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COMMITTEE ON FISHERIES

SUB-COMMITTEE ON AQUACULTURE

Third Session

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THE FAO FISHERIES DEPARTMENT'S EFFORTS TOWARDS IMPLEMENTING THE RECOMMENDATIONS OF THE SECOND SESSION OF THE COFI SUB-COMMITTEE ON AQUACULTURE

SUMMARY

This document contains a brief overview of the efforts made by the FAO Fisheries Department towards implementing the recommendations of the Second Session of the Sub-Committee on Aquaculture of the Committee on Fisheries (COFI), which was held in Trondheim, Norway from 7-11 August 2003.

INTRODUCTION

1. The Second Session of the COFI Sub-Committee on Aquaculture was held in Trondheim, Norway, from 7-11 August 2003, at the invitation assistance of the Government of Norway. The report of the Second Session is provided as an information document, COFI:AQ/III/2006/Inf.5¹.

MAJOR RECOMMENDATIONS AND SUGGESTIONS OF THE SUB-COMMITTEE

2. On the basis of thorough discussion, facilitated by the technical documentation provided by the Secretariat, the Sub-Committee made a number of suggestions, comments and recommendations, towards achieving the full potential of aquaculture for national, regional and global food security, poverty alleviation and human development. The Sub-Committee identified several priority areas for the future work by the FAO Fisheries Department. The details are given in the Sub-Committee report, COFI:AQ/III/2006/Inf.5.

¹ Committee on Fisheries. *Report of the second session of the Sub-Committee on Aquaculture*. Trondheim, Norway, 7-11 August 2003. FAO Fisheries Report. No. 716. Rome, FAO. 2003. 91p.

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3. **Priority area A** - issues arising from the implementation of the recommendations of the First Session of the COFI:AQ, the following areas have been identified:
 - assistance to the sustainable development of smallholder aquaculture;
 - promotion of commercial aquaculture – initially through organizing a conference on the promotion of commercial aquaculture in Africa; and
 - development of regional networking
4. **Priority area B** - efforts by the Regional Fishery Bodies in responsible aquaculture and culture-based fisheries, the Sub-Committee identified the following activities and issues:
 - for FAO, by necessity, to continuously support Regional Bodies as these receive more emphasis in global aquaculture development;
 - for Regional Bodies to assist in the elaboration of essential standards and guidelines for specific aquaculture systems, including regular and organic aquaculture;
 - the need to address the question of how trade regulations deal with cultured and wild-caught organisms, and in this light, encouraged the Sub-Committee on Fish Trade to work with the WCO² to take up these key trade issues; and
 - for FAO to provide assistance to national development programmes through regional bodies in the areas of human and infrastructure capacity, data collection, health and quality control and assurance, use of exotic or genetically improved culture organisms, sustainable use of biodiversity, elaboration of regional or inter-regional specifications including standards of processing and handling of aquaculture organisms, information sharing and networking.
5. **Priority area C** - progress in implementing the provisions of the FAO's CCRF³ relevant to aquaculture and culture-based fisheries, the following actions have been recommended:
 - develop a web-based reference of aquaculture codes of practice and legislation as a means to facilitate information exchange; and
 - for FAO Regional Bodies to establish a database on the ecological background of main species so as to help members conduct science-based risk analyses on these species.
6. **Priority area D** - improving the status and trends reporting on aquaculture, the following activities were proposed:
 - develop a comprehensive, internationally agreed-upon glossary;
 - Improve data collection particularly from small holders, more extensive market data and better species-level data;
 - develop a general methodology for the collection of aquaculture data; and
 - continued assistance to members in building national statistical capacity through the FAO Technical Cooperation Programme (TCP).
7. **Priority area E** - strategies to improve safety and quality of aquaculture products, the Sub-Committee:
 - urged FAO to assist in the harmonization of standards for health and safety of aquaculture products through the Codex Alimentarius Commission process, as well as to promote equivalence among systems;
 - for FAO to facilitate training and capacity building in analytical testing aspects relevant to health and safety systems for aquaculture products; and
 - recommended that its activities and those of the COFI Sub-Committee on Fish Trade be well coordinated and effective coordination be encouraged including greater collaboration with the OIE⁴.

² World Customs Organization (WCO).

³ Code of Conduct for Responsible Fisheries (CCRF).

⁴ World Organization for Animal Health (OIE).

