

**ASIA-PACIFIC  
FISHERY  
COMMISSION**

# **APFIC Regional Consultative Forum Meeting**

## **“Reforming Fisheries and Aquaculture in the Asia-Pacific”**

**Kuala Lumpur, Malaysia  
16-19 August, 2006**





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**APFIC REGIONAL CONSULTATIVE FORUM MEETING**  
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**Asia-Pacific Fishery Commission (APFIC)**  
**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**  
**Regional Office for Asia and the Pacific**  
**Bangkok, 2006**

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## FOREWORD

The theme of the Asia-Pacific Fishery Commission (APFIC) Regional Consultative Forum was “Reforming fisheries and aquaculture” and this reflects FAO’s belief that major changes are required if we are going to realize greater benefits from the huge potential that fisheries and aquaculture offers the Asia-Pacific region.

APFIC, FAO and the member countries of the Asia-Pacific region have a common goal of better administration and management of fisheries and aquaculture and, based on global instruments and agreements, we are all trying to achieve sustainable development. It is becoming clear that we have probably reached the last frontier in terms of marine capture fishery expansion and it is also evident that aquaculture is facing severe constraints. In terms of fisheries there are very few unexploited resources left to explore. In terms of aquaculture two main constraints are the lack of land for further expansion and the limit to the global supply of aquaculture feeds.

The news is not all bad, as there is increasing will and commitment to address the mistakes of the past and there are some good examples of policy decisions in fisheries which should reduce the “boom and bust” scenarios that have beset the sector over the years. The same can be said for aquaculture, where the trend of intensification, increasing demand for improved health and safety of products, and competition for natural resources are all pushing aquaculture towards a higher degree of management.

The keynote address presented in this report raises six challenges to member countries and fisheries organizations active in the Asia-Pacific region and, as agreed in the last FAO Committee of Fisheries, this is the decade of implementation of the Code of Conduct for Responsible Fisheries (CCRF). There are now many instruments/agreements/targets and policies, but now is the time for action and APFIC can help facilitate this action.



He Changchui  
Assistant Director-General and  
Regional Representative for Asia and the Pacific

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APFIC would like to gratefully acknowledge the following organizations for their generous support for the convening of the first regional consultative forum meeting:



Department of Fisheries  
Ministry of Agriculture and Agro-industry, Malaysia



Ministry of Maritime Affairs and Fisheries of the Republic of Korea (MOMAF)



Swedish International Development Agency (Sida)



INFOFISH



FAO Fishcode Programme



Food and Agriculture Organization of the United Nations



IPC Food Sovereignty

## EXECUTIVE SUMMARY

The overall goal of the biennial Regional Consultative Forum Meeting (RCFM) was to provide a forum to synthesize, analyse and agree on actions needed to reshape fisheries and aquaculture in the Asia-Pacific region for future generations.

The more specific objectives were to:

- (i) provide a background on the status, trends and potential of Asia-Pacific fisheries and aquaculture;
- (ii) develop policy and action plans to address two major issues that constrain reaching that potential, namely the emergence of trash fish fisheries in the region and the need to mainstream fisheries co-management in national fisheries management activities; and
- (iii) discuss fish trade and standards and illegal, unregulated and unreported fishing (IUU) as emerging issues for the region.

The RCFM also addressed some of the broader policy challenges facing all members, such as:

- policy direction and drivers in Asia-Pacific Fishery Commission (APFIC) countries;
- the incorporation of fisheries and aquaculture into national poverty reduction strategies; and
- the integration of fisheries management into broader large marine ecosystem management.

Recommendations arising from the forum were to be forwarded to the APFIC session for consideration and possible endorsement by member countries.

*All the background papers that were submitted for the RCFM are available on the APFIC website (<http://www.apfic.org/>).*

The workshop was convened at the Renaissance Hotel, Kuala Lumpur, Malaysia from 16 to 19 August 2006 and was attended by 88 participants from 16 APFIC member countries and 15 international, inter-governmental, and non-governmental organizations active in the fishery sector. The full list of participants and their affiliations is given in Annex IV.

The RCFM sought the active involvement of partner organizations and invitees to ensure that a wide range of views was represented in considering issues facing Asia-Pacific fisheries and aquaculture. The public was also invited to attend and funding support was generously made available to support the participation of many attendees. The programme for the RCFM appears in Annex I.

Four main themes were covered in the RCFM. The four themes were very much related to the issues that are under discussion in global fora and therefore relevant both regionally and globally.

- Theme 1: Future of fisheries and aquaculture in Asia and the Pacific region and the low value/trash fish problem.
- Theme 2: Co-management, governance and institutions.
- Theme 3: Policy challenges
- Theme 4: Emerging issues – illegal, unreported and unregulated fishing

In the final session, a summary and recommendations for reporting to APFIC were presented. In addition, posters prepared by countries and other participants on national experiences of policy development, co-management and other issues enriched the information exchange.



## OPENING OF THE WORKSHOP

1. Y. Bhg. Dato' Junaidi bin Che Ayub, Director-General, Department of Fisheries Malaysia delivered the opening remarks. He welcomed the participants and noted that this was the first RCFM organized by APFIC, having replaced the previous APFIC symposia. The Director-General stated that the purpose of the forum was to strengthen the role of APFIC by extending consultations and knowledge of fisheries issues in the region to bring the issues into the policy arena and to assist member countries in reshaping their fisheries for future generations. He outlined the new role of APFIC as a coordinating mechanism for dialogue on fisheries and aquaculture issues. He thanked the sponsors of the RCFM for their generous contributions as well as the organizers, and thanked APFIC and FAO for convening the event and providing this opportunity for regional discussions. The full text of the welcome remarks is in Annex II.

2. On behalf of the Director-General, FAO, Mr Ichiro Nomura, Assistant Director-General, FAO Fisheries Department welcomed the participants to the RCFM. He gave an account of the process of review and reform of APFIC's role and function and of its emergence as a regional consultative forum. He stated that the forum was designed to act as a neutral platform to assist its members in discussing the emerging issues in fisheries and aquaculture that affect Asia and the Pacific region. As part of its reform he noted the inclusion of regional fisheries institutions and organizations and NGOs as part of the wider forum. Mr Nomura briefly reviewed the recent activities of APFIC that had acted as foundations for the current RCFM and would form the basis of discussions. He noted the unprecedented changes that had occurred in both fisheries and aquaculture in Asia and the Pacific region in recent times. The rapid rate of growth of both has not been without impact and there was now an urgent need to reform and improve fisheries and aquaculture to ensure sustainability and maintain the role of fisheries and aquaculture in contributing to the livelihoods and economies of the countries in the region. He noted that the two new possible themes for the coming biennium of the APFIC consultative forum could be food safety and quality in the context of trade, and illegal, unreported and unregulated (IUU) fishing. He also noted that the forum was intended to be an active process with participants engaged in discussion and debate. The recommendations of the forum would be submitted to the twenty-ninth session of APFIC for further debate and for the development of strategies for action. In conclusion, he thanked the Government of Malaysia for hosting the event and acting as the chair of APFIC. He also thanked all the sponsors of the event and made special reference to the Ministry of Maritime Affairs and Fisheries of the Republic of Korea and the Swedish International Development Agency (Sida) for their financial support to the forum; as well as to the Department of Fisheries, Malaysia and the Intergovernmental Organization for Marketing Information and Technical Advisory Services for Fishery Products in the Asia and Pacific Region (INFOFISH) for their assistance in organizing and arranging the forum. The full text of Mr Nomura's address can be found in Annex III.

3. The RCFM was officially opened by the Honourable Dato' Seri Hj. Mohammed Shariff bin Hj. Omar, Deputy Minister of Agriculture and Agro-Based Industry Malaysia. He expressed his thanks to the FAO and DOF Malaysia for jointly organizing the RCFM and welcomed the participants to Malaysia. He noted that fish has always been a key part of the healthy diet of the rich and the poor alike in the region and has also contributed significantly to the economies of the Asian region. He noted the stagnation of fisheries production and the potential impacts on the livelihoods of coastal fishers and how the rate of growth of the fisheries and aquaculture sectors in the region has challenged the countries' abilities to control and manage them. There was now an urgent need for action to improve the management of the sector, which should be carried out on the basis of the FAO Code of Conduct for Responsible Fisheries (CCRF). Action was needed if the countries of the region were to meet the goals laid out in the World Summit for Sustainable Development, and particularly, with respect to those communities and people most dependent on this sector. He particularly noted the strengthening of norms and standards for safety

and quality and increasing requirements of global and regional trade that had resulted from increasing globalization. These challenges highlight the importance of regional fisheries bodies assisting their members to address the issues that now confronted the fisheries and aquaculture sectors of the region. Malaysia welcomed the new role of APFIC as a consultative forum and was confident that it would contribute to the reshaping of fisheries and aquaculture in the region. The full text of the opening speech can be found in Annex IV.

4. Mr Derek Staples, the Secretary of APFIC, welcomed the participants and explained the arrangements for the RCFM and the overall objectives and expected outcomes of the meeting. He emphasized that the RCFM was convened as a platform for discussion and that its success depended on the active participation of the participants and their contributions. The RCFM would be marked by the development of a series of recommendations, which would be taken to the twenty-ninth session of APFIC for consideration by the member countries.

## **KEYNOTE ADDRESS – “REFORMING FISHERIES AND AQUACULTURE IN THE ASIA-PACIFIC”**

*Ichiro Nomura, FAO Department of Fisheries*

5. The keynote address of the Assistant Director-General of the Food and Agriculture Organization of the United Nations (FAO UN) highlighted that the development of fisheries and aquaculture in Asia and the Pacific region has been characterized by successive waves of “boom and bust” activities. In the case of fisheries this development is one where, one by one, stocks and habitats were exploited by new and more effective fishing techniques to supply the rapidly increasing demand and markets for fish. This began with the boom and subsequent decline of pearling in the 1800s, trawling in the 1960s, and purse seining for small pelagics in the 1970s. However, about a decade ago a point was reached where there were very few new underexploited stocks or areas for fleets to develop. In the case of aquaculture, although the sector has shown remarkable growth in some parts of the region, this has also been characterized by rapid shifts in technology and species farmed – the most recent one being the emergence of an imported species of white shrimp becoming the dominant aquaculture product. However, there are now many constraints on the further development of aquaculture, including the limitations on areas to expand and on the supply of aquaculture food.

6. The history of APFIC also reflects the history of the development of fisheries and aquaculture. In its formative years (1949-1962) it promoted research and better administration of its members. In the second phase (1962-1980), it promoted fisheries development. In its third phase (1980-2006), APFIC increased its efforts to promote better fisheries management and rational development. However, although many global instruments and tools were put in place to guide this process, effective management remains an elusive goal.

7. Mr Nomura remarked that APFIC and FAO would now like to see a fourth phase – one of effective management and sustainable development. The need to reform fisheries and aquaculture is urgent – there is simply no other choice. This RCFM is an attempt by APFIC to facilitate this change. It will consider several issues that have resulted from the “boom and bust” nature of the sector (e.g. the increasing share in production of low value/trash fisheries) and ways to improve management (e.g. through co-management). It is intended that it will guide the policy development of the sector and develop strong actions to address the challenges that confront it. The text of the keynote address can be found in Annex V.

## **THEME 1: FUTURE OF FISHERIES AND AQUACULTURE IN ASIA AND THE PACIFIC REGION AND THE LOW VALUE/TRASH FISH PROBLEM**

### **Status and potential of fisheries and aquaculture in Asia and the Pacific region**

*Derek Staples, FAO Regional Office for Asia and the Pacific*

#### **Production trends and contribution to Asia and the Pacific region**

8. The world's production from capture fisheries is now about 95 million tonnes, 46.7 million tonnes coming from Asia and the Pacific region (49 percent). The world's aquaculture production, excluding aquatic plants, is now 45.5 million tonnes, of which 40.4 million tonnes come from Asia and the Pacific region (90 percent).

9. In Asia and the Pacific region, production from both capture fisheries and aquaculture has grown since 2002 (a modest 3 percent for capture fisheries and 12.5 percent for aquaculture, not including aquatic plants). In 2004, the region contributed 92.2 million tonnes. With the inclusion of aquatic plants, aquaculture in the region is now 54.3 million tonnes, which exceeds reported capture fisheries production. This huge production (and value) provides many opportunities for revenue generation, employment, and should contribute significantly to poverty reduction and increased food security.

10. The fisheries and aquaculture sector is of fundamental importance to Asia and the Pacific region. Direct effects can be seen at the national level, with the fisheries and aquaculture sector benefiting significantly from trade with major global import markets in France, Italy, Japan, Spain and USA. In terms of exports, China and Thailand are part of the top five, along with Norway, Peru, and USA. Within the APFIC region, many countries are net exporters, but China, Hong Kong, Japan, Republic of Korea and Singapore are major net importers. Fisheries and aquaculture also have significant direct effects on the income, nutritional status and livelihoods of millions of people in the region.

11. There is very little information on employment, but some data are available for some countries as a result of census information. Overall, the sector is a very significant employer with Asia representing 87 percent of the world's total employment of fishers and fish farmers. There are 33 million people engaged in fishing (and the figure is not changing significantly) and 9.5 million fish farmers (this figure is increasing). Many of these activities are pursued on a part-time basis as part of a complex livelihood.

12. In terms of capture fisheries, the clear trend for marine waters is that production from the APFIC region (excluding China) peaked in the late 1980s followed by a slow decline (but with a slight recent increase). Production from inland waters rapidly increased in the 1990s, but there is evidence of levelling off in recent years in both China and the rest of the APFIC region. Six APFIC countries were among the top 10 producers in 2004; China remains the largest producer with a reported catch of 17.9 million tonnes.

13. Total production figures, however, mask what has really been happening. Production of pelagic species (species that live in the water column) peaked in the late 1980s and then declined and levelled off. Significantly, demersals (species that live on or near the bottom) peaked in the mid-1970s, declined and then levelled off and never returned to mid-1970s level. In the APFIC region, both small pelagic species like Japanese anchovy, and larger pelagics such as skipjack tuna dominate.

14. Unlike capture fisheries, aquaculture production is continuing to grow. There has been a steady increase in the APFIC region's production with a dramatic production increase reported for China. Eight APFIC member countries (including USA) are in the top 10 producing countries. In terms of value, China is less dominant, but still overwhelming. About 70 percent of Asia and the Pacific region's aquaculture is produced in China. The top five produced animal species in aquaculture in terms of tonnage remain carps, with tilapia ranking sixth and the white leg shrimp (*L. vannamei*) now seventh.

15. There are few systematic data related to the production and landing of low value/trash fish, but studies conducted by APFIC in five countries and an Advisory Council for Industrial Research (ACIAR) study in Viet Nam, indicates that across these six countries the volume is approximately 7434 million tonnes. A weighted average across these countries suggests that low value/trash fish accounts for 25 percent of total catch.

#### **Status of the fishery/aquaculture resources**

16. Only a few countries in the region carry out regular stock assessments and use these in management. The reason for this is fairly obvious: given the hundreds of species, the diversity of gears and fisheries, and the enormity of the task, most countries simply don't have the capacity to do it. Some estimate maximum sustainable yield (MSY) based on aggregate data, but the reliability of this is questionable, especially when the estimates are based on fishery catch and effort data. Scientific surveys are one of the best sources of information and have been conducted in many areas of Asia, including India, Indonesia, the Philippines, Thailand and Viet Nam. All show dramatic declines with current biomasses between six percent and thirty percent of the biomass recorded 20 to 30 years ago. An example from the Gulf of Thailand shows that with a reduction in fishing effort, total catch increases and, more importantly, profits increase. At the MSY, the catch and the profit are both greater. At the maximum economic yield (MEY) the catch is slightly less, but the profit is even greater because the overall cost of fishing is less. This type of data should be calculated and used to assist in the making of policy decisions, such as those concerning the implementation of vessel buyback schemes.

