer. However, recent studies conducted in the Netherlands show that

risks are negligible unless an extremely excessive amount of contaminated food was consumed.

Reducing the prevalence of antibiotics in shrimps

In order to alleviate the issue, ASEAN Member Countries adopted four recommendations in the meeting:

- To promote the implementation of the ASEAN guidelines on *Good Aquaculture Practices* in farms
- To closely regulate and monitor the use of antibiotics in aquaculture
- To develop a public awareness program on the effects of using antibiotics, and
- To develop ASEAN-SEAFDEC training programs for the detection of antibiotic residues.

In the past, each Southeast Asian country and related regional organizations have tackled the issue independently. As such, recommendations adopted in the meeting underline an important shift in regional policy on the management of shrimp culture.

Although the situation is improving in terms of systematic inspection of shrimp shipments, as it has recently been seen by the lifting of the one-year embargo on exports from Vietnam, the Maximum Residue Limit (MRL) issue is still being discussed. The ‘zero tolerance’ set by the EU is considered by many countries as unreasonable, since only the most sophisticated equipment is able to detect these very small amounts

What is the Maximum Residue Limit?

The Maximum Residue Limit (MRL) is the amount of residue considered to be without any significant toxicological risk for human health. MRLs are based on Acceptable Daily Intakes (ADIs), which in turn are based on NOAEL (No Observable Adverse Effects Level) derived from animal and in vitro trials.

Trends in Chloramphenicol MRL for the main shrimp importers

EU	0.00 ppb
USA	5 ppb to 1 ppb to 0.3ppb
Japan	30 ppb

of antibiotics. Although zero tolerance can ideally be pursued, application of zero tolerance ignoring MRL may not be practical for the inspection of all consignments.

Brussels' European Seafood Exhibition

The issue of antibiotic residues in shrimps was also discussed in the Industry Meeting on Antibiotic Residues in Asian Seafood Products, at the European Seafood Exhibition, Brussels, Belgium, on April 24, 2002. The meeting focused especially on the MRL for *chloramphenicol*, *furazolidone* and *nitrofurans* antibiotics. Delegates at the meeting stated that the setting of such limits should be based on the amount of residue considered without any significant toxicological risk for human health (in terms of quantitative risk assessment), while residue-testing protocols for those antibiotics should be standardized.

They are everywhere!

Recent studies have shown that these antibiotics are nowadays commonly found at significant dosages in our natural environment and even in wild animals. In a study by the US Geological Survey on water samples from 139 streams across 30 states in the USA, results indicated the presence of antibiotics in 48% of the samples at combined level of 3.6 ppb. Hence, if sophisticated equipment had been used in analyzing the samples, it is almost certain that antibiotic traces would have been detected in a majority of the waterways. Very preliminary analyses of a variety of aquatic products as well as terrestrial animal foods have revealed a

disturbing number of trace amounts of *chloramphenicol* and *nitrofurans* among the samples, as mentioned by Dr. George Chamberlain, President of the GAA (Global Aquaculture Alliance), in the European Seafood Exhibition meeting.

Dealing with the situation

Several meetings on this issue between representatives of shrimp exporting countries and EU authorities have been held in an attempt to arrive at a practical and acceptable solution for both parties. Although many difficulties have been faced by Thailand, the latest news from the EU has encouraged the Thailand Farmer Organization. The news mentioned that the EU was satisfied with Thai food products, after having found no antibiotic substance contamination during its latest round of inspections. However, the EU authority stated that it would continue checking Thai products for a further short period of time before taking Thailand off its import control list.

Further discussion on the international harmonization of the tolerance level needs to be clarified soon, especially on the EU position in regard to lower *chloramphenicol* threshold levels than the US and Japan, since they are not really based on existing toxicity data, analytical capabilities and background contamination levels.