8. **Priority area F** - responsible practices in culture-based fisheries, the Sub-Committee identified the following areas as important:

- seed profiling and lack of seed;
- cost effectiveness of stocking programmes;
- environmental risk assessment; and
- socio-economic feasibility assessment of culture-based fisheries and stocking practices.

9. Many members requested technical assistance in the areas of breeding of aquatic species; tagging and marking methodologies of species to assess contributions of stocking programmes; risk assessment; development and implementation of technical guidelines and best practices in culture-based fisheries; stock assessment and statistical surveys; and community-based fisheries management.

Other recommendations

10. The Sub-Committee made further recommendations concerning two important emerging issues on: (a) exotic aquatic species, their introductions, transfers and movement; the risks and benefits, including introduction of pathogens and management of health; and (b) shrimp aquaculture sustainability, including follow-up activities recommended at the Expert Consultation on Good Management Practices and Good Legal and Institutional Arrangements for Sustainable Shrimp Culture held in Brisbane, Australia in December 2000.

11. The Sub-Committee also requested FAO to review and analyse the various certification systems in place with a view to ensure harmonized approaches and procedures for the development and implementation of shrimp aquaculture products certification systems.

12. The Sub-Committee agreed that the Secretariat should provide a prospective analysis of future challenges in global aquaculture as a basis for a discussion of the longer term direction of the Sub-Committee's work.

Intersessional activities

13. The Sub-Committee also identified several intersessional activities including:

- formulation of technical guidelines and best practices for responsible stocking guidelines;
- support to regional cooperation on and coordination of stocking programmes covering the potentially affecting transboundary waters;
- compilation of case studies illustrating successful stocking practices in the marine, coastal and inland environment;
- risk assessment and management associated with the movement and transfer of live aquatic animals;
- developing guidelines to promote the harmonization of trade related regulations and facilitate a dialogue between shrimp producing countries and importing countries to ensure access of small-scale shrimp farmers in international trade;
- assistance with environmental risk assessment;
- assistance with integrated planning aquaculture development in coastal areas and watersheds; and
- development of sustainability issues in aquaculture feed and best-management feed strategies.

14. On other business, the Sub-Committee recommended that additional resources should be sought within the Regular Programme or through Extra-Budgetary resources to undertake aquaculture activities.

EFFORTS BY THE FISHERIES DEPARTMENT TOWARDS IMPLEMENTING THE ABOVE RECOMMENDATIONS

15. The Sub-Committee is informed that some information provided in this Working Document may be repeated in other working documents of this session, in particular the Working Document No. 3 - Progress made on the implementation of the aquaculture related provisions of the Code of Conduct for Responsible Fisheries – as most recommendations of the Sub-Committee are related to implementation of the CCRF. The Secretariat has tried hard to minimize unnecessary repetition of information among different working documents.

16. Due to various constraints, financial, human resource and time, in particular, it was not possible to implement all recommendations of the Sub-Committee. Nevertheless, owing to the significant efforts made by the Fisheries Department, considerable progress has been made on the implementation, which is reported in this document.

Priority area A

17. Because of the current budget crisis, it was not possible to secure funds to hold the meeting on promotion of commercial aquaculture in Africa in this biennium. Previous to the announcement of the budget crisis, efforts were made to find a host country. Madagascar had, in principle, agreed to host the event. However, contacts have been put on hold awaiting the normalisation of the budget situation.

18. On-going preparatory studies include: (a) “Contribution of commercial aquaculture to food security, poverty alleviation and economic growth and development in selected Latin America and sub-Saharan Africa countries; and (b) Comparative advantage of selected commercial aquaculture species in Latin America, sub-Saharan Africa and Southeast Asia. Reports are being finalised and will be completed in 2006.

19. The Fisheries Department has been successful in promoting regional networks on aquaculture. The networks are at different levels of functioning; FAO’s assistance towards reinforcing the networks will continue.

20. The NACEE⁵, with a membership of 31 institutions from 13 CEE⁶ countries was established in November 2004. HAKI⁷ is the Coordinating Institute and 21 institutions from 21 countries participated in this 1st meeting which was held in Szarvas, Hungary⁸. The 2nd Meeting of the Directors of NACEE took place in Astrakhan, Russian Federation, in September 2005, participated by 16 countries. A 3rd meeting to be held in late 2006 is being organized.