17. There are 65 large marine ecosystems (LMEs) worldwide, of which 20 are in the APFIC region. These can be characterized into 4 types.

- ***Pelagic systems e.g. Kuroshio Current.*** Once dominated by South American pilchard. These declined in early 1980. On bottom line – mean trophic level of catch – shows some degree of change in ecosystem structure. As adults, pilchards are herbivores feeding largely on phytoplankton. Low mean trophic level. After their decline, trophic level increased with a higher proportion of chub mackerel and Japanese anchovy.
- ***Fished down the food chain e.g. Yellow Sea.*** Changes in catches over time. Relatively steady decline in mean trophic level – fishing down the food chain.
- ***Still increasing e.g. Bay of Bengal.*** Reported increase in most groups – driven largely by Indonesia. Here too we can see the decline in trophic level.
- ***Strictly managed e.g. SE Australia.*** Pattern reflects the management regime. Southern bluefin tuna in 1960s – now under strict quotas and very little caught in this LME. Catch now dominated by small shark, Australian salmon and blue grenadier (*hoki*). The rock lobster stock is very well managed and has a stable supply.

18. Given this depleted status of many coastal ecosystems, interest is turning to offshore resources, especially tuna. However, all species, except skipjack are fully exploited or overexploited. For APFIC member countries, this means that they will have to compete with long distance fishing nations and neighbouring countries to be successful. This will also require membership of the increasing number of fishery management organizations and participation in arrangements that are being established to deal with tuna stocks.

19. Asian aquaculture is characterised by a flexible group of species that can be grown extensively through to intensively under a range of systems and differing market conditions. Mr Staples' presentation also covered a number of trends related to aquaculture production.

20. Carnivorous finfish production is on the rise because of increasing fish prices and better profit margins for this group of species. Production of marine finfish and freshwater carnivores is increasing rapidly as a result of their export potential and good domestic markets. New species, such as cobia, are making advances and there is interest in large-scale/offshore cage culture as coastal sites become limited and suffer from poor water quality. In terms of freshwater carnivorous fish, *basa* catfish culture is expanding in Viet Nam and is targeting export markets. Eel production is relatively stable, but requires elvers, which are a potential future constraint, particularly if from Europe. Production of other freshwater carnivores is also increasing and these are largely targeted at niche regional markets. Feeds remain a significant constraint for all carnivorous finfish production and the development of formulated feeds is a major need.

21. Omnivorous fish production is still increasing and carps still predominate, although tilapia continues to make gains as part of the industrialization and standardization of aquaculture commodities where there are export opportunities.

22. Crustacean production is dominated by shrimp and there has been a large-scale changeover from *Penaeus monodon* to introduced white leg shrimp (*P. vannamei*) largely as a result of access to specific pathogen free (SPF) stocks. However, there have been problems with declining prices, increasing trade measures (anti-dumping, residues etc. too). There are also emerging health problems as a result of poor control of SPF systems movement of broodstock. The development of *P. Monodon* SPF is in progress, but is not commercially viable yet. Other crustacean production includes freshwater prawn and, particularly, crab and lobster fattening, all of which are increasing. There are problems with seed supply and the use of fresh feeds.

23. Mollusc production in the region continues to expand. However, there are increasing site limitations and effects such as deterioration of coastal water quality in some areas. Molluscs are difficult to trade internationally because of the need to meet stringent sanitary and phytosanitary requirements. Most trade remains at the national level.

24. The production of aquatic plants, particularly the production of food algae in China, is increasing. The global demand for biopolymers is also driving development in new areas. The potential of algae for other non-food products offers a wide potential range of systems and products and it can be expected that this part of the sector will increase considerably.

### **Emerging issues**

25. Mr Staples also highlighted two possible issues that could form the basis of further work for APFIC and a future focus of the next regional consultative forum meeting. These were illegal, unreported and unregulated fishing (IUU) and seafood safety and trade.

26. Most of the waters within the APFIC area of competence lie within the 200 mile Economic Exclusion Zones (EEZs) of member countries and, therefore, IUU is mostly IUU fishing by nationals in their own EEZ (using illegal gears or fishing in closed areas etc.) or IUU fishing by foreign vessels inside the EEZ (encroachment across borders or from the high seas). IUU fishing on the high seas, particularly in the Indian Ocean and the Western and Central Pacific, is also an issue but comes under the competence of the Indian Ocean Tuna Commission (IOTC) and the Western and Central Pacific Fishery Commission (WPCFC).

27. Food safety and trade issues relate to both capture fisheries and aquaculture products. As a result of the globalization of trade, fish products are increasingly being inspected for chemical contaminants and residues, parasites and microbial contamination. Because of the greater scrutiny of traded products, there

are now stringent sanitary and phytosanitary measures being put in place. Issues related to the labelling of products and the need for certification are increasingly demanding that more attention be paid to the pre-harvest quality of products. This will require more appropriate management of fisheries and aquaculture systems.

### **Future potential**

28. The Global Outlook from the WorldFish Center (WFC) and the International Food Policy Research Institute showed an increased demand for fish from developing countries and a shift to the production of capture fisheries in developing countries. Meeting this demand will require that aquaculture contributes a rising share of production. There will also be a turn around in fish trade with more countries in the region importing fish and this will also be accompanied by rising fish prices. To further the analysis of these predictions, future scenarios are being developed by APFIC/FAO and WFC. Preliminary results were given in the next presentation as shown below.

29. In conclusion, Mr Staples summarized the challenges to fisheries and aquaculture in terms of the five subsectoral areas of:

- marine coastal fisheries – integrated coastal management, increasing catches through better management;
- pelagic offshore fisheries – access to resources;
- demersal offshore fisheries – sustainable expansion;
- inland fisheries – competing water use and environmental impacts from external factors; and
- aquaculture – site and feed constraints and increasing trade related issues.

### **Implications for supply of and demand for fish for food and fish for feeds**

*Stephen Hall, WorldFish Center (WFC)*

30. Mr Hall highlighted that the market for fish and fish products in Asia is one of the most dynamic in the world. The region produces and consumes fish for food as well as for aquaculture feeds. National markets influence and are affected by the regional and global trade in fish and fish products such as fishmeal. Mr Hall gave preliminary findings of the WFC/APFIC collaborative study to develop a supply and demand model for fisheries in five Asian countries.

31. The model stems from the WFC's "Asia-Fish model" and was used to develop scenarios for the supply of and demand for fish in the Asian region. For the present study, the model was expanded to incorporate trade in fish and fish products from capture fisheries for aquaculture feeds. Different supply and demand scenarios can be foreseen, all of which are relevant to fisheries and aquaculture in Asia. These include:

- the effect of increases in the global price of fishmeal because of a decline in global supply (e.g. cornering of the market, decline in the global fishmeal fisheries yield);
- the effect of more local/regional declines in supply (from overfishing, environmental degradation, fuel price rises);
- the effect of technology in improving the quality of landed fish, bringing it up to human food grade (e.g. through better handling onboard); and
- the effect of improved feed use and feed efficiency for aquaculture.

32. A main conclusion of Mr Hall's presentation was that under all scenarios there will be differential impacts on poor consumers who will be hit by the reduced availability of fish and higher prices. A second conclusion was that the impacts of the scenarios differed depending on the stage of a country's aquaculture development. When aquaculture is in an early phase of development and the dependency on trash fish and fishmeal is relatively small, simple import substitutions compensate for changes in the supply of fishmeal or trash fish. In contrast, with intermediate development there is likely to be a shift to the culture of lower value species or lower intensity production that is less dependent on feed. With highly developed aquaculture, there will be no escape from fishmeal and trash fish price increases. These increases will result, not only in impacts on fish prices and production, but will also have wider ripple effects on national economies leading to falls in incomes and consumption. Impacts will be much greater for China, but the scenario in China is very likely to be a problem for other countries in the region as their aquaculture sectors develop.

33. It is recommended that the management of wild capture fisheries be improved to include greater consideration of low value fish, and developing plant based substitutes for fish based feeds should be a top priority.

### **Action plan to address low value/trash fish issues in the APFIC region**

*Simon Funge-Smith, FAO Regional Office for Asia and the Pacific*

34. Mr Funge-Smith covered the main outcome of the APFIC regional workshop on "Low value and 'trash fish' in the Asia-Pacific region" (Hanoi, Viet Nam, 7-9 June 2005), which was the elaboration of an action plan that addresses the priority issues associated with the increasing catch of low value/trash fish. The priority issues for action included: (i) the increasing regional demand for aquaculture feeds (both direct feed and fishmeal/oil); (ii) concern over reduction in the supply of animal protein for poor rural people; (iii) lack of incentives for better post-harvest processing; (iv) sustainability of harvesting from capture fisheries; (v) growth of overfishing and capture of small juveniles; and (vi) ecosystem level impacts.

35. Addressing these issues requires action both regionally and by countries. The workshop agreed that all countries should:

- apply a number of fishery management interventions (including a reduction of the capacity of trawlers and pushnetters; improving gear selectivity, introducing more effective rights based management; protecting nursery areas; and seeking alternative employment options for fishers);
- improve post-harvest interventions that could be used to improve the utilization of low value/trash fish (improve onboard handling, diversify product forms); and
- address the demand for low value/trash fish by aquaculture by improving feeds for aquaculture (through changing over from direct feeding to pellet feeding; reducing fishmeal content by substitution of suitable ingredients in pellets; investing in feed research for inland/marine species; and promoting the adoption and change over to pellet feeds.

36. The workshop stressed the need to recognize the importance of small fish in rural and coastal livelihoods. It also highlighted the need to improve the information and communication of the issues through a better understanding of status, trends and utilization of low value/trash fish and raising awareness among all stakeholders, especially of the potential of pellet feeds for aquaculture and the suitability of many low value/trash fish for human consumption. These actions were presented for consideration by the regional consultative forum meeting.

37. Fishery interventions to deal with the issue included: reduction of trawling and pushnet effort (along with clear monitoring of the effect of capacity reduction); introduction of improved selectivity of fishing gears/fishing practices; reduction in the “race for fish” through rights-based fisheries and co-management; protection of juvenile nursery areas (refugia/closed areas, seasonal closures); and provision of alternative social support measures (including employment).

38. Strategies for improved utilization included: improved post-harvest fish handling and the development of new fish products through processing.

39. Strategies for improvement of feeds for aquaculture included: change over from direct feeding to pellet feeding; reduction of fish meal content by substitution of suitable ingredients in pellets; investment in feed research for inland/marine species; and promotion of the adoption and change over to pellet feeds (note: shrimp aquaculture is already based on pellet feed).

40. The APFIC Secretary invited a review of these recommendations. Suggestions also included emphasizing the need to increase the size of fish and the need to direct trash fish towards human consumption once it has been caught. It was also noted that improved utilization might increase incentives to catch trash fish, and the recommendations might highlight the key role of the government in relation to food safety issues.

41. It was noted that the recommendations do not currently specify who should do what, and that the recommendations might benefit by specifying a pro-poor and small-scale focus. It was also noted that region-specific recommendations and policy do not take account of the global interlinkages and other policies that might also be important, and that the recommendations might be improved by including a reference to the need to engage with other sectoral policies.

## **Capture fisheries management interventions**

*Panel led by Rolf Willmann, FAO Department of Fisheries*

42. In introducing the panel on management interventions in capture fisheries, Rolf Willmann explained that the problems of capture fisheries in the region are well known and common (to a lesser or greater extent) to most countries and the world at large. He explained that because of the largely open-access status of fisheries in the region, the “race to fish” was growing in intensity and highly over-capitalized fleets and excess fishing effort, indiscriminate fishing practices, declining fish stocks and a shift towards lower value species, damage to marine ecosystems and declining catches per unit of effort, and declining incomes and economic returns were common. In the context of APFIC this has led to the increase in low value/trash fish and associated issues.

43. He stressed that there are large economic benefits that can be harnessed by better management. He noted that this does not necessarily mean decreased employment opportunities in fisheries and fisheries related activities.

44. Countries in the region are considering or have already implemented various measures, often several in combination, to address these problems. These include:

- controlling fleet sizes and establishing zones for different classes of vessels;
- protecting juvenile nursery areas (refugia/closed areas, seasonal closures);
- introducing and promoting improved selectivity of fishing gears/fishing practices;
- reducing trawling and pushnet effort and reducing fleet capacity through buyback and other measures;



- facilitating a reduction in the “race for fish” through rights-based fisheries and co-management; and
- providing alternative social support measures (including alternative employment).

45. The panel members, fishery managers and researchers from the region, expressed their views on priority management interventions and objectives in their respective countries. They reported on past successes and failures and identified the key constraints they need to address and overcome to improve fisheries management and increase, in a sustained manner, the national and local benefits from their fishery wealth. Panel members included Sheikh Mustafizur Rahman (Bangladesh), Jin, Xianshi (China), G.D. Chandrapal (India), Ibrahim bin Saleh (Malaysia), Jessica Munoz (Philippines), and Mala Supongpan (Thailand).

46. **Malaysia** – The country has a sizeable catch of low value/trash fish of which 60 percent goes to feed aquaculture species. Between 60 and 90 percent of trash fish landings are by inshore trawlers. Fisheries management interventions include the introduction of fishing rights through licensed fishing appliances and vessels, with a revised licensing policy implemented since 1980. There has been a moratorium on the licensing of inshore fishing vessels since 1982 and the numbers are reducing. Other interventions include closed areas and mesh size limitations. A zoning system (Zone A, B, C) is in place to restrict the access of vessels and fishing gears, e.g. traditional fishing vessels are allowed to fish in any zone and exclusive use up to 5 nautical miles (nm) from shore. Commercial fishing vessels (trawlers and fish purse seiners) up to less than 40 gross registered tonnage (GRT) fish in waters beyond 5 nm from shore and those between 40 to less than 70 GRT fish in waters beyond 12 nm. Malaysia has a large artificial reef programme to deter illegal trawling in Zone A and also to enhance fish stocks. There is a current policy of encouraging existing inshore trawlers to increase in size and move into the offshore areas, and a buyback scheme for trawlers will be implemented next year.

47. **Thailand** – Management measures used include the freezing of the number of trawlers, mesh size control, reserve areas, zoning, reduction of pushnetters, promotion of co-management, closed seasons and areas, gear regulations and deployment of artificial reefs. New measures (Policy and Plan of Action 1997) for fishing capacity reduction and management are to be introduced for trawlers and pushnetters with the support of a Sida/FAO project. Pushnet reduction is already in progress and the fishers have taken up alternative activities including fish cage culture, gillnet fishing, oyster, mussel, and soft-shell mud crab cultivation, and use of more selective fishing gear (e.g. trammel nets). For trawl fisheries, capacity reduction has started with consultation with stakeholders and opinion polls to guide the introduction of incentives to leave the fishery. A meeting of decision makers will follow this (25 August 2006) and the Department of Fisheries (DOF) will follow up. Recommendations from the stakeholders meetings include a cap on boat building, a buyback programme, better enforcement and registration processes, updating of capacity-reduction plans and expanded deployment of artificial reefs.

48. **Bangladesh** – Fisheries contribute 4.9 percent to GDP and are very important for employment and livelihoods. Almost all fish landed is used for direct human consumption. Management interventions include control on fleet size and trawling number, a mandatory registration system for artisanal boats and fishers. There is also a ban on shrimp larvae collection, mesh size restrictions, zone restrictions, fish sanctuary and seasonal closures. Discarding is not allowed and shrimp trawlers must land at least 30 percent finfish. Fisheries co-management (including awareness raising, participatory resource management, institutional and technical capacity building, government initiatives to reform policies to ensure the rights of the poor to resource access, government support during closed seasons, and adoption of measures to increase catches and encourage savings) is being introduced. There are also changes occurring in policies to support co-management, especially pro-poor policies. The government is also encouraging aquaculture as well as promoting integrated aquaculture/agriculture and other ways of alternative income generation.