About the authors

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Date/Venue	Events	Organizer
2002		
1-5 October Malaysia	Expert-Government Consultation on RCCRF Phase III: Fisheries Management	SEAFDEC/TD, MFRDMD
11-16 October Thailand	ASEAN-SEAFDEC Regional Meeting on Fish Trade and Environment	SEAFDEC/Secretariat
21 Oct-19 Nov Thailand	Regional Short-term Training Course on Selective Fishing Gears and Practices	SEAFDEC/TD
1 Oct - 28 Nov Philippines	Third-Country Training on Responsible Aquaculture Development	SEAFDEC/AQD
6-19 November Philippines	Hands-on Training for Important Viral Diseases of Shrimp and Marine Fishes (in collaboration with OIE and NACA)	SEAFDEC/AQD
10-16 November Japan	Regional Seminar on Coastal Fisheries Management (Decentralized Management and Rights-based Fisheries)	SEAFDEC/Secretariat
25-30 November Philippines	The Third Regional Workshop on the Application of HACCP in the Fish Processing Industry in Southeast Asia	SEAFDEC/MFRD
27-29 November Philippines	FAO-NACA-SEAFDEC-MRC-ICLARM Regional Donor Consultation on the Role of Aquaculture and Living Aquatic Resources	SEAFDEC/AQD
9-11 December Philippines	Progress and Planning Meeting: Regional Fish Disease Project	SEAFDEC/AQD
2003		
19-21 February Thailand	LBCRM-PD Local Seminar	SEAFDEC/TD
22-24 February Thailand	LBCRM-PD Regional Seminar	SEAFDEC/TD
March (tentative) (on-line training)	On-line Training on "Trawl Fisheries"	SEAFDEC/TD
March (tentative) Thailand	Workshop on Estimation of Discards and Measures to Reduce By-catch in the India Ocean and Western Pacific	SEAFDEC/TD
7-10 April Thailand	First Regional Technical Consultation on Information Gathering for Inland Capture Fisheries	SEAFDEC/MFRDMD
23 April - 22 May Philippines	Training Course on Crab Seed Production	SEAFDEC/AQD
May (tentative) Thailand	ASEAN-SEAFDEC Regional Workshop for the Improvement of Fishery Statistics in the ASEAN Region	SEAFDEC/Secretariat
2-6 May the Philippines	AquaMarkets 2003: Regional Seminar, Consultation and Exhibition	BFAR, DA, NACA aquamarkets2003@enaca.org
5-30 May Thailand	Regional Short-term Training Course on Resource Enhancement Methodologies	SEAFDEC/TD
5 May - 15 August (On-line training)	On-line Course on Principles of Health Management in Aquaculture	SEAFDEC/AQD
7 May - 5 June Philippines	Training Course on Marine Fish Hatchery	SEAFDEC/AQD
17-21 May Thailand	Training/Workshop on Artificial Reefs and Stationary Fishing Gear (set net) Design and Construction	SEAFDEC/TD
May (tentative) Thailand	Regional Consultation on Decentralization of Management and Right-based Fisheries	SEAFDEC/Secretariat
May-June (tentative) Thailand	Training Course on the Use of TEDs and JTEDs for Shrimp Trawling	SEAFDEC/TD
May-September (On-line training)	On-line Course on Basic Principles of Aquaculture Nutrition	SEAFDEC/AQD
4 June - 3 July Philippines	Training Course on Management of Sustainable Aquafarming Systems	SEAFDEC/AQD
June (tentative) (on-line training)	On-line Training on "Media Development for Fisheries Extension Officers"	SEAFDEC/TD
June (tentative) Singapore	Fish Processing and Packaging Training Course	SEAFDEC/MFRD

Southeast Asian Fisheries Development Center (SEAFDEC)

What is SEAFDEC?

SEAFDEC is an autonomous intergovernmental body established as a regional treaty organization in 1967 to promote fisheries development in Southeast Asia.

Objectives

SEAFDEC aims specifically to develop fishery potentials in the region through training, research and information services in order to improve food supply through rational utilization of fisheries resources in the region.

Functions

To achieve its objectives the Center has the following functions:

1. To offer training courses, and to organize workshops and seminars, in fishing technology, marine engineering, extension methodology, post-harvest technology, and aquaculture;
2. To conduct research and development in fishing gear technology, fishing ground surveys, post-harvest technology and aquaculture, to examine problems related to the handling of fish at sea and quality control, and to undertake studies on the fisheries resources in the region; and
3. To arrange for the transfer of technology to the countries in the region and to make available the printed and non-printed media, which include the publication of statistical bulletins for the exchange and dissemination related to fisheries and aquaculture development.

Membership

SEAFDEC members are the ASEAN Member Countries (Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam) and Japan.



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In the occasion of the Millennium Conference, a drawing contest was organized for the children among ASEAN-SEAFDEC Member Countries, on the theme of 'Fish and the Culture'. This is the best drawing from Vietnam.