21. The FAO and APEC⁹ launched two parallel initiatives exploring the possibilities of establishing a Network of Aquaculture Centres in Latin America and the Caribbean (RED/LAC). Two workshops were held: (a) FAO Workshop on the “Feasibility of Establishing a Regional Cooperation Network for Aquaculture in Latin America and the Caribbean”, 6-8 December 2004, Panama; and (b) APEC Workshop on “Feasibility Study for the Establishment of an Aquaculture Network for the Americas”, 26-28 April, 2005, Mazatlan, Mexico. During the 10th meeting of the

⁵ Network of Aquaculture Centres in Central-Eastern Europe (NACEE).

⁶ Central-Eastern Europe countries include: Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russian Federation and Ukraine.

⁷ Hungarian Research Institute for Fisheries, Aquaculture and Irrigation (HAKI).

⁸ FAO/Network of Aquaculture Centres in Central-Eastern Europe (NACEE). 2005. *Report of the First Meeting of Directors of the Network of Aquaculture Centres in Central-Eastern Europe (NACEE)*. Szarvas, Hungary, 21-24 November 2004. FAO Fisheries Report No. 774. Rome, FAO. 195p.

⁹ Asia-Pacific Economic Cooperation (APEC).

COPESCAL¹⁰, in Panama in September 2005, a discussion paper was presented comparing the outcomes of the two initiatives¹¹.

22. The 13th Session of the Secretariat of CIFA¹², in October 2004, discussed the findings¹³ of a Mission which explored the opportunities for, and requirements of, a NACA-like mechanism in Africa. The Mission concluded that there is overwhelming support from within the Region for the concept of establishing a regional intergovernmental aquaculture network organization for Africa to facilitate and hasten aquaculture development. The first interim step recommended was the establishment of a CIFA Sub-Committee for Aquaculture with a Secretariat to be provided by the FAO Regional Office for Africa.

Priority area B

23. In Viet Nam, in June 2004, FAO organized the first international conference on organic aquaculture, jointly with INFOFISH and VASEP¹⁴. This meeting was attended by experts from 38 countries, giving an overview of this increasing market, and focused on the strategic importance of certification and labelling for aquaculture products¹⁵, including ISO (International Organization for Standardization) and adoption of traceability measures.

24. The recommendation for working on organic aquaculture is currently being implemented by INFOFISH under a COFI Sub-Committee on Fish Trade project, in Myanmar, Thailand and Malaysia. The main aim of the 3-year project on organic aquaculture (to commence in 2006) is to assist the Asian aquaculture industry to accommodate and implement product sustainability and safety requirements to ensure wider market acceptance and competitiveness.

25. The 9th Session of COFI Sub-Committee on Trade recommended the differentiation of fishery products from aquaculture and from capture fisheries in the trade statistics and countries were asked to provide input on possible ways to achieve this goal. However, no input was received from countries and this issue was not included in the agenda of the 10th Session of COFI Sub-Committee on Fish Trade.

26. The Fisheries Department continues to provide assistance to national development programmes through regional fishery bodies, within the limited financial and human resources available.

27. The FAO Regional Fishery body APFIC¹⁶ convened a regional workshop to review the aquaculture and capture fishery issues relating to “low value/ trash fish” use in the Asia-Pacific region. The workshop recommended policy and action plans to address the emergence of ‘trash’ fish fisheries in the region¹⁷.

28. The Fisheries Department also provided financial support and technical assistance for several relevant meetings and workshops held during the intersessional period by other Regional Fishery Bodies: CIFA¹⁸ on its 13th Session, COPESCAL¹⁹ on its 10th Session, EIFAC²⁰ on its 23rd Session, SIPAM²¹ of the GFCM²² on an expert meeting and RECOFI^{23,24} on its 3rd Session.

¹⁰ Comisión de Pesca Continental para América Latina (COPESCAL)

¹¹ *FAO Report of the Workshop on the Feasibility of Establishing a Regional Cooperation Network for Aquaculture in Latin America and the Caribbean*. 2005. Panama, Republic of Panama, 6-8 December 2004. (English/Spanish). FAO Fisheries Report. No. 773. Rome, FAO. 43p.

¹² Committee for Inland Fisheries for Africa (CIFA).

¹³ FAO. Report of the 13th session of the Committee for Inland Fisheries of Africa. Entebbe, Uganda, 27–30 October 2004.

¹⁴ Vietnam Association of Seafood Exporter and Producers (VASEP).