49. **India** – The Model Marine Fishing Regulation Bill, circulated by the central government in 1997 to coastal states, has provided the legal basis for fisheries management in India and every coastal state has enacted its own legislation on the basis of this. Management measures include delimitation of zones for different types of crafts, closed seasons and areas, fishing gear regulations (e.g. minimum mesh size) and gear restrictions, especially in lagoons and backwaters. Theoretical capacity limits on the number of coastal vessels have been estimated, however fisheries management authority within territorial waters rests with states. During recent years, a uniform 47 days fishing ban has been adopted during the monsoon season. This aims to protect spawning stocks, but its effectiveness is not well known and will be subject to further impact assessments. However, a seasonal fishing ban has helped the traditional sector in terms of better fishing opportunities. The fishery ban is accompanied by a saving-cum-relief scheme to mitigate against income losses. Measures have been taken to promote alternative livelihood activities including coastal aquaculture and mariculture. Suggestions have been received to introduce a fishing vessel buyback programme to reduce the overcapacity of the coastal trawler fleet. No financial assistance is provided for introducing trawlers; in deep sea policy, only resource specific vessels are allowed to be introduced and stern trawlers are prohibited.

50. **Philippines** – There is growing concern in the Philippines about declining economic returns in fisheries, poor living conditions and the deteriorating state of the fishery resources. Management interventions include protected areas, fish sanctuaries and reserves, effective law enforcement, information and awareness raising campaigns, and the promotion of alternative livelihoods. There is a moratorium on the granting of new licenses for commercial fisheries and limited licensing has been introduced for municipal fisheries. Future challenges include the allocation of appropriate human and financial resources in support of sustainable fisheries management, institutional and organizational strengthening, better law enforcement, improved policies based on greater research efforts, and expanding educational, information and awareness raising activities. The two major government policy/legal instruments that facilitate co-management in the Philippines are the 1991 Local Government Code and the 1998 Fisheries Code.

51. **China** – There is no or limited discarding in Chinese marine fisheries, but there is a high percentage of low value or trash fish (about 20 percent of the marine catch and 3 million tonnes is used for reduction and marine culture). Existing management includes ban lines for trawlers, closed seasons and closed spawning grounds. Licensing and minimum mesh size have been in effect since the 1950s. Single species total allowable catches (TACs) are not considered practical today, but limitations on total marine catch have been implemented and there has been a zero growth policy since 1999. China has embarked on a fishing capacity reduction programme that involves buyback of boats and support to find alternative jobs. This has reduced the fishing fleet in recent years by about 3750 boats per annum. A total of about 30000 vessels are expected to be bought out by 2010 and the total fleet size reduced to about 192000 vessels. The building of new boats is also strictly controlled. Other management measures include summer banning of fishing of two to three months duration in the South and East China Seas and the Yellow and Bohai Seas. China also has a large-scale resource enhancement programme that annually produces and releases artificially reared juveniles of important commercial species into coastal waters.

52. In response to a question about whether the major issue was poor policies or poor implementation of policies, all panel members responded that poor implementation of the policies was the main issue. Many of the countries supported co-management and the involvement of stakeholders both in the development and implementation of the policies. Several highlighted the need to include politicians (especially government ministers) in this consultation process. Examples of better implementation when fishing associations/societies were formed and included were provided, especially when the consultation process included consideration of easily implementable policies.

53. It was noted also that past management had not been very successful. It was suggested that buyback programmes might not be appropriate for multi-species fisheries, noting for example the buyback programme of Taiwan Province of China, which resulted in an increase in fishing effort rather than a reduction. It was argued that the increase in the costs of fishing, especially as a consequence of the recent dramatic price rise of fuel, would result in a reduced fishing capacity. In response, it was pointed out that whereas a rising fuel price will help to reduce fleet size, by itself it would not lead to a sufficiently large contraction in fishing capacity and effort. Buyback schemes in multi-species fisheries can work, but a precondition was that entry can be and is effectively controlled.

54. Finally, it was noted that management interventions in Asia needed to be more in tune with traditional social systems and governance.

### **Pellets and fishmeal substitution**

*Albert Tacon, University of Hawaii*

55. Mr Tacon noted that although aquaculture's contribution to total world fisheries landings has increased over 93-fold from 638577 tonnes in 1950 to 59408444 tonnes in 2004, the finfish and crustacean aquaculture sector is still highly dependent on marine capture fisheries for sourcing key dietary nutrient inputs, including fish meal, fish oil and low value/trash fish. This dependency is particularly strong with respect to aquafeeds for farmed carnivorous finfish species and marine shrimp.

56. Estimates in 2004 showed that the finfish and crustacean aquaculture sector consumed 3452000 tonnes of fishmeal (52.3 percent of the total global fishmeal production of 6604229 tonnes in 2004) and 893400 tonnes of fish oil (82.2 percent of total global fish oil production of 1085674 tonnes in 2004). This quantity of fishmeal and fish oil is equivalent to the consumption of 17.4 to 21.7 million tonnes of pelagic fish (using a dry meal plus oil to wet fish weight equivalents conversion factor of four to five). Moreover, coupled with the current estimated use of between 5 to 7 million tonnes of low value/trash fish as a direct aquaculture feed source, it is estimated that the finfish and crustacean aquaculture sector consumed the equivalent of 22 to 28 million tonnes of fish (pelagic wet weight equivalents) as feed for the total production of around 32 million tonnes of farmed finfish and crustaceans in 2004.

57. Because over 90 percent of total global finfish and crustacean aquaculture production is realized within Asia and the Pacific region, there is an urgent need for the aquaculture sector to reduce its current dependence on potentially food-grade marine capture fishery resources for sourcing its major dietary protein and lipid nutrient inputs. Apart from the potential use of low-value/trash fish and feed-fishery fish stocks for direct human consumption and the finite nature of these precious fishery resources, the continued use of these fishery resources (and in particular of low-value/trash fish species) by the finfish and crustacean aquaculture sector poses major environmental and biosecurity risks to the long-term sustainable development of the sector, and in particular for small-scale cage-farmers.

58. Mr Tacon described efforts to date to find cost-effective dietary fishmeal and fish oil replacements for use within compound aquafeeds, and to develop alternative dry pellet based feeding strategies for use by small-scale farmers. Although research success to date concerning the development of cost-effective fishmeal replacements has been relatively encouraging, efforts to replace fish oil in aquafeeds or to prevent the direct use of low-value/trash fish as feed have been less encouraging.

59. As stated in the FAO Code of Conduct for Responsible Fisheries, "States should encourage the use of fish for human consumption and promote consumption of fish whenever appropriate" (FAO, 1995), and discourage the use of fish fit for human consumption for animal feeding. This is in line with the Rome Declaration on World Food Security and the World Food Summit Plan of Action, that aquaculture activities do no harm to the existing food supplies of the poor, but rather help by providing much needed affordable aquatic food produce and employment opportunities for inland and coastal rural communities.

60. The use of low-value/trash fish as feeds for aquaculture is largely directed at higher value carnivorous species. The current use is largely because of convenience and price, coupled to the lack of alternatives. Problems of low-value/trash fish use were explored, including environmental effects, overfishing and competition for food. It is recommended that low-value/trash fish use by aquaculture is restricted or prohibited, particularly where the fish might be of significance as food for poor people.

61. Constraints on the use of fishmeal and fish oil are mainly market driven. There are static supplies but increasing demands. Aquaculture products continue to demand high quantities of these products, but prices are declining (especially for the commodity species such as shrimp and salmon, but also for others, e.g. tilapia). Nutritional requirements of aquaculture species can be met from other sources but have until recently been economically unattractive. With the recent 50 percent rise in price for fishmeal over the last year, economic forces are already driving feed producers to look to other ingredients. The use of rendered livestock by-products is subject to some constraints, but these can be overcome, particularly for aquaculture where concerns of disease transfer are greatly reduced. There are particular biosecurity issues related to the use of rendered seafood products (e.g. processing wastes).

62. The livestock industry produces massive quantities of by-products, which can be rendered for animal feeds. Aquaculture has yet to explore many of these sources. Alternatives also exist in the form of new sources of proteins and fatty acids (polychaete worms), non-marine feeds, and heterotrophic systems using bacterial flocs. Seaweeds and molluscs also offer potential sources of important feed ingredients.

### **Recommendations of the APFIC Regional Consultative Forum**

63. The APFIC regional consultative forum agreed that:

*“Low value/trash fish” refers to fish that are generally of relatively low economic value and typically small sized. They can be used for either human consumption or as animal feeds (both fish and livestock). They can be used directly in aquaculture to feed other fish or processed into fish meal/oil for incorporation into formulated diets. The same is true for human food, where the fish may be consumed directly, or further processed often using traditional methods of processing small fish.*

#### **Main recommendation**

64. To address the issues associated with the increasing trend in the production of low value/trash fish taken from the APFIC region, members should improve the management of fisheries, improve the utilization of low value/trash fish for human food, and improve feeds for aquaculture.

#### **Improved Management of Fisheries**

65. APFIC members should:

- reduce trawling and pushnet effort and fishing capacity (and clearly monitor the effects of capacity reduction);
- introduce improved selectivity of fishing practices/fishing gears, particularly gear to increase the size of fish captured;
- introduce mechanisms for rights-based fisheries and co-management (to facilitate reduction in the ‘race for fish’);
- establish mechanisms to identify and protect juvenile nursery areas (refugia/closed areas, seasonal closure);

- provide alternative income generating activities; and
- link fisheries and aquaculture policies to other sectoral policies (particularly agriculture) and to more general development policies.

### **Improved utilization of low value/trash fish for human food**

66. To improve the utilization of fish and fisheries products, the region should:

- improve post-harvest fish handling for human consumption and enhance food safety measures;
- develop new fish products through processing, and
- promote the benefits of fish for improving food security and reducing poverty in the region.

### **Improve feeds for aquaculture**

67. Noting that aquaculture was growing at a rapid rate in the region and that feed for this growing industry continued, in large part, to be sourced (either directly or indirectly) from wild fish stocks, the region should:

- fast-track the change-over from direct feeding to pellet feeding (noting that shrimp aquaculture is already based on pellet feed);
- reduce fishmeal content of aquaculture feeds by substitution of suitable ingredients in pellets; and
- invest in feed research for inland/marine species.

## **THEME 2: CO-MANAGEMENT, GOVERNANCE AND INSTITUTIONS**

### **Mainstreaming fisheries co-management in Asia: Lessons learned in Asia, Africa, and the wider Caribbean**

*Robert Pomeroy, University of Connecticut*

68. Cooperative management or co-management can be defined as a partnership arrangement in which the community of local resource users (fishers), government, other stakeholders (boat owners, fish traders, boat builders, business people, etc.) and external agents (non-government organizations, academic and research institutions) share the responsibility and authority for the management of the fishery.

69. Mr Pomeroy identified the key conditions for the successful implementation of fisheries and coastal co-management in Southeast Asia. Co-management in Asia has been carried out since the 1960s, but in the early days there was little government involvement. From the early 1990s governments were more involved, especially with regards to protecting rights. Since the early 1990s there has been a move towards decentralization.

70. All countries have their own co-management scenarios and cases and there is a wide range of factors that can affect the implementation and performance of co-management related activities: from resources and fisheries to cultural and institutional factors.

71. There is a move in fisheries management towards:

- different scales of fisheries management – from individual fishers up to LMEs;
- different paradigms, e.g. ecosystems management, precautionary principle, etc.;

- a more people-based approach;
- an emphasis on good governance; and
- decentralization of fisheries management and a realization of the need for increased resource user participation in management.

72. Through consultations and negotiations, the partners develop a formal agreement on their respective roles, responsibilities and rights in management. This is crucial to determining what kind of and how much responsibility and authority to allocate to the community level. This is ultimately a political decision. The government will always hold the balance of power in co-management.

73. The drivers behind the development of co-management are often threats to livelihoods from poor management, resource conflicts, and a desire by coastal communities to be more involved. Doing co-management is doing something differently. It should be underlined that there is no blueprint or model for co-management, but rather a variety of arrangements from which to choose to suit a specific context. The countries in Asia and the Pacific region are all different.

### **Co-management in aquaculture**

*Pedro Bueno, NACA*

74. Mr Bueno considered the extent to which there is co-management in aquaculture and whether aquaculture can be managed under a co-management approach. Co-management has mostly been described through its application in the management of common resources (mostly at the community level). Varying definitions of co-management cover the need for involvement of stakeholders and the sharing of authority in decision-making. Typically, the arrangement includes state and civil society, often through the use of groups and/or associations.

75. The general trends in aquaculture in the region are towards: increasing intensification because of restrictions and limits to aquaculture expansion; diversification of species; diversification of production systems; increasing influence of markets; enhanced regulation and better governance. All of these challenge current regulatory and management mechanisms and require a higher degree of interaction between the state and the producers, as well as other stakeholders.

76. Aquaculture development and its need for resources has generated or has the potential to generate conflicts such as: (i) competition for common resources between users, including fish farmers; (ii) denial of access to common resources to some groups; (iii) social inequities that arise when the benefits from aquaculture are not equitably shared; (iv) specific people or groups reaping benefits while others bear the costs; and (v) ecosystem impacts by aquaculture and the cost of mitigating the damage or restoring the ecosystem.

77. The fundamental purpose of managing an economic resource is to ensure its sustainability through harmonious development and sharing of the benefits and the costs of such development equitably. Management approaches include command-and-control, market incentives, and voluntary arrangements. Realistically, a carrot is not always enough to induce good behaviour. Equally, morality by itself is not always enough to compel individuals to act wisely. Adherence to a code of conduct could be facilitated by the threat of punitive action.

78. A preferable approach is the integration of producers and regulators under a co-management arrangement that combines incentives and disincentives into a complementary set of governance tools. Faced with increasing difficulty with and costs of regulating aquaculture activity, greater importance is being given to voluntary arrangements and co-management practices. Their practical application is in the

adoption of good or better management practices, codes of conduct or practices by farmers and industry. Self-regulation and co-management imply divesting the government of some responsibilities. The presentation raised the question: Are market mechanisms alone sufficient to ensure that farmers' goals (of profitable production) can be balanced with broader societal goals that include environmental quality, social equity, food safety etc.?

79. The desired state of affairs is that the stakeholders have co-ownership of the development of policies and programmes to attain such objectives as equitable access to resources and a share of the returns from aquaculture, environmentally friendly and socially responsible farming, harmony, and cooperation. Some experiences in Asia show clearly that the voluntary adoption of better management practices by farmer groups leads to more environmentally responsible and economically efficient farming, as well as better quality and safer products. These are important issues in sustaining farming and accessing markets.

80. Examples of co-management applications in aquaculture were presented from a number of countries from the APFIC region and included: culture based fisheries; better management practice mechanisms and cluster management of organized farmers groups; and codes of conduct for responsible aquaculture.

81. Mr Bueno concluded his presentation by asking a number of questions:

- What is needed for the market to be able to sustain small-scale farmer groups with a minimized role for government? How can the market sustain smaller farmers?
- What could be an effective (private) institutional arrangement to sustain small-scale farmer groups?
- Given that there is a need for income generation through the market chain to support farmer servicing, who pays for the additional costs of compliance and how is this implemented?
- How can the commercial servicing of small-scale farmers be balanced with the involvement of government in servicing or extension? What are appropriate roles and when should government be involved or not?

## **Strategies and action to mainstream fisheries co-management in the APFIC region**

*Simon Funge-Smith, FAO Regional Office for Asia and the Pacific*

82. The APFIC regional workshop on mainstreaming fisheries co-management (Siem Reap, Cambodia, 9-12 August 2005) acknowledged that the co-management of fisheries is widely practiced in most countries in Asia and the Pacific region, but noted these were mostly undertaken through traditional arrangements or on a pilot/demonstration scale through projects. Although these pilot/demonstration schemes have shown that economic, social and environmental benefits can be achieved, countries in Asia and the Pacific region are urged to move towards more organized implementation of co-management at local, provincial and national level, i.e. they should mainstream fisheries co-management. This should build on existing co-management and community-based arrangements where available.

83. A number of challenges to successful co-management was highlighted, including poverty levels of fishers in the region; limited communication of the benefits of co-management; resource constraints; weak governance frameworks and poor institutional linkages, the lack of integration of fisheries management with other policy developments such as decentralization and poverty reduction.

84. Mr Funge-Smith listed various strategies and actions to facilitate the mainstreaming of fishery co-management in Asia and the Pacific region for further consideration by the forum. These were:

- demonstrate and communicate the benefits and importance of co-management, to promote the scaling up of pilot/demonstration activities.
- provide an appropriate national policy and legislative frameworks.
- ensure legitimate representation of, and trust among, stakeholders.
- strengthen human/institutional capacity of stakeholders to enable co-management.
- empower fishing communities to engage in co-management.
- establish, enhance and increase linkages and communication.
- focus research and learning on fisheries co-management.
- make available and support sustainable financial arrangements for fisheries co-management.

## Country experiences with co-management

### *Brief presentations from APFIC Members*

85. This session consisted of brief presentations from representatives of the APFIC member countries.

86. **Australia** – Co-management has been implemented in Australia with a trend towards smaller management units. Both information technology and developments in science and technology have had a profound impact on the ability to engage in co-management. This is particularly the case with tracking and information management, as well as with the increased interaction and engagement between stakeholders. There is now a greater expectation of being consulted in decision-making and a policy to devolve more management powers from national to state or local level. Australia has three pillars for management of the natural resource base:

- environmentally sustainable development (balancing the needs of environment, economy and society);
- management (linking government, industry and communities); and
- governance-based standards (linking national, state and local levels).

87. **Bangladesh** – The co-management process was initiated by the sensitization of fishers and the organization of fishing communities in village organisations into gear-based fisheries maintenance organizations/community-based organizations (FMOs/CBOs) and FMAC. Training and workshops were conducted and multi-stakeholder committees, including NGOs, established at local levels. Administrative steps taken include the identification of locations and the number of illegal gears, supportive policy, and recognition of CBOs and the establishment of a mobile court. Surveys have suggested significant benefits in terms of resources and marketing. Efforts have so far been based most strongly on inland fisheries.

88. **Cambodia** – The move to co-management started in 2000 when the Prime Minister released more than 56 percent of a total ‘fishing lot’ concession area of 536302 ha to local people. Since then Cambodia has developed legal instruments in the form of a new fisheries law, a sub-decree on community fisheries, and community fisheries guidelines. Institutional support is available at national level (the Community Fisheries Development Office – CFDO), at provincial level (community fisheries development units – CFDUs), and local level (community fisheries committees – CFCs). There have already been two rounds of impact assessment, which show local people now have greater access to fishing grounds and improved incomes. There is also increased awareness and a decreased number of conflicts related to resource utilization between lot owners and small-scale fishers. The main issues remain the low capacities of CFCs, and the fact that many of them do not function well. The majority are still lacking management plans, boundary maps, and a functioning committee. There is now a need to strengthen CFCs and provide motivation and incentives, support networking, promote cooperation of CFCs with commune councils and support livelihood diversification.



89. **India** – Union government has authority outside territorial waters and states have authority over other inland marine areas. There are co-management arrangements in the form of: a) collection and fattening of lobster rather than harvesting them too young, where the state provides finance to local banks so that communities can get access to necessary finance; b) use of fish aggregating devices (FADs), where the state defines areas, researchers input, and fishermen’s groups are custodians. There are significant advantages of these arrangements, but they also need careful regulation to avoid over-development or inappropriate developments (e.g. too many operations, dumping of materials in the sea to act as FADs).

90. **Indonesia** – The country has customary laws/practices (e.g. *Panglima Laut*), and since 1957 licensing has been decentralized. More formal systems of co-management have been in place since 1997, supported by the Fisheries Law of 31/2004 and the Autonomy Law 32/2004. Management plans are developed using a combination of top-down (central to local fisheries agencies) and bottom-up (fisheries to groups and their representatives) approaches. The major objective is “poverty alleviation through increasing public awareness without increasing fishing capacity.” Constraints include limited human and institutional capacity and lack of good knowledge of stocks. Key lessons learned from this process are the importance of participation of the local community, and the importance of ensuring that laws and regulations are specific to the local context.

91. **Japan** – Records of traditional community management systems date from 600 AD. In 1875, the introduction of a complete institutional reform saw the introduction of a top-down centralized system. This led to a chaotic situation and serious conflicts between fisheries. A new law was introduced in 1901 under which fishing rights and licences were articulated. However, there was no control over transfer of rights and this led to the concentration of rights holdings. Further reform led to the current law (1949), which ensures that fisheries coordination is based on democratic decision-making processes and fishing rights that are subject to limitations and obligations. There are various levels of coordinating organizations. Currently, emerging issues include non-competitiveness and multiple coastal uses, thus the process of ‘trial and error’ is still ongoing, emphasizing that co-management is also a co-learning process.

92. **Republic of Korea** – There has been a paradigm shift in fisheries management (mainly since 2001) from a top-down approach to one of fishermen’s participation and voluntary management. The government’s responsibilities for management are now shared with fishermen. Fishermen’s role has changed from “users” to “users and resource managers”. Community activities under this system include fishing ground management (collecting lost gear, etc.), fisheries management (mesh size rules, etc.), and production management (catch limits, length restrictions, etc.). Key lessons from this are that building leadership is critical, a government role and political will are important, and incentives are necessary. Future activities will include the establishment of an evaluation system, an income analysis process, and a civil society consultation system.

93. **Malaysia** – An example of successful co-management in inland fisheries is the *tagal* system in Sabah. As a result of its extension, many river fish populations have been revived in the last three years. State laws empower communities to establish regulations for their resources (Sabah Inland Fisheries and Aquaculture Act 2003). Under the *tagal* system, the local community forms a committee, identifies sites, and harvests once or twice per year and shares the catch equally. The community also liaises with the Department of Fisheries (DOF), which gives technical advice and has assisted in setting up a model *tagal*. DOF promotes the system, monitors progress and engages in dialogue with fishers and capacity building, gives material assistance and helps to promote ecotourism in *tagal* zones where no harvesting is allowed. The *tagal* committee’s responsibilities include paying a fee, deciding on a closed period, deciding on fines and holding meetings. Communities protect the site using signboards and through community and peer pressure. Key lessons are that you must have strong support and cooperation from all stakeholders, especially village heads, and committed department staff, and that zoning of *tagal* sites is important. There are now 244 *tagal* sites with plans to increase to 400 *tagal* sites by 2010.

94. **Myanmar** – The country is exploiting its fisheries in accordance with estimates of maximum sustainable yield (MSY) with the fishery being divided into inshore and offshore fisheries. Offshore fisheries are using trawling, purse seines and longlines. Aquaculture development has grown to 164 000 ha under cultivation. Production and marketing of eels provides an example of co-management in Myanmar. Government specifies minimum sizes, and an Eel Association has been established. There is joint monitoring of eels, and collectors have a chance to export. Greater private sector participation in co-management is important for sustainable fishery development. There are now many associations for different sectors of the industry, with regular meetings between associations and government.

95. **Nepal** – Since the 1980s there has been a public/private partnership in the fisheries management of water bodies, establishing legal regulations, conservation awareness and environmental protection. Ongoing co-management activities include cage fish culture in Lake Phewa (420 ha with 300 beneficiary families). Another example is cooperative fish harvesting in Lake Rupa.

96. **Pakistan** – Fisheries only contribute 0.3 percent to the country's GDP. Marine aquaculture has not really started yet in Pakistan, but inland aquaculture is growing rapidly. There is one major fisheries cooperative society, with the membership mostly comprising marine fishers. There was a community development project between 1991 and 1994 in Punjab. There is a need to establish greater sectoral representation for co-management. Government has an important role in providing models that can be replicated by the private sector.

97. **Philippines** – There are a wide range of coastal co-management interventions including marine protected areas (MPAs), Resource Enhancement Projects (REPs), community-based coastal resource management (CB-CRM), Fisheries and Aquatic Resources Management Councils (FARMCs), *bantay dagat*, aqua-silviculture, fish sanctuaries, municipal ordinances, and mangrove rehabilitation. Less attention has been given to inland fisheries, although some co-management activities are beginning in terms of lake management plans and protected area management. Methods of inland resource management may not be easily replicable.

98. **Sri Lanka** – Total production was 286370 tonnes in 2004, with exports of US\$94 million. Co-management is practiced in inland and marine fisheries. But in coastal waters, boat numbers have increased steadily since 1980 and fish production and catch per unit of effort (CPUE) are declining. Negombo lagoon has been used as a pilot area to form fisheries management committees and a fisheries management authority. Regulations have been implemented and are being enforced.

99. **Thailand** – The Department of Fisheries (DOF) has implemented various patterns of co-management or community-based management. DOF has been encouraging self-regulatory fisheries activities, and providing capacity building and training. The legal framework also allows for local communities and fishers to manage their own territories, and local acts and dispensations are provided and the 1947 legislation is being reviewed/updated. There have been three prominent pilot sites for community based resource management in Phang Nga Bay, Bang Saphan Bay, and Pathiew District in Chumphon province. There are also several fisher groups on the coasts of the Gulf of Thailand and the Andaman Sea involved in management activities. Other sites are planned. The Bang Saphan project has been successful (strong voluntary participation, reduced conflicts and a sustainable revolving fund). There have also been successes in the Phang Nga Bay project (central market, good research, good ecotourism) and the Pathiew project (good research, success in small business development). But there are some weak points in each project too. In the Bang Saphan project there is a weak fisher community network, ecotourism is not well developed, and no law and legal support to prevent outsiders coming in). In the Phang Nga Bay project there is weak participation in monitoring, control and surveillance (MCS), and weak waste management for tourists. In the Pathiew project there is weak participation in MCS, and no law and legal support to prevent outsiders coming in).

100. *Viet Nam* – An example of co-management can be found in Tam Giang lagoon (22000 ha stretching through five coastal districts, and with 400000 inhabitants with one third being direct users of the lagoon). Traditionally, there was no planning between aquaculture development and capture fisheries. A pilot model has established fishermen’s organizations and fisheries management. The fisheries sub-association has its own legal entity. Results have included planning, rearrangement of fishing grounds, and water traffic circulation to create a better environment. A rule on fishing ground self-management was approved in 2003. The pilot model is being scaled up to 14 self-associations in the province. These self-associations are self-financing, and can get group-use rights.

### **What are fishery rights?**

*Suriyan Vichitlekarn, Southeast Asian Fisheries Development Center (SEAFDEC)*

101. Mr Vichitlekarn covered fishery rights issues in the context of the various problems affecting fisheries in the region, including overfishing and overcapacity, use of destructive fishing gears and practices, conflicts of various users’ interests and the lack of appropriate regulatory systems. The consequent deterioration of the state of the fisheries and declining economic returns have aggravated poverty, particularly in small-scale fisheries in inland and inshore waters. Fishery rights are increasingly considered as a management tool and implemented in the region to address these problems. Noting that rights come with duties/responsibilities, different forms of rights in fisheries can be distinguished, including territorial use rights (TURFs), input rights (e.g. limited entry/licensing) and output rights (e.g. harvesting quotas). Rights of use or access need to be differentiated from ownership rights, which usually rest with states. In the absence of accompanying management measures, limited entry has generally failed because it does not effectively curtail the ‘race to fish’.

102. In the context of its effort to provide guidance on the adoption of the Code of Conduct for Responsible Fisheries and in support of the 2001 Resolution and Plan of Action on Sustainable Fisheries for Food Security for the Association of Southeast Asian Nations (ASEAN) region, SEAFDEC developed regional guidelines for co-management using group user rights. The guidelines provide consideration on policy and legal support, understanding on group user rights, co-management mechanisms and local fisher institutions as well as on the steps needed when implementing a rights-based fisheries management system. Licensing and community/group user rights were considered appropriate for commercial/industrial fisheries and small-scale fisheries, respectively, in the region. Whether the process of introducing rights-based fisheries management should start as a top-down or a bottom-up process or as a mixture of both would largely depend on the specific context in each country.

103. The costs (transitional costs) and benefits (e.g. greater compliance; reduced management costs) of adopting rights-based fisheries management systems need to be carefully assessed and there was often a need to support institutional and legal frameworks. Traditional rights systems usually require appropriate adaptation to deal with the rapid changes that fisheries face in today’s world.

104. In conclusion, emphasis was placed on the importance of local institutions for effective co-management, economic activities to strengthen the established community-based institutions to be financially sustainable/viable, and the need for supporting regional collaborative mechanisms.

### **Recommendations of the APFIC Regional Consultative Forum**

105. Noting that fisheries co-management includes both fisheries (marine and freshwater) and aquaculture activities, the forum recommended that fisheries co-management be mainstreamed in national systems of management in the countries of Asia and the Pacific region, building on previous activities.

106. In this context, fisheries co-management can be defined as:

*a partnership approach where government and the fishery resource users share the responsibility and authority for the management of a fishery or fisheries in an area, based on collaboration between themselves and other stakeholders.*

107. The mainstreaming of fisheries co-management should be achieved by various actions of APFIC members and other parties.

APFIC members should:

- invest adequate resources in developing co-management and allocate appropriate budgets for fisheries co-management practices at all levels (noting that it often takes significant time to build up the trust and capacity for successful co-management);
- ensure that co-management addresses key national policy objectives such as reducing overexploitation of fish stocks and overcapacity in both marine and freshwater fisheries, and poverty reduction, possibly through rights-based approaches;
- review, develop and amend national fishery policy and legislation (where necessary) to support fisheries and aquaculture co-management, particularly supporting the right of stakeholders to be involved in management (inclusion/reference to the use of rights-based fisheries as a tool for aiding implementation of co-management);
- define and communicate the respective roles and responsibilities of all stakeholders (including government and regional/intergovernmental organizations);
- establish agreed objectives for fisheries co-management at the operational level (through dialogue and negotiation with fishery communities and civil society organizations/NGOs);
- assist in the empowerment of communities, and ensure equitable distribution of the benefits of co-management, with special emphasis on the livelihoods of small-scale users;
- facilitate human and institutional capacity building at all appropriate levels across communities and scales, particularly ensure that government staff at all levels are adequately skilled and experienced to facilitate the implementation of fisheries co-management (focusing on participation, communication and building partnerships);
- facilitate the creation of effective institutional arrangements and linkages among the major stakeholders at all levels, building on existing arrangements (including better cross-sectoral integration and communication where appropriate for fisheries co-management).

All parties should:

- share information and experiences on co-management between members, including information on costs and benefits, via lessons learned; and
- encourage research agencies to undertake applied research that meets high priority needs of major stakeholders, particularly utilize traditional knowledge, management practices and experience (as a prerequisite, co-management stakeholders may need to develop mechanisms to prioritize and communicate research needs).

## THEME 3: POLICY CHALLENGES

### Fishery and aquaculture policy direction in APFIC countries

*Graeme Macfadyen, Poseidon Aquatic Resources Management Ltd.*

108. A policy review of member countries was undertaken to provide a regional synthesis of topical policy issues and to consider key policy drivers. The methodology used was to examine national policy documents and legislation and to score key policies issues according to the extent to which they were mentioned and/or detailed in these documents. This scoring process enabled data on these key policy issues to be presented in a standardized format.