¹⁵ Overview of Organic Markets: an Opportunity for Aquaculture Products? Globefish Research Programme, Vol. No. 77.

¹⁶ Asia-Pacific Fishery Commission (APFIC).

¹⁷ The RAP publication 2005/21 Low value/trash fish workshop
<http://www.APFIC.org/modules/mydownloads/visit.php?cid=5&lid=130>

¹⁸ FAO. Report of the 13th session of the Committee for Inland Fisheries of Africa. Entebbe, Uganda, 27–30 October 2004.

¹⁹ FAO Oficina Regional para América Latina y el Caribe. *Informe de la decimo reunion de la Comision de Pesca Continental para America Latina*. Panama, Republica de Panama, 7-9 Septiembre de 2005. FAO Informe de Pesca. No. 784. Santiago, 2005. 21p.

Priority area C

29. The Fisheries Department in cooperation with the Development Law Service developed the NALO²⁵, a series of comparative national overviews of laws and regulations on aquaculture. The overviews reflect the multi-disciplinary character of aquaculture, the complex issues involved and the various regulations under a wide range of legislation governing the sector. Since 2003, 34 NALOs has been published on the FAO web site²⁶. The NALOs will be made available in all FAO official languages.

30. Development of species fact sheets for inclusion in the FIGIS²⁷ is continuing. As of May 2006, 547 species fact sheets were available. The information in FIGIS is relatively general and is not related to specific aquaculture/breeding issues. In 2003, the development of cultured aquatic species fact sheets was initiated. As of May 2006, facts sheets for 26 species are available on the internet²⁸, 350 more are envisioned.

Priority area D

31. The Fisheries Department recently launched a multidisciplinary aquaculture glossary which can be searched alphabetically or by thematic area. The primary objectives of the glossary are: to serve as reference to fish farmers, consultants, administrators, policy makers, developers, engineers, agriculturists, economists, environmentalists and anybody interested in aquaculture and to facilitate communication among experts and scientists involved in aquaculture research and development. The glossary can be accessed at the FAO website²⁹ and will be published in due course.

32. The Fisheries Department made progress in the implementation of recommendations related to improving status and trends reporting on aquaculture (see COFI/AQ/III/2006/4 and COFI/AQ/III/2006/Inf. 6)³⁰.

33. The ongoing TCP project (TCP/RAF/3102 - Support to the Aquaculture Sub-sector in the Riparian Countries around Lake Victoria) with the Lake Victoria Fisheries Organization has a component related to the development of a coordinated national and sub-regional statistical system for aquaculture for the countries involved (i.e., Tanzania, Kenya and Uganda).

Priority area E

34. The Fisheries Department continues to support the work of the CCFFP³¹, the FAO/WHO initiatives on risk assessments relevant to trade and provision of technical advice to CAC³².

35. Concerning the spread of pathogens and assistance required by member governments in reducing the risks of disease, the Department has been active in providing assistance at national and regional levels. Under TCP/INS/2905, a Regional Workshop on Preparedness and Response

²⁰ FAO Report of the Twenty-third Session of the European Inland Fisheries Advisory Commission. 2005. Wierzba, Poland, 26 May-2 June 2004. (English/French). FAO Fisheries Report No. 771. Rome, FAO. 43 p.

²¹ Network on Information System for the Promotion of Aquaculture in the Mediterranean (SIPAM).

²² FAO/General Fisheries Commission for the Mediterranean. 2006. *Report of the Expert Meeting for the Re-establishment of the GFCM Committee on Aquaculture Network on Environment and Aquaculture in the Mediterranean*. Rome. 7-9 December 2005. FAO Fisheries Report. No. 791. Rome, FAO. 61p.

²³ Regional Commission for Fisheries (RECOFI).

²⁴ FAO Regional Office for the Near East. 2005. *Report of the Third Session of the Regional Commission for Fisheries*. Doha, Qatar, 9-11 May 2005. FAO Fisheries Report. No. 783. Rome, FAO. 18p. (Bilingual version English/Arabic)

²⁵ National Aquaculture Legislation Overview (NALO).

²⁶ http://www.fao.org/figis/servlet/static?dom=root&xml=aquaculture/nalo_search.xml

²⁷ Fisheries Global Information System (FIGIS).