109. Generally, most countries have appropriate and comprehensive policy directions although trade-offs between alternative policies are not often mentioned. There is some question about whether stated policies are realistic given the apparent status of some fish resources (e.g. inshore coastal fish stocks). Also, there is often a lack of detail as to the practical and realistic implementation of stated policies although strategy documents and master plans provide additional details in some countries. Most policy documents reviewed have provision for regular reviews, which provide opportunities for revisions. Key findings of the review were as follows:

- Eighty-five percent of countries have specific aquaculture production targets and 79 percent of countries have capture fisheries production targets.
- Aquaculture management targets are less commonly used and 59 percent of countries have capture fisheries management targets.
- Most countries have policies related to IUU fishing.
- Community and co-management approaches are mentioned in most policy documents.
- More than 80 percent of countries have specific policy support for decentralization and offshore expansion.
- Eighty-six percent of policy documents mention reduction in fishing capacity.
- More than 80 percent of policies include actions for cross-sectoral coordination.
- Conflict resolution methods are mentioned in more than 80 percent of policies and more than 60 percent of policies mention ecosystem management.
- Use rights are less commonly included in policy documents.

110. There is still a need in some countries to develop specific fishery policies. There may be conflicting national policies between fishery and aquaculture subsectors and with other activities (e.g. trade conservation, environment).

111. There are inconsistencies between national policies of countries (particularly neighbouring countries), which would benefit from a degree of harmonization. There is a lack of reference in many national policies to international and bilateral arrangements.

112. Major challenges exist in many countries with respect to operationalizing fisheries policy, and in the detailed planning required for implementation of policy, i.e. specification of activities, allocation of responsibilities, use of indicators, provision of appropriate budgets, etc. Targets for increasing capture fisheries may be based more on goals related to increasing production or may be based more on economic planning goals rather than sustainable use of resources and a realistic assessment about resource potential. Where fisheries management is in place in the region, the costs are increasing. However, policies in the region do not always specifically indicate where revenue could be obtained.

113. Targets for aquaculture production may not reflect future challenges and potential future resource constraints (as well as opportunities for increasing aquaculture production). Most policies in the region refer to the expansion of offshore fisheries, even though the potential of offshore resources and the economic viability is, in many cases, not well known.

114. Most policies refer to the need to increase value-added in the context of pre-harvest and post-harvest activities, but there is less mention of the need/ability to increase value-added throughout the supply chain (especially at the harvesting level) and in related activities. Most policy documents include provisions for subsidies and traceability or certification measures. However, there is little mention in policy documents of tariff barriers, reduced subsidies or support for use charges.

115. Although most policies refer to both poverty alleviation and increases in exports as key objectives, few are specific about the need to address distributional aspects and impacts of trade. Microfinance (a form of credit) is increasingly recognised as an important tool in bringing about poverty alleviation, but is not widely referred to in fishery policies in the region.

116. The forum discussed whether the issue of food security was defined sufficiently well in policy documents. In addition, it was questioned whether it was realistic or appropriate to have a goal of sustaining or increasing employment in an environment where there are declining resources.

### **Development and poverty reduction strategies in the APFIC region: integrating fisheries into the development discourse**

*Andy Thorpe, University of Portsmouth*

117. Mr Thorpe emphasized that as Asia is the foremost capture fishery and aquaculture producer in the world, there is every reason to expect that this importance would be reflected in the national development discourse. The socio-economic importance of fisheries in the region in terms of their contribution to primary exports, domestic protein consumption, employment and the incidence of poverty within fishing communities was examined.

118. Fisheries and aquaculture are not often considered in government development and poverty reduction policy and the study examined the key issue of whether the fisheries sector is included in poverty reduction and national development plans in APFIC countries. Four questions were posed and a scoring system developed to rate countries' responses. The questions posed of the poverty reduction and national development plans were:

- Do they refer to fisheries issues?
- Do documents refer to causal linkages?
- Do documents specify a response to the issues?
- Is there a process identified?

119. The study also considered whether the likelihood of inclusion in a poverty reduction strategy paper (PRSP) was affected by the size/importance of the national fisheries sector and to what extent fisheries are a 'motor of growth'. The methodology used was the plotting of fish consumption (as a proportion of total protein consumption) against fisheries exports as a proportion of total agricultural exports. This revealed that in countries where fisheries are less important, the sector is less likely to be mentioned in PRSP and national development plans (NDPs). In countries where fishers are an important group (i.e. fisheries is a refuge for the poor) there is an increased likelihood that the sector will be included in PRSP and NDPs. Importantly, it was shown that APFIC countries score higher in including fisheries in PRSPs and NDPs than other regions.

120. To further increase the prominence of fisheries and aquaculture issues in national development and poverty reduction plans, it was suggested, based on experience from other sectors, that:

- There needs to be increased attention on fisheries and aquaculture at the regional level, perhaps by developing ‘flagship’ projects to highlight the importance of the sector.
- Links should be established with United Nations Development Programme (UNDP) to jointly develop strategies for the equitable development of fish trade.
- As the Asian Development Bank (ADB) was ceasing its fisheries support programme, countries of the region, as a group, should work with ADB to develop a new ADB fisheries policy.
- APFIC should encourage a greater emphasis on sustainability of fisheries rather than development in the region, and APFIC should monitor the status of regional fisheries.
- APFIC should encourage member countries to ensure that policies outlined in national poverty reduction and development plans were acted upon in a timely manner.

### **Integrating fisheries into large marine ecosystem/regional seas arrangements**

*Chris Paterson, United Nations Environment Programme/Global Environment Facility (UNEP/GEF)  
South China Sea Project*

*Xianshi Jin, Yellow Sea Fisheries Research Institute*

*In Kwon Jang, West Sea Fisheries Research Institute*

121. Three presentations were made covering large marine ecosystem initiatives in the APFIC region. The need to integrate fisheries issues into broader frameworks for marine resource and environmental management has recently received high-level international recognition. Several initiatives including the UNEP Regional Seas Programme, and others based on the concepts of large marine ecosystems (LMEs) and marine protected areas (MPAs), have been introduced over recent decades as mechanisms for improving the integration of fisheries and environmental management.

122. The medium term objective of the UNEP/GEF South China Sea Project to elaborate and agree at an inter-governmental level, the Regional Strategic Action Programme, has necessitated the development of a conduit for merging fisheries issues with actions aimed at improving environmental management in areas of the South China Sea and the Gulf of Thailand. An important area of work of the UNEP/GEF Regional Working Group on Fisheries is the establishment of a regional system of fisheries refugia based on areas of critical importance to fished species. The aims of such a system are: (a) to improve the understanding amongst stakeholders of ecosystem and fishery linkages, as a basis for integrated fisheries and habitat management, and (b) to build the capacity of fisheries ministries and departments to ensure that fisheries issues are integrated into overall marine management frameworks.

123. Another important area of work is the review of fishery resources. In the Yellow Sea, analysis shows that increasing levels of fishing effort over the last half century have greatly impacted the abundance and composition of fishery resources. In the 1950s, the economically important species were small yellow croaker (*Pseudosciaena polyactis*), large head hairtail (*Trichiurus haumela*) and fleshy prawn (*Fenneropenaeus chinensis*) etc. With the increase of fishing effort, the abundance of these species declined one after the other. In the early 1970s, the stock of Pacific herring (*Clupea pallasii*) exploded and became a major fishing target in 1972 leading to depletion within a few years. In the 1980s, the stocks of some other pelagic fish like half fin anchovy (*Setipinna taty*), Japanese anchovy (*Engraulis japonicus*), chub mackerel (*Scomber japonicus*) and Spanish mackerel (*Scomberomorus niphonius*) showed increases, with Japanese anchovy becoming most abundant in the mid-1980s. In recent years, however, this stock declined to a low level.

124. Another important area of work is the reduction of environmental stress on the Yellow Sea LME through the adoption of better mariculture practices. This work consisted of an initial assessment of the environmental impact of mariculture during the last decade, followed by an applied research programme and pilot demonstration activities of improved culture practices with lower environmental impacts.

125. In the area of integrated coastal governance, the Yellow Sea LME promotes activities such as the establishment of coastal green belts, the designation of wetland conservation, reserve islands, wildlife conservation and ecosystem conservation areas, as well as the management of special areas for acceptable coastal pollutant levels.

## **Recommendations of the APFIC Regional Consultative Forum**

### **National fisheries and aquaculture sector policy**

126. The APFIC regional consultative forum noted that in most cases countries in the APFIC region have ‘good policy content’ and elements of ‘best practice’ contained within their fisheries and aquaculture policies.

127. All policies in Asian APFIC countries refer to the need to tackle illegal fishing and propose the use of reserves or (marine) protected areas or similar area-based restrictions. Almost all policies in the region state food security, poverty alleviation, community/co-management, decentralization, capacity reduction, improvements in administrative efficiency, and cross-sectoral collaboration as policy objectives.

*However, the APFIC regional consultative forum also noted a number of concerns with respect to policy in the region.*

#### *Policy gaps*

- There are inconsistencies between the national policies of countries (particularly neighbouring countries), which would benefit from a degree of harmonization.
- There may be conflicting national policies between fishery and aquaculture subsectors and with other activities (e.g. trade, conservation and environment).
- There is still a need in some countries to develop specific fishery policies.
- There is a lack of reference in many national policies to international and bilateral arrangements.
- Most policies in the region refer to the expansion of offshore fisheries, even though the potential of offshore resources and the economic viability is in many cases, not well known.
- The need to introduce rights-based fisheries management is not widely included in policy in the region.
- Although most policies refer to both poverty alleviation and increases in exports as key objectives, few are specific about the need to address distributional aspects and impacts of trade.
- Most policies refer to the need to increase value-added in the context of pre-harvest and post-harvest activities, but there is less mention of the need/ability to increase value-added throughout the supply chain (especially at the harvesting level) and in related activities.
- Microfinance (a form of credit) is increasingly recognized as an important tool in bringing about poverty alleviation, but is not widely referred to in fishery policies in the region.
- In most policy documents there are few if any references to gender-related issues, although marginalized groups in general may be referred to under ‘poverty alleviation’.



- Where fisheries management is in place in the region, the costs are increasing. However generally within the region, there is relatively limited investment in fisheries management, and policies in the region do not always specifically indicate the new sources of revenue that will be required.

#### *Implementation issues*

- Major challenges exist in many countries with respect to operationalizing fisheries policy, and in the detailed planning required for implementation of policy, i.e. specification of activities, allocation of responsibilities, use of indicators, provision of appropriate budgets, etc.
- Targets for increasing capture fisheries production may be based more on economic planning goals rather than the sustainable use of resources and a realistic assessment about resource potential.
- Targets for aquaculture production may not reflect future challenges and potential future resource constraints (as well as opportunities for increasing aquaculture production).
- Restricted or reserved areas (including MPA) may not always be effective or appropriate in certain cases, often lying outside the mandate of the national fisheries department.

#### **Poverty reduction strategy papers (PRSPs) and national development plans (NDPs)**

128. The forum noted that, in general, the fisheries sector is relatively well-covered in national PRSPs and NDPs, especially in countries where: (i) fisheries exports make up a large proportion of agricultural exports; (ii) fisheries make a large contribution to domestic protein requirements; (iii) there are large numbers employed in the fisheries sector; and (iv) there is a high level of rural poverty.

#### *However, the APFIC regional consultative forum:*

- *noted that* countries in the region could be doing more to link with and influence the policies and activities of international agencies, e.g. United Nations Development programme (UNDP), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) Sub-Committee on Poverty Reduction Practices;
- encouraged countries to fulfil their targets indicated in PRSPs and NDPs (noting that policy is a dynamic process and to ensure the inclusion of fisheries in new PRSP and other future policy documents);
- considered that support to the fishery sector would be better directed in the form of support to improved management of fisheries (including management of fishing capacity) and aquaculture; and
- noted with concern that specific support to the fishery sector has been de-prioritized by the Asian Development Bank.

#### **Regional environmental management of large marine ecosystems (LMEs)**

129. Ensuring the effective inclusion of fisheries issues into broader frameworks for marine management is an emerging policy challenge for the region. Efforts to meet this challenge are constrained by:

- limited practical experience in the implementation of such approaches;
- low-level awareness of the extent of the partnerships required to manage fisheries; and
- environmental management and environment initiatives not involving mechanisms that foster the effective integration of fisheries considerations into multiple-use management frameworks.

130. The APFIC regional consultative forum noted that regional experience suggests that overcoming these challenges will require:

- improving the understanding among fishing communities, managers, and policy makers of ecosystem and fishery linkages, as a basis for integrated fisheries and habitat/ecosystem management; and
- building the capacity of both fisheries and environment ministries and departments to ensure that issues facing the fisheries sector are integrated into overall marine management frameworks.

131. Conduits for integrating fisheries into overall management frameworks should:

- focus on linkages between fish life-cycle and critical habitat;
- be easy for fishing communities, local government officials, and fisheries managers to relate to; and
- provide a suitable platform for the fisheries sector in best representing fisheries issues in fora relating to multiple-use marine management.

132. Experience indicates that the LME programmes engage in specific useful aspects of fisheries management, however, they do not deal with some of the most important aspects such as capacity management. It is suggested that LME programmes should make an effort to incorporate important fisheries management actions into their programmes.

## **THEME 4 (I): EMERGING ISSUES – FOOD QUALITY AND SAFETY IN THE CONTEXT OF TRADE**

### **Emerging issues and requirements relating to food safety and trade**

*S. Subasinghe, INFOFISH*

133. Mr Subasinghe covered the major trends in the global seafood trade and how this relates to Asia and the Pacific region.

134. In the USA market, significant trends are the continuing rise of culture shrimp in the global market, as well as the more recent emergence of cultured tilapia and *basa* catfish. Tuna (canned) is in decline because of the declining consumer demand in the USA market and now shrimp has replaced this. In the European Union (EU) markets (with France, Germany, Italy, and Spain as major consumers) there is a sustained increase in consumption and demand by the EU countries for all products, both fresh and frozen, from Asia and the Pacific region. China is the principal exporting country for Asia and the Pacific region (shrimp and finfish) India and Thailand export shrimp and Viet Nam is a major exporter of *basa* catfish. EU is a major market for cooked and frozen tuna loins. The Japanese market is still depressed from earlier highs (in 2000), particularly for frozen products, although value-added products are increasing. Japanese household consumption has decreased from ~60 kg per capita to ~49 kg per capita. Changing food habits are partly responsible for this decrease, e.g. increased dining out and purchasing from supermarkets (processed products). China imports are increasing and consumption is also increasing. Increased purchasing power is also driving the import of more expensive products. China is importing from all regions (frozen shrimp, squids, cuttlefish, cultured salmon).

135. Tariff barriers are increasing with developed countries having lower tariff barriers but higher non-tariff barriers than developing countries. The slow progress of World Trade Organization (WTO) negotiations is leading to a proliferation of free trade agreements and bilateral arrangements. There is also

a recent rise in anti-dumping measures, however, this does not appear to be affecting sales overall as flexible marketing allows products to be redirected (e.g. Viet Nam catfish redirected from the USA market to the EU market). Traceability requirements and food safety legislation are rising. Labelling and labelling fraud is also rising, particularly with mislabelling between wild and farmed product.

136. Supermarket purchasing power is a strong influence on global trade and is emerging in both developed and developing countries alike. The power of supermarkets is strongly affecting markets and trade, which are also increasingly influenced by environmental lobbying. Schemes for certification of products are proliferating, and branding is becoming an important marketing mechanism as countries, or parts of the sector, try to protect their market share. Organic certification and labelling is increasing, however, there are issues with certification and labelling because of the lack of international/global standards. Ethical issues (particularly humane slaughtering and non-sale of live fish) are increasingly becoming part of harvesting management.

### **Improving production standards to meet consumer requirements**

*Lahsen Ababouch, FAO Department of Fisheries*

137. The international fish trade has expanded and globalized significantly during the last decade. In fact, fish and fishery products are the most traded foods in the world. Thirty eight percent (live weight equivalent) of the total yearly production, estimated at around 140 million tonnes in 2004, enter international trade.

138. Whereas fish supply from wild capture fisheries has stagnated over the years, the demand for fish and fishery products has continued to rise. Consumption has more than doubled since 1973. This increasing demand has been steadily met by a robust increase in aquaculture production, estimated at around 45 million tonnes in 2004 or 32 percent of total world fish production, from a mere 3.9 percent in 1970.

139. There has been an increasing focus on food safety in the international trade in seafood products. The main regulatory framework in the fish and seafood trade is the Agreement on the Application of Sanitary and Phytosanitary Measures and the Technical Barriers to Trade (TBT) Agreement, often referred to simply as the SPS and TBT agreements. In the finalization of these agreements, the main issues have been liberalization of trade while providing for proper consumer, animal and plant protection. The SPS and TBT agreements are based on a number of general principles. These are:

- Sovereignty
- Harmonization
- Equivalency
- Scientific basis
- Transparency
- Technical Assistance
- Special and differential treatment
- Consultation and dispute settlement

140. The SPS agreement recognizes the Codex Alimentarius Commission (CAC) and the Organisation Internationale des Epizooties (OIE) as the international standard setting bodies, respectively for food safety and animal health, including live aquatic animals. However, there is still much to do to harmonize the many different fish safety schemes and standards.

141. The increased globalization and expansion of the international food trade has led to the development of an important retail and supermarket system, which is expanding rapidly to developing countries in Latin America, Asia and Africa. As the last link between suppliers and consumers, retailers are developing business to business (B2B) standards to protect their reputation.

142. Likewise, food demand has been changing with the evolution of lifestyles, demographics and increase in household incomes. Increasingly demanding consumers expect not only safe and quality foods, but also a transparent and informative trail that can be used to trace the origin of food, its quality, as well as the environmental and/or social conditions of its production, processing and distribution. It is important to underline that both producers and processors are responsible for fish safety and quality along the food chain using preventive systems good aquaculture practices/good management practices (GAP/GMP), good hygienic practice (GHP), the Hazard Analysis and Criteria Control Point (HACCP) system. It is the responsibility of the control authorities to provide a regulatory framework and verify that producers and processors properly apply preventive systems.

143. It is a difficult balance to achieve good consumer protection and at the same time not enact sanitary and phytosanitary (SPS) measures and technical standards that can be used to shield domestic producers from foreign competition.

144. There is some concern that small-scale fishers and unorganized farmers are at a disadvantage in trade if measures that are too strict are put in place on food safety issues (e.g. HACCP). It is important to discuss what small-scale farmers can do to address these issues and what impact potential standards will have on these farmers. It was also noted that there is a potential for small-scale fishers and farmers in developing countries to do better to improve food safety standards. It was suggested that the main importing countries are not ready to lower food safety standards.

145. Standards for the global market need a competent authority to harmonize the standards. But it is up to the countries to nominate the institution(s) and the structure of fish control.

### **The Marine Stewardship Council (MSC)**

*Alice McDonald, Marine Stewardship Council*

146. The MSC aims to contribute to reversing the decline in global fish stocks by harnessing market forces to drive improvements in fishing practices. This is achieved through an independent, market-based certification and ecolabelling programme that promotes the best environmental choice to consumers and the trade. The MSC is operating in an increasingly favourable market environment, where consumers, the media and the trade are showing increasing interest in, and commitment to, sustainable seafood.

147. After a period of establishment and foundation building, the MSC is experiencing an expansion in global fisheries certification and market presence. In order to capitalize on experience and continually improve its programme the MSC is currently undertaking a number of strategic projects, including: a review of the quality and consistency of assessments against the MSC standard; developing assessment methodology; guidance to ensure equal access to small-scale and data-deficient fisheries; ensuring 100 percent consistency with the FAO guidelines for ecolabelling of fish and fishery products; and considering a potential MSC role in aquaculture certification.

148. These strategic initiatives will strengthen the organization, allowing the MSC to continue to encourage positive change in fisheries management. Asia and the Pacific region presents a number of challenges to the MSC because of the region's size and the diversity of fisheries and management schemes in place. However, being home to the largest tuna and aquaculture production areas of the world, the largest single country market and importer of seafood (Japan), and the two largest seafood consuming nations (China and Japan), the region is pivotal to the long-term achievement of the MSC's mission.

149. The main principles that are covered by the scheme, are sustainability of the stock, ecosystem impact and effective management. Entry to the scheme is by voluntary application, and assessment is undertaken by third party certifiers. A certified fishery can market products using the MSC label. Fisheries also commit to continuous improvement in order to maintain their MSC certification where appropriate. There are currently 21 certified fisheries and 16 currently under assessment, representing six percent of the global edible wild catch. There are currently 387 products in 26 countries that are derived from MSC certified fisheries. However, they are currently mainly available in the USA and the EU.

150. Experience with the MSC scheme has shown a broad range of benefits affecting the environment, society, industry and governance. In addition, market benefits can include market security, price premiums, access to new markets and product differentiation. For the industry, the scheme requires sustainable harvesting and good management, and traceability aspects of the certification can assist in marginalizing seafood products from IUU fishing activities.

151. It is essential that ecolabelling schemes are consistent with international instruments for standard setting and certification. This is to ensure that they are credible, robust and equally accessible by all interested parties. Although there are constraints in access to ecolabelling schemes for small-scale, developing countries' fisheries, ecolabelling is increasingly relevant to these fisheries. Constraints to entry include the information and data requirements, the costs associated with monitoring of the fishery and the costs of assessment for certification. MSC is currently looking at a number of ways to address these constraints, including finding sources for fisheries and reliable methods for assessing and certifying sustainable fisheries in data deficient fisheries (using local ecological knowledge etc.). In the Asian region, there is one fishery in assessment in Japan (snow crab and flounder) and there are two fisheries in Viet Nam currently in preliminary assessment.

152. Command and control mechanisms are of value, but can be more effective when complemented with positive incentives, such as those that ecolabelling can offer. Ecolabelling provides a range of opportunities to fisheries in Asia and the Pacific region, however, it is not a cure-all. Ecolabelling works alongside and complements existing fisheries management approaches in ensuring responsible fisheries.

### **Ecolabelling of aquatic products in ASEAN countries: mission possible?**

*Rattanawan Mungkung, Kasetsart University*

*Mali Boonyaratapalin, Martin Bjerner, Niklas Wennberg*

153. Ecolabelling, i.e. environmental labelling, is introduced to support the sustainable trade of fisheries and aquaculture products as well as the sustainable livelihoods of local people in ASEAN countries who are the main global producers. These issues are even more important because of the increasing consumer demand for products that are environment-friendly, especially in Europe.

154. Because of the many questions raised over the advantages and disadvantages of ecolabelling implementation in the ASEAN countries, a regional study on the ecolabelling of aquatic products was conducted by a team of researchers from the Thai Department of Fisheries, Kasetsart University, SEAFDEC and the Swedish Board of Fisheries. The results indicate that many countries look at ecolabelling as a potential barrier to trade of ASEAN products. There is concern about the feasibility of applying ecolabelling to multi-species fisheries and aquaculture in the region and about certification costs, especially to small-scale producers.

155. However, there were also opportunities identified for ecolabelling schemes of, for example, extensive polyculture or low-input production systems. It was also found that national ecolabelling schemes exist in some ASEAN countries that could be adopted or adjusted to fisheries and aquaculture products.

156. Most ASEAN countries indicate a cautious attitude towards ecolabelling whose promotion would depend on future market developments. When and where implementation is considered, capacity building and technical and financial assistance is required. Regional and international institutions, including SEAFDEC, FAO, and the Network of Aquaculture Centres in Asia-Pacific (NACA), could play a role in this regard and could assist in various ways, including in the setting-up of pilot projects, awareness raising and market identification and development.

## **Recommendations of the APFIC Regional Consultative Forum**

### **Aquaculture and fishery product standards and trade**

157. As trade in fish products increase, food quality and safety issues, along with related issues of labelling, traceability and certification, are becoming increasingly important for countries in the APFIC region. The globalization and expansion of the international food trade has led to the development of fish safety and quality standards that have a significant impact on the international fish trade.

158. Technological developments in pre-harvest management, fish handling, preservation and distribution, consumers' increasing awareness and demand for safe fish of high quality, and global concerns over the use of safety and quality requirements as barriers to trade, have all contributed to the development of fish safety and quality standards and culminated in the adoption of HACCP-based systems and scientifically-based risk-assessment methods.

### **The regional consultative forum meeting noted that:**

- A food chain approach is being adopted that requires an enabling policy and regulatory environment at national and international levels with clearly defined rules, responsibilities and practices, the establishment of appropriate food control systems and programmes at national and local levels, and the provision of appropriate training and capacity building.
- There is an increasing use of voluntary codes of conduct, better management principles and a variety of certification mechanisms (e.g. MSC) in both capture fisheries and aquaculture. These are increasingly becoming promoted in major markets for fish from the region and there will be increasing pressure for their adoption/compliance within producing countries.
- There are also an increasing number of mandatory codes and mechanisms being introduced with which producing countries will be required to comply.
- There are obvious constraints for developing countries in complying with the standards promoted by these schemes, and these will need to be addressed in the future in order to capitalize on the benefits they offer.
- There is some concern that small-scale fishers and unorganized farmers are at a disadvantage in trade if measures that are too strict are put in place with regard to food standards issues. There is a need to sustain public support for small-scale farmers and fishers to enable them to address the issues related to the impact the potential standards will have on these farmers.
- There should be a harmonized approach to HACCP aquaculture (standards) work across countries in the Asian region.

## **THEME 4 (II): EMERGING ISSUES – ILLEGAL, UNREPORTED AND UNREGULATED FISHING**

### **Illegal, unreported and unregulated (IUU) fishing in Asia and the Pacific region**

*Gary Morgan, Consultant*

159. Mr Morgan noted that IUU was not an emerging issue in the sense that it has been prevalent in the region for many decades. However, the will to address the issue is emerging. It was strongly recommended that the region address the issue of IUU fishing, which currently is estimated to cost the region some \$5.8 billion annually in economic losses. There is also a range of social issues, including forced labour on fishing vessels. This has become increasingly important to the fisheries in the region as fish stocks have become serially depleted.

160. IUU fishing is important in the region and includes IUU fishing in a nation's EEZ by nationals of that EEZ, the incursion of foreign fishing in another country's EEZ and IUU fishing on the high seas.

161. A recent analysis shows that many countries do not have the legislative or material capacity to adequately address IUU fishing and that there is no mechanism in place for regional coordination of management measures, including management of foreign vessels access to EEZs and international waters. Only two countries make it an offence to fish in another country's EEZ. Loose access arrangements in EEZs also lead to increased IUU fishing. Monitoring, control and surveillance are also poorly developed across the region and overall, surveillance is ineffective and compliance is low (there is a less than 10 percent chance of being caught in any one year).

162. Noting that much of the region's sea area lies within national Exclusive Economic Zones (EEZs) and the extent of international waters is limited mainly to the Indian Ocean and the Western and Central Pacific, the responsibility for controlling IUU fishing rests largely with national governments of the region. However, to be successful, this will require regional cooperation that includes coordinated access arrangements, regional registers of foreign vessels, uniform vessel identification, regional coordinated data collection and exchange of monitoring, control and surveillance activities.

163. It was recommended that countries should sign onto and implement the international instruments that are in place to address the management of shared stocks and IUU fishing, such as the UN Straddling Stocks Convention and the FAO Compliance Agreement, but they have more often relied on bilateral arrangements, which are usually not coordinated within the region.

164. There is an urgent need for countries to begin to manage the issue of overcapacity of their national fishing fleets, to review national legislation with regards IUU fishing and to support international initiatives on the management of shared stocks and IUU fishing. To achieve such a coordinated regional approach to IUU fishing, it is also recommended that consideration be given to the establishment of a regional fisheries management organization. APFIC has a role to play facilitating regional cooperation and cooperation. APFIC could provide a regional (subregional) forum for sharing information on IUU issues.

165. In response to Mr Morgan's presentation, it was noted that controlling the sale of IUU catches made in high seas areas through national markets is important for countries in the region. It was also observed that in the Indian context there are different types of fleets crossing borders illegally. The lack of bilateral agreements makes these activities IUU activities, when moving across borders may be an important livelihood activity and acceptable from a stock status point of view. In such cases better access agreements could solve problems of IUU. Finally, it was noted that although the presentation focused exclusively on marine waters, IUU in inland waters is also a problem that needs addressing.

## **Recommendations of the APFIC Regional Consultative Forum**

### **Illegal, unreported and unregulated fishing (IUU)**

166. The forum noted that the region must address the issue of illegal, unreported and unregulated (IUU) fishing, which is considered to be a significant cost to the region. Noting that much of the region's sea area (especially in the Southeast and East Asian region) lies within national Exclusive Economic Zones (EEZs) and the extent of international waters is limited, the responsibility for controlling IUU fishing rests largely with the national governments of the region.

#### **The regional consultative forum meeting noted that:**

- Many countries do not have the legislative or material capacity to adequately address IUU fishing.
- Excess capacity is one of the main drivers of IUU fishing and there is an urgent need for countries to begin to manage the issue of overcapacity of their national fishing fleets, to review national legislation with regards IUU fishing and to support international initiatives on the management of shared stocks and IUU fishing.
- With the exception of the tuna management commissions (Indian Ocean Tuna Commission and the Central and Western Pacific Fisheries Commission), there is no mechanism in place for regional coordination of management measures, including management of foreign vessels' access to EEZs and international waters.
- Many IUU issues could be resolved via bilateral agreements and countries are increasingly engaging in bilateral agreements, however, there is little coordination at the regional (subregional) level.
- There is no mechanism for information exchange on IUU between countries (especially bilateral access agreements).
- There is a need for a more coordinated regional and subregional approach to IUU fishing.

## **FINAL SESSION: SUMMARY AND RECOMMENDATIONS FOR REPORTING TO APFIC**

167. In the final plenary session the summary, conclusions and recommendations from the four themes covered by the forum were presented to the participants. There was a process of discussion and examination of the conclusions for omissions or inaccuracies. The regional consultative forum meeting agreed that the conclusions and recommendations should be accepted and put forward for further consideration at the twenty-ninth session of APFIC.