²⁸ http://www.fao.org/figis/servlet/static?dom=root&xml=aquaculture/cultured_search.xml

²⁹ <http://www.fao.org/fi/glossary/>

³⁰ FAO Fisheries Department. 2005. *Towards improving global information on aquaculture*. FAO Fisheries Technical Paper. No. 480. Rome, FAO. 172p.

³¹ Codex Committee of Fish and Fishery Products (CCFFP).

³² Codex Alimentarius Commission (CAC).

to Aquatic Animal Health Emergencies in Asia³³, conducted in July 2005 in Indonesia, produced the Guidelines on Preparedness and Response to Aquatic Animal Health Emergencies³⁴ which provided technical procedures for contingency planning, emergency preparedness and response for aquatic animal diseases in developing countries.

46. An on-going TCP/RAS/3101 - Sustainable Aquaculture Development in Pacific Micronesia – includes capacity building activities on pathogen risk assessment and health management in aquaculture and fisheries for Pacific Micronesian islands.

37. A number of TCPs (completed, on-going and pipeline) have components on health and safety of aquaculture products. These include: TCP/BZE/3003 Strengthening the Biosecurity Framework (January 2005 to December 2006); TCP/LAT/3001 Improving Aquatic Animal Health and Quality and Safety of Aquatic Products (2004 until July 2006); TCP/IND/2902 Health Management in Shrimp Aquaculture in Andhra Pradesh (2003 to present); and TCP/INS/2905 Health Management in Freshwater Aquaculture (2003-2005).

38. A study on the food safety control regimes of the major importers and exporters and the causes of detentions and/or rejections of aquaculture products during border control has been completed³⁵. The 6th World Congress on fish trade and safety was organized and attendance of over 30 participants from developing countries was supported.

39. The Fisheries Department has been working closely with the OIE and concluded two major collaborative workshops: (a) Surveillance and Zoning for Aquatic Animal Diseases³⁶ and (b) Development of CCRF Technical Guidelines on Health Management for Responsible Movement of Live Aquatic Animals in Sri Lanka in 2005. FAO is also collaborating with OIE on the FAO/OIE/WHO expert consultation on antimicrobial use in aquaculture, which will be held in June 2006 is expected to deal with the risk mitigation strategies, including analytical techniques.

Priority area F

40. The Fisheries Department conducted a study and analysis of freshwater seed as global resource for aquaculture with particular emphasis on rural aquaculture. The study comprised of 20 country case studies (Bangladesh, Brazil, Cambodia, Cameroon, China, Colombia, Cuba, Ecuador, Egypt, Ghana, India, Indonesia, Mexico, Pakistan, Philippines, Sri Lanka, Thailand, Uganda, Viet Nam and Zimbabwe), 3 regional synthesis (Asia, Africa and Latin America) and reviews on selected themes. The study culminated in an FAO Expert Workshop on Freshwater Seed as Global Resources for Aquaculture held in PR China from 23-26 March 2006. The reports and proceedings of the study will be available in late 2006. Some findings are discussed/included in the Prospective Analysis of Future Aquaculture Development (see COFI/AQ/III/2006/8 and COFI/AQ/III/2006/Inf. 7³⁷).

41. On tagging and marking methodologies of species to assess contributions of stocking programmes, the publication Aquatic telemetry³⁸ contains many useful information that may be used for applying radio telemetry as a tagging methodology for stocking programmes. Two relevant TCPs on this subject are: (a) TCP/EST/2901: on Re-opening of Migration Routes for

³³ Subasinghe, R.P. & Arthur, J.R. 2005. *Regional Workshop on Preparedness and Response to Aquatic Animal Health Emergencies in Asia*. 21-23 September 2004. FAO Fisheries Proceedings No. 4. Rome, FAO. 2005. 178p.

³⁴ Arthur, J.R., Baldock, F.C., Subasinghe, R.P. & McGladdery S.E. 2005. *Preparedness and response to aquatic animal health emergencies in Asia: guidelines*. FAO Fisheries Technical Paper, No. 486. Rome, FAO. 40p

³⁵ Ababouch, L.; Gandini, G.; Ryder, J. 2005. *Detentions and rejections in international fish trade*. FAO Fisheries Technical Paper. No. 473. Rome, FAO. 110p.

³⁶ Subasinghe, R.P., McGladdery, S.E. & Hill, B.J. 2004. *Surveillance and zoning for aquatic animal diseases*. FAO Fisheries Technical Paper. No. 451. Rome, FAO. 73p.

³⁷ Prospective Analysis of Future Aquaculture Development (draft information document prepared for the COFI/AQ/III/2006)

³⁸ Spedicato, M.T., Lembo, G., & Marmulla, G. (Eds). 2005. *Aquatic Telemetry. Advances and applications*. Proceedings of the Conference on Fish Telemetry held in Europe, Ustica, Italy, 9-13 June 2003. Rome, FAO/COISPA. 295p.

Salmon and Other Migratory Fish in Estonian Rivers with telemetry training course in Estonia, July-August 2005; and (b) TCP/POL/3003: Re-opening of Migration Routes for Migratory Fish in Polish Rivers.

42. Regarding risk analysis, a new biennial output has been included in the Fisheries Department's Programme Work and Budget 2006-2007 to support the theme Application of Risk Analysis in Aquaculture Production. A new project is being implemented with funding from the Government of Norway to: (1) review the (a) current state of knowledge and understanding on the risks involved in aquaculture development and management, and (b) application of risk analysis (hazard identification, risk assessment, risk management and risk communication) in aquaculture with the view to reduce those perceived risks; and (2) to prepare and compile a technical document providing advice and assistance to FAO member countries in the application of risk analysis in aquaculture as a decision-making tool for sustainable development of the sector.

43. A world review of aquaculture insurance is on-going, the results of which will be published in late 2006³⁹. A regional workshop on the promotion of fisheries and aquaculture insurance for sustainable development of the sector is also being planned in 2006 or early 2007.

44. On community-based fisheries management, TCP/ZIM/3003 - Strengthening Fish Production through Improved Management of Small Water Bodies and Dams in Zimbabwe - is aimed to improve communal households' food security by making more easily accessible fish and fish products for sale and for domestic consumption through the promotion of community participation in the management of up to six selected dams/small water bodies. The project will also develop guidelines for the sustainable management of small water bodies and dams in Zimbabwe.

45. The FAO Regional Office for Asia and the Pacific undertook a review of stock enhancement practices in the inland water fisheries of Asia (RAP Publication 2005/12). The review covers the differing forms of stock enhancement in the region and the issues and potentials associated with these practices⁴⁰.

46. Between 2004-2005, the Caribbean Regional Fisheries Mechanism, assisted by the Fisheries Department, conducted case studies on the consideration of socio-economic and demographic concerns in fisheries and coastal area management and planning in Belize, Dominican Republic, Jamaica, Saint Lucia, Trinidad & Tobago and Turks & Caicos Islands. In addition, a study team from the Caribbean carried out a comparative study on the use of demographic and socio-economic information in coastal and fisheries management, planning and conservation in Malaysia and the Philippines. The findings of these studies⁴¹ were then reviewed in a regional workshop held on 13-17 June 2005 in Trinidad & Tobago.

Implementation of other recommendations

47. Based on the recommendations of the 1st Session of COFI Sub-Committee on Aquaculture, in Beijing, PR China, in 2002, the Fisheries Department, in collaboration with the World Fisheries Trust (Canada) convened a workshop, *Comparative Environmental Costs of Aquaculture and Other Food Production Sectors*, 24-28 April 2006, Canada, to: (a) advise FAO on appropriate and accurate accounting systems for comparing environmental costs of aquaculture and other terrestrial food production sectors; (b) evaluate strengths and weaknesses of such accounting systems; and (c) advise FAO on how to deal with this subject in the future. The workshop concluded that there are numerous methods to address comparative environmental costs of food production systems; such methods should be used together as no single method is

³⁹ Van Anrooy, R., Secretan, P.A.D., Lou, Y., Roberts, R., & Upare, M. 2006. *Review of the current state of aquaculture insurance in the world*. FAO Fisheries Technical Paper No. 493. Rome, Italy. 82 p.

⁴⁰ <http://www.apfic.org/modules/mydownloads/visit.php?cid=5&lid=124>

⁴¹ Tietze, U., Haughton, M. & Siar, S.V. (Eds.). 2006. *Socio-economic indicators in integrated coastal zone and community-based fisheries management – case studies from the Caribbean*. FAO Fisheries Technical Paper No. 491. (In press).

sufficiently robust to provide a complete comparison. The workshop proceedings with recommendations will be published in the FAO Fisheries Proceedings Series.

48. Responding to the recommendations concerning two important emerging issues on (a) exotic aquatic species, their introductions, transfers and movement, the risks and benefits, FAO supported the workshop