## PROGRAMME OF THE APFIC REGIONAL CONSULTATIVE FORUM MEETING

## “Reforming fisheries and aquaculture in the Asia-Pacific”

Renaissance Hotel, Kuala Lumpur, Malaysia, 16-19 August 2006

DAY 1: Wednesday, 16 August 2006	
08:00 – 09:00	<b>Registration</b>
09:00 – 10:15	<b>Opening Ceremony (see separate detailed program)</b> <ul style="list-style-type: none"> <li>• Welcome remarks      • Director-General, Department of Fisheries Malaysia</li> <li>• Address                      • Assistant Director-General, FAO Fisheries Department</li> <li>• Opening speech      • Minister of Agriculture and Agro-Based Industry Malaysia</li> </ul>
10:15 – 10:45	<b>Morning tea/coffee</b>
10:45 – 11:00	<b>Forum arrangements</b> <i>Derek Staples, APFIC Secretary</i>
11:00 – 11:30	<b>Keynote address:</b> <b>Reforming fisheries and aquaculture in the Asia-Pacific</b> <i>Ichiro Nomura, FAO Department of Fisheries</i>
<b>THEME 1: Future of fisheries and aquaculture in the Asia-Pacific and the low value/trash fish problem</b>	
11:30 – 12:00	<b>Status and potential of fisheries and aquaculture in Asia and the Pacific region</b> <i>Derek Staples, FAO Regional Office for Asia and the Pacific</i>
12:00 – 12:30	<b>Implications for supply of and demand for fish for food and fish for feeds</b> <i>Stephen hall, WorldFish Center</i>
12:30 – 14:00	<b>Lunch</b>
14:00 – 14:15	<b>Action plan to address low value/trash fish issues in the APFIC region</b> <i>Simon Funge-Smith, FAO Regional Office for Asia and the Pacific</i>
14:15 – 15:30	<b>Capture fisheries management interventions</b> <i>Panel led by Rolf Willmann, FAO Department of Fisheries</i>
15:30 – 16:00	<b>Afternoon tea/coffee</b>
16:00 – 16:30	<b>Pellets and fishmeal substitution</b> <i>Albert Tacon, University of Hawaii</i>
16:30 – 17:00	<b>General discussion</b>
DAY 2: Thursday, 20 August 2006	
<b>THEME 2: Co-management, governance and institutions</b>	
09:00 – 09:45	<b>Mainstreaming fisheries co-management in Asia: Lessons learned in Asia, Africa, and the wider Caribbean</b> <i>Robert Pomeroy, University of Connecticut</i>
09:45 – 10:15	<b>Co-management in aquaculture</b> <i>Pedro Bueno, NACA</i>
10:15 – 10:45	<b>Morning tea/coffee</b>
10:45 – 11:00	<b>Strategies and action to mainstream fisheries co-management in the APFIC region</b> <i>Simon Funge-Smith, FAO Regional Office for Asia and the Pacific</i>
11:00 – 12:30	<b>Country experiences with co-management</b> <i>Brief presentations from APFIC Members</i>
12:30 – 14:00	<b>Lunch</b>

14:00 – 14:30	<b>What are fishery rights?</b> <i>Suriyan Vichitlekarn, SEAFDEC</i>
<b>THEME 3: Policy challenges</b>	
14:30 – 15:00	<b>Fishery and aquaculture policy direction in APFIC countries</b> <i>Graeme Macfadyen, Poseidon Aquatic Resources Management Ltd.</i>
15:00 – 15:30	<b>Development and poverty reduction strategies in the APFIC region: integrating fisheries into the development discourse</b> <i>Andy Thorpe, University of Portsmouth</i>
15:30 – 16:00	<b>Afternoon tea/coffee</b>
16:00 – 16:30	<b>Discussion on national policy directions &amp; initiatives</b>
16:30 – 17:00	<b>Integrating fisheries into large marine ecosystem/regional seas arrangements</b> <i>Chris Paterson, UNEP/GEF South China Sea Project</i> <i>Xianshi Jin, Yellow Sea Fisheries Research Institute</i> <i>In Kwon Jang, West Sea Fisheries Research Institute</i>
18:00	<b>Poster Session – country posters or exhibits on key issues that are being addressed by the Members</b>
<b>DAY 3: Friday, 18 August 2006</b>	
<b>THEME 4: Emerging issues</b>	
<ol style="list-style-type: none"> <li><b>1. Food quality and safety in the context of trade</b></li> <li><b>2. Illegal, unreported and unregulated fishing (IUU)</b></li> </ol>	
09:00 – 09:45	<b>Trends in international fish trade and market access requirements</b> <i>Lahsen Ababouch, FAO Department of Fisheries</i>
09:45 – 10:15	<b>Emerging issues and requirements relating to food safety and trade</b> <i>S. Subasinghe, INFOFISH</i>
10:15 – 10:45	<b>Morning tea/coffee</b>
10:45 – 11:45	<b>Improving production standards to meet consumer requirements</b> <i>Lahsen Ababouch, FAO Department of fisheries</i> <i>Alice McDonald, Marine Stewardship Council</i> <i>Rattanawan Mungkung, Kasetsart University</i>
11:45 – 12:30	<b>Illegal, unreported and unregulated (IUU) fishing in the Asia-Pacific region</b> <i>Gary Morgan, Consultant</i>
12:30 – 14:00	<b>Lunch</b>
<b>FINAL SESSION: Summary and recommendations for reporting to APFIC</b>	
14:00 – 15:30	<b>Plenary Discussion</b> <b>Summary and recommendations for APFIC</b>

**Welcome Remarks by  
Y. Bhg. Dato' Junaidi bin Che Ayub,  
Director-General of the Department of Fisheries Malaysia**

First of all, I would like to express my gratitude to the Hon. Dato' Seri Hj. Mohd. Shariff bin Hj. Omar, Deputy Minister of Agriculture and Agro-Based Industry Malaysia for his presence and consent to officiate the "Asia-Pacific Fishery Commission Regional Consultative Forum: Reforming Fisheries and Aquaculture in the Asia-Pacific" on behalf of the Minister of Agriculture and Agro-Based Industry Malaysia.

It is my privilege and pleasure to extend my warmest welcome to all the Honourable Guests, Distinguished Participants from the Asia-Pacific region to Kuala Lumpur, Malaysia.

As you are all probably aware, this forum is the first forum organized by APFIC held in conjunction with the Twenty-ninth Session of APFIC to replace the APFIC Symposia. The proposal to organize this Forum was initiated by the APFIC Secretary during the Sixty-ninth Session of the APFIC Executive Committee in Pattaya, Thailand, December 2003. Subsequently the proposal was endorsed by the Asia-Pacific Fishery Commission (APFIC) at its Twenty-eighth Session in Chiang Mai, Thailand, August 2004.

It is hoped that this forum will assist in strengthening APFIC's function as a Regional Consultative Forum to provide a framework for members to discuss fisheries issues which affect members across the wider Asia-Pacific region, formulate recommendations for action and act as a regional coordinating body by transferring and exchanging information and experience. In this context APFIC could act as a platform to discuss emerging issues related to fisheries, aquaculture, trade and sustainable management facing its members in the region. Members will work together to develop and agree on ways of implementing policies and action plans to address the issues raised. The outcome of this forum will be used to reshape fisheries and aquaculture in the Asia-Pacific region for future generations and be forwarded to the Twenty-ninth Session of APFIC which will be held after this forum, that is, from 21-23 August 2006 in Kuala Lumpur for consideration and endorsement.

The objectives of this forum as indicated in the official opening programme book are namely:

- To provide a background on the status, trends and potential of Asia-Pacific fisheries and aquaculture;
- Develop policies and action plans to address two major issues that constrain reaching that potential including the emergence of trash fish fisheries in the region and the need to mainstream fisheries co-management in national fisheries management activities;
- Discuss food safety and quality as an emerging issue in the region.

Four (4) main themes will be discussed in this forum namely:

- Future of fisheries and aquaculture in Asia-Pacific;
- Co-management, governance and institutions;
- Policy challenges; and
- Emerging issues – food quality and safety in the context of trade.

These four (4) themes are very much related to the issues raised at all international and global fora whereby the issue of sustainability of the fisheries is debated. We are very fortunate here that regional fishery body (RFB) like APFIC is concerned about the fate of million of fishers especially in developing countries of the Asia-Pacific and the sustainability of the fisheries regionally and globally.

To the Food and Agriculture Organization (FAO FishCode), Swedish International Development Agency (Sida), the Ministry of Maritime Affairs, Republic of Korea and other donors, we would like to express our greatest gratitude for providing the needed fund for the organization of this forum and we give you the assurance that we will try our best to make this forum a success and a meaningful one.

I understand that this forum has over *100* participants from countries all over the Asia-Pacific region. Your presence will add to the seriousness and commitment of this forum and as participants from the different countries in this region, will exchange ideas and learn from each other to build and agree on ways of implementing policies and action plans to reform fisheries and aquaculture in the Asia-Pacific region. I sincerely suggest that you take full advantage of the discussion that follows the presentations of our distinguished speakers.

Once again, I would like to thank all the resource persons and paper and poster presenters, and participants for giving their valuable time to attend this forum. To the Organizing Committee of the Asia-Pacific Fishery Commission Regional Consultative Forum and INFOFISH, I thank you for your hard work in ensuring the success of this forum.

Last but not least, I wish to express my sincere appreciation and heartfelt thanks to FAO and APFIC, for jointly organizing this forum; to the Hon. Dato' Seri Hj. Mohd. Shariff bin Hj. Omar, Deputy Minister of Agriculture and Agro-based Industry, Malaysia for his consent to officiate at this forum as well as to all those who have in one way or another contributed to the success of this event.

I sincerely hope that all of you will have a pleasant and memorable stay in Kuala Lumpur.

Thank you.

**Address by  
Mr Ichiro Nomura, Assistant Director-General  
FAO Fisheries Department**

On behalf of Mr Jacques Diouf, Director-General of the Food and Agriculture Organization of the United Nations, I welcome you all to the Asia-Pacific Fishery Commission (APFIC) “Regional Consultative Forum Meeting”, to be held here over the next three days in Kuala Lumpur, Malaysia.

Following an extensive review of the function of APFIC over the past few years, the Commission decided at its 28<sup>th</sup> Session held in Chiang Mai, Thailand in 2004, that it could best serve its members by becoming a regional consultative forum. The purpose of this forum is to provide its Members a neutral platform to examine issues affecting the sustainable development of fisheries and aquaculture across Member States. One of the major changes in the *modus operandi* of APFIC, was to involve its regional partner organizations and relevant non-governmental organizations much more in its technical working activities as well as the consultative forum. It is therefore extremely encouraging to see many of our partners participating here today.

The 28<sup>th</sup> Session also agreed that APFIC would hold a major Consultative Forum Meeting every two years. This forum meeting would be based on number of inter-sessional workshops on selected issues that the Commission considered to be of major regional importance. For this forum meeting, the Commission decided to focus its attention on important issues in small-scale fisheries and rural aquaculture. APFIC has now organised two Regional Workshops – one on “Low value and trash fish in the Asia-Pacific region” convened in Hanoi, Viet Nam 7-9 June 2005 and another on “Mainstreaming Fisheries Co-management” convened in Siem Reap, Cambodia 9-12 August 2005. The Commission intended that the recommendations coming from these two workshops would be further considered at this APFIC biennial Consultative Forum Meeting and the subsequent Commission Session, so that decisions for concerted action could be developed and implemented.

This function of APFIC was further endorsed by the APFIC Executive Committee in its 70<sup>th</sup> Session in Kuala Lumpur in 2005, where it was agreed that the overall theme for this first Consultative Forum Meeting would be “Reforming fisheries and aquaculture in Asia-Pacific”. In choosing this theme, the Committee considered the outcomes of the two workshops and noted the need for reforms in fisheries management and aquaculture development. The Asian region has seen unprecedented development in its fisheries and aquaculture sectors over the past three decades. Growth in capture fisheries, especially those of marine waters, has slowed considerably over the past decade as the harvesting of fisheries has met its natural and economic limits. In many cases this has, unfortunately, also resulted in depleted fish stocks and fisheries which are performing below their fullest potential. In the case of Asian aquaculture, the growth of this sector has been staggering, especially from the People’s Republic of China, but this sector is also now also facing resource constraints.

APFIC has recognised the need for improved management of the region’s natural resources and a move towards more sustainable development. In guiding these reforms the Executive Committee stressed the need for a more participatory, community-based co-management approach that forges a stronger partnership between governments and stakeholders in addressing issues such as those associated with low value/trash fish. During this Consultative Forum Meeting, you will be able to reflect on the recommendations and actions suggested by the two APFIC workshops and hopefully, formulate these into action plans that can be endorsed by the full Commission Session and implemented in your countries.

The Executive Committee also considered a number of new thematic areas which could form the focus for APFIC's work in the coming biennium 2007/08. These are grouped under 3 headings (i) advice and policy, (ii) costs and implications of management interventions and (iii) tsunami rehabilitation. From these, the APFIC Secretariat thought that it would be useful to carry out a snap-shot of what is happening in terms of policy development for fisheries and aquaculture across the region. The Commission Secretariat has also highlighted two major emerging issues in the region which require special attention. These are (i) food quality and safety in the context of trade, and (ii) illegal, unreported and unregulated fishing. Both these issues will have a major impact on the future supply and demand for seafood in the region.

I would like to stress that this is a forum which is aimed at informing APFIC Members about current issues in fisheries and aquaculture and to provide a platform for debate. This will assist members in understanding the issues better and to enable to make informed decisions on the direction for future significant reforms in fisheries and aquaculture. Members will also be encouraged to share their experiences in throughout the forum meeting. This forum meeting is not intended to be a seminar where participants take a passive role and simply listen to a number of speakers. Members have been asked to prepare presentations and posters on a number of the forum themes to facilitate the exchange of information and opportunity for discussion and comment is provided for in the programme. Members will also be asked to develop a set of recommendations that will be considered by the Commission Session. This is an opportunity to address many of the issues that have plagued fisheries and aquaculture development in the past.

Before I conclude my remarks, I would like to take this opportunity thank everyone who has enthusiastically contributed this Consultative Forum Meeting. Firstly our major sponsors who have enabled us to make these arrangements, the Ministry of Agriculture and Agro-Based Industry Malaysia; the FAO FISHCODE project; INFOFISH; the Ministry of Maritime Affairs and Fisheries, Republic of Korea; the Swedish International Development Agency (Sida) and, of course my colleagues from FAO and APFIC.

I would also like to thank Malaysia and the Chair of APFIC for kindly hosting this meeting and making everyone feel welcome at the forum. Thanks are also due to INFOFISH who have been responsible for much of the meeting organization. Lastly, but not least, I thank you, the participants, and urge you to focus your energy over the next three days in setting a new course for fisheries and aquaculture in the Asia-Pacific region.

Thank you.

**Opening Speech of  
Honourable Dato' Seri Hj. Mohammed Shariff bin Hj. Omar  
Deputy Ministry of Agriculture and Agro-Based Industry Malaysia**

First and foremost, I would like to apologize on behalf of the Minister of Agriculture and Agro-Based Industry Malaysia for not being here with all of you today to officiate this important forum as he has to attend to an urgent matter.

It is an honour and pleasure for me to be here to address this distinguished gathering at the Asia-Pacific Fishery Commission Regional Consultative Regional Forum. I would like to thank the Department of Fisheries Malaysia and the Food and Agriculture Organization of the United Nations for jointly organising this important forum.

I have been told that there are participants from various countries in the Asia-Pacific and international organisations who have come all the way from their respective countries to participate in this forum. To our distinguished participants, I would like to wish you “Selamat Datang” or Welcome to Malaysia. If this is your first visit to Malaysia, I hope you will take some time after this forum to savour the sights and sounds of this beautiful country.

Throughout the world especially in the Asia-Pacific region, fish has been the main supply of cheap and healthy protein to a major percentage of the world's populations. Fisheries continue to receive increasing attention not only because they are important source of livelihoods and food but also form one of the key components in the national economy of coastal states. FAO, in a report on the State of World Fisheries and Aquaculture 2004 concludes that developments in world fisheries and aquaculture during recent years have continued to follow the trends that were already apparent at the end of 1990's:

- captured fisheries production is stagnating;
- aquaculture output is expanding; and
- there are growing concerns with regard to safeguarding the livelihoods of fishermen and the sustainability of both the commercial catches and the aquatic ecosystem.

We have seen that fisheries and aquaculture development over the past 20 years has been extremely rapid and difficult to control. The rapid expansion of both fisheries and aquaculture has brought about many challenges and if they are not addressed urgently will certainly undermine the potential contribution that both fisheries and aquaculture can make to the sustainable development of the affected countries.

The World Food Summit and the Millennium Declaration contain two important goals, that is, reducing hunger as well as poverty by half by the year 2015. In this regard, aquaculture is essential in helping to meet the growing demand for fish and fishery products. Aquaculture is also a significant source of labour and income, particularly in developing countries. However, if the development of the aquaculture and culture-based fisheries sector is to be sustainable, it must be carried out in a responsible manner and in line with the FAO Code of Conduct for Responsible Fisheries.

Small-scale fisheries are also playing an increasingly important role in contributing to achieving the goals of the World Food Summit and the Millennium Declaration, despite many human, technological and financial constraints. Nevertheless, communities of small-scale fishermen is still the poorest and most vulnerable rural communities. I believe this forum will propose strategies aimed at creating an enabling environment to alleviate the social and economic deprivation which affects millions of small-scale fisherfolk.

Fish trade is another major issue of concern especially to developing countries in the Asia-Pacific region. The considerable growth in international trade in fish and fishery products has led to the development of an important regulatory framework which makes it difficult for many developing countries to get access to foreign markets. In addition to constraints, such as the strengthening of norms and standards for safety and quality, these countries have to face the effects of utilization of new technologies as well as the increased competition brought about by globalization and liberalization of trade.

These rapid developments have also highlighted the need for enhancing the role of regional fishery bodies. Many countries in the region face similar challenges and we need to work together to address them. I believe, the Asia-Pacific Fishery Commission (APFIC) which has been in existence for over 50 years will continue to serve its members to address the issues mentioned above. I must congratulate the Asia-Pacific Fishery Commission for its long success, commitment and continued service to this region.

Malaysia welcomes the new initiative of APFIC to organize this “regional consultative forum” that provides States with the opportunity to share our challenges, and more importantly, ways to address them. I believe this forum with the theme “Reforming Fisheries and Aquaculture in the Asia-Pacific” will work towards synthesizing, analyzing and agreeing on actions needed to reshape fisheries and aquaculture in the Asia-Pacific for future generations. The recommendations made during this forum will be essential input to the formulation of the future APFIC work programme until the year 2010.

In spite of the heavy agenda, I hope that delegates will be able to find time to view the poster presentations that have been organized in conjunction with this forum.

As some of you may know, Malaysia will be celebrating its Independence in less than two weeks, that is, on the 31<sup>st</sup> of August 2006. On that Day, Malaysia will be celebrating its 49<sup>th</sup> year of independence. To mark this occasion, many events have been lined up, including cultural shows and historical exhibitions. This is a good opportunity for those of you who would like to learn more about the progress and development that has taken place in Malaysia over the last few decades. The festive atmosphere will no doubt help to enhance your stay here, too. I hope that you will find time to attend these events, explore the city, places of interests, shopping delights and delicious food besides the warm hospitality of our plural society.

Before I end my speech, I would like to congratulate the Department of Fisheries Malaysia, the Asia-Pacific Fishery Commission (APFIC), INFOFISH and all other donors and agencies that have contributed towards the successful organization of this forum.

Finally, I hope that all of you will have a very pleasant and memorable stay here. On this note, and in the name of Allah the Compassionate, the Merciful, I take great pleasure in declaring the “Asia-Pacific Fishery Commission Regional Consultative Forum: Reforming Fisheries and Aquaculture in the Asia-Pacific” open.

I wish all of you a very fruitful and rewarding deliberations.

Thank you.



## LIST OF PARTICIPANTS

## PARTICIPANTS FROM APFIC MEMBER COUNTRIES

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## KEYNOTE ADDRESS

### “REFORMING FISHERIES AND AQUACULTURE IN THE ASIA-PACIFIC”

*Ichiro Nomura, FAO Department of Fisheries*

The Keynote Address was entitled: “Reforming fisheries and aquaculture in the Asia-Pacific”. The presentation commenced with a short outline of the global picture. Total global fisheries production in 2004 was 140.5 million tonnes. Note that this figure does not include aquatic plants. This is an increase of about 7 million tonnes over that recorded in 2002, representing a modest increase of 1.9 percent for capture fisheries and 12.6 percent for aquaculture. Marine capture fisheries is still the largest component – 61.1 percent; Inland capture – 6.6 percent; Marine aquaculture – 13.0 percent; Inland aquaculture – 19.3 percent.

*Within capture fisheries*, total global production in 2004 was 95 million tonnes. A slight increase since 2002 is due mainly to fluctuations in the catch in anchoveta fisheries in Peru and Chile, although Southeast Asia also recorded an increase. With China’s figures removed, it is clear that the rest of the world’s catch has been declining since early 1990s, indicating that the upper limit of the worlds capture fisheries may have been reached. There are, of course, wide geographic differences with increases in the NW and Central Pacific and declines in the northern Atlantic

Unlike capture fisheries – *Aquaculture production is continuing to grow* – especially in China and the Asia-Pacific region. China now produces 70 percent of the world’s supply of aquaculture. Just considering aquaculture without aquatic plants, production is at an all time high of 45.5 million tonnes. Aquaculture supplied 43.0 percent of the fish for human consumption in 2004. This proportion was only 36.6 percent in 2000. With the inclusion of aquatic plants produced by aquaculture, the total aquaculture production in 2004 was 59.4 million tonnes with a value of USD70.3 billion. Importantly, in terms of the future growth of aquaculture, there is a shift towards more carnivorous and feeding of omnivorous species that require protein inputs as feed. This shift is dependent on the global supply of fish protein resources that is needed, either directly as feed in the case of fish cage culture, or in other forms of aquaculture, indirectly, through its reduction to fishmeal and fish oil that forms the basis of pelleted diets.

#### **Historical trends in APFIC region**

Using the Southeast Asia subregion as an example, the keynote address described what has happened in fisheries in the APFIC region. Fishing and aquaculture have been traditional activities in the Southeast Subregion for many centuries. The first major industrial fishing activity occurred in the early 1880s with the *advent of pearling* in the Sulu-Celebes Sea. By 1830 pearling involved about 68 000 divers. The industry was driven by a strong market in China and with the introduction of new diver technologies, the area of exploitation expanded across the subregion as successive beds were discovered and depleted. Pearling now survives as a small artisanal fishery in the Philippines – although the culture of pearls is a significant industry for several Asia-Pacific countries.

*Trawling for fish* has occurred in the Southeast Asia since the late 1800s. It started with Japanese sail boats trawling in Manila Bay. The advent of steam power vessels in Europe occurred at this time and several attempts of using this technology in Southeast Asia were tried. These were not successful as the gear often clogged and catches were low. The Japanese fleet also adopted steam-powered vessels in the late 1920’s. As stocks became depleted in the Philippines, the vessels expanded into the South China Sea and Viet Nam. In a joint initiative of Germany and Thailand, trawling-technology was transferred to the

Gulf of Thailand in the 1960s. Trawling took off very rapidly and as Thailand stocks became depleted, Thailand vessels expanded into Viet Nam, Myanmar, Malaysia and Straits of Malacca. Trawling was also developed in parallel in other countries, especially in Malaysia.

Around 1976, when the establishment of EEZs from UNCLOS negotiations became certain, it changed the way trawling development occurred in the region. Countries declared their own EEZs and accepted their responsibility to manage these areas. This required access agreements be formed with neighbouring countries to allow trawling to continue in their waters.

The degree to which this has occurred is a question that has no definitive answer, although it is known that many trawlers continued to fish in foreign waters, and this aspect of illegal, unregulated and unreported (IUU) fishing is an issue that will be taken up later in the Forum and APFIC sessions. With respect to our discussion on low value/trash fish, it is interesting to note that even in the early days of trawling development, a major market has always been feed for livestock of which ducks are an important end user.

*Purse seining* is another activity that underwent a dramatic cycle of development. Fishers were using surrounding nets as early as 1800s. These sail-powered Chinese junks were fishing off Viet Nam, Gulf of Thailand and Straits of Malacca in early 1900s. As with trawlers, the introduction of steam power in 1930s, was a catalyst to rapid expansion. As the demersal stocks became depleted through trawling, many vessels were modified to fish for pelagic resources, especially in the Gulf of Thailand. There was a large expansion of Thai purse seiners in the 1970s and 1980s. Pelagic stocks, especially inshore small pelagics became reduced.

As a last example of what has happened in Southeast Asia, the keynote presentation considered *tuna longlining, poling and purse seining*. As with all the other fishing methods, fishing for tuna has been being carried out for a very long time. Traditional fishing for tuna was being carried out in the 1800s using trawl-shaped nets, lures and long-lines, long-lining for tuna in the Oceans of Southeast Asia developed from 1930s to 1950s. Purse seining targeting tuna developed in 1980s, driven by the rapid expansion of canneries in 1970s and early 1980s. Recent assessments of tuna stocks indicate that many stocks are either over-fished or fully fished. The exception is skipjack tuna, but this species is mostly marketed as canned product and has little potential to become part of the more lucrative sashimi market. In the APFIC region, almost all countries want to increase their national capacity to catch tuna. Given the limited nature of the resource, this expansions must result in increased competition amongst countries and if not managed effectively will result in further over-capitalization of the tuna fleet and overfishing of the tuna stocks.

In summary, this analysis of the history of this fishery is characterized by “boom and bust” cycle. Traditional fishing dates back centuries, but new technologies and markets has greatly influenced fishing in the region. These new technologies and markets have resulted in expansion and serial depletion of fish stocks across the region. In the case of demersal fishing activities, this has taken the form of “fishing down the food chain” where higher-value market fish have been replaced by low value/trash fish. In the pelagic fisheries, this has also seen lowered catches and catch rates with a recent switch to tuna as the last frontier.

*Aquaculture development* in the Asian region has seen continual overall growth over the past 14 years. However, beneath these total statistics there are also been significant variation. The rapid rise of export focused aquaculture (especially shrimp) witnessed rapid development and was accompanied by serious disease problems and was often associated with local environmental degradation.

Consumer demand and market demands have seen a change in the relative contribution of different aquaculture commodities. Export focused aquaculture is highly sensitive to market demands. The

increasing affluence of several Asian economies has also seen a trend towards higher valued species. There is enormous diversity of aquaculture species in the Asian region with over 177 reported species cultured at significant levels. As demands change, aquaculture has responded by shifting species and production systems. Superimposed on these changes are also “booms and bust” created by disease problems, conflicts over land use and changing technologies. The most recent changes include: a dramatic shift to production of the Pacific white leg shrimp; increasing production of marine carnivorous species; a shift away from extensive low inputs freshwater finfish systems; increased use of supplemental and formulated feeds and a general trend to intensification.

### **The history of APFIC and its role**

The history of APFIC also reflects this pattern of development in the region’s fisheries and aquaculture. APFIC is, in fact, one of the oldest fisheries commission in the world. In its first phase (1949-1962), APFIC promoted biological and oceanographic research and supported Member’s administration, particularly in strengthening their Fishery Departments and administration. In the second phase, it supported countries in being able to benefit from the rapid pace of development that occurred during this period. In its third phase (1980-present) it became more concerned with promoting better fisheries/aquaculture management and more rational development.

However, APFIC is not a management body and can only act in an advisory role. The advice was probably good but it had little impact on the development during this period. Today’s fisheries and aquaculture in the region are now facing major challenges. The theme of this Forum is “Reforming fisheries and aquaculture” and, we believe that major changes are required if we are going to getting greater benefits from the huge potential that fisheries and aquaculture offers the region.

### **Options for the future**

APFIC and FAO and the member countries have the goal of achieve in our efforts for better administration and management of fisheries and aquaculture. Based on global instruments and agreements, we are all trying to achieve sustainable development. Sustainable development is an attempt to find the right balance between human well-being and ecological well-being, so that development (improving human well-being) is maintained into the future by conserving the ecosystems on which it depends. Human well-being is the overall standard of living of all humans as measured by human health, education, sanitation, poverty etc. Ecological well-being is the overall health of the ecosystem that support human needs. In the context of fisheries, it is the fishery resources and critical habitats on which these fishery resources depend.

Sustainable Development, therefore, includes three main dimensions – Social, Economic and Ecological. It will also require good governance in order to find the right balance. Experience in the past has shown that you can not have human well-being without ecological well-being, but also importantly, that you can not have ecological well-being without human well-being. The two depend on each other.

There are many options for the future, but we can consider two extremes:

- To accept high variation and uncertainty i.e. “boom and bust” scenarios
- To manage to reduce these “boom and bust” trends

*In accepting “boom and bust”* neither governments nor the stakeholders try to control the path of change and maintain an open access regime for common property resources and allow unregulated aquaculture development. Advocates of this approach will argue that change is just a process of evolution that can not be controlled. They will also argue that development in many countries in the past has not been controlled. In fact, they will argue that economic growth at the expense of the environment is necessary

so that there is sufficient capital to enable the damages to be reversed. They will also argue that this type of open access system will provide a social safety net for the poor so that when there are no other options for poor people they are able to subsist, through catching fish. Lastly, but possibly most importantly, this approach keeps favour with the fishers and those dependent on fish that will result in votes for politicians at all levels. There are several consequences of this approach that need to be recognized. We have probably reached the last frontier in terms of marine capture fishery expansion and aquaculture is facing severe constraints. In terms of fisheries there are very few unexploited resources left to explore. In terms of aquaculture two main constraints are the lack of land for further expansion and the limit to the global supply of aquaculture feeds. The approach will result in degraded natural resources and reduced biodiversity, a condition that will have major implications in years to come.

It has to be realized that fisheries will not contribute to sustainable development to its full potential. Fisheries and aquaculture have the potential to contribute significantly to the region's sustainable development, especially in poverty reduction and increased food security, but this potential will not be realized. There are many hidden costs, for example increased subsidies, that will be needed to the activities viable, despite the fact that the sector may be running at an overall economic loss. It is true that this will result in social benefits in having many people employed, but at what cost? The "not doing anything" option will result in locking the rural poor into the poverty trap from which they can not escape.

*Alternatively, action can be taken to reduce "boom and bust" through management measures that include:*

- Reducing fishing capacity, especially IUU fishing
- Introduce rights-based fisheries and co-management
- Protect critical habitats
- Provide alternative income generation opportunities
- Implement multiple use areas (e.g. MPAs)
- Encourage consumer market schemes
- Remove subsidies through WTO

There are many justifications for investing in better management, based on reducing the consequences of the "do nothing option". However, there are also implications and consequences that need to be considered. In the case of access limitations, who will be excluded; what happens to the social safety net and who pays for the increased costs of management?

### **What is happening in the region?**

It appears that several policies are trying to address the mistakes of the past but during this Regional Consultative Forum Meeting we need to ask ourselves, whether some of these are appropriate, including:

- Moving fishing effort offshore
- Switching to aquaculture which could put even heavier pressure on inshore fish as a source of feed
- Expansion of tuna fishing

There are also some good examples of policy decision that should reduce the "boom and bust" of the past. These include:

- Reducing fishing capacity
- Introducing co-management

- Allocating uses
- Better regulated aquaculture development
- Reduced subsidies

In the case of aquaculture, the trends of intensification, demand for improved health and safety of products and competition for natural resources are all pushing aquaculture towards a higher degree of management. This is occurring at farm level in order to remain profitable, but also at sectoral level with choices of species and commodity and increasing state regulation and international scrutiny of farming methods and product quality. The future of Asian aquaculture lies in better managed farms and a higher degree of regulation.

### **Challenges for APFIC Members**

The keynote address raised 6 challenges for the participants to consider during the RCFM.

- Deciding on policy objectives. Not possible to meet all the social, economic and ecological objectives without trade offs. For example, you can not have full involvement and employment for everyone, significant profits for everyone and also healthy fishery resources. The balance needs to be met;
- Tackling transboundary issues, especially those involving shared fish stocks and IUU fishing;
- Deciding on how to invest – whether to invest in subsidies to prop up the fisheries or whether to invest in management to realize the full potential of the region;
- Incomplete management intervention. Doing half the job e.g. improving coastal co-management, but ignoring IUU fishing that will undermine the effort;
- Addressing the incentives that lead to unsustainable development, in particular short-term political benefits that can be gained from various actions, especially at district level; and
- Turning talk into action. As agreed in the last FAO Committee of Fisheries, this is the decade of implementation of the CCRF. There are now many instruments/agreements/targets and policies. It is now time for action and APFIC can help facilitate this action.



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INFOFISH



FAO Fishcode Programme



Food and Agriculture Organization of the United Nations



IPC Food Sovereignty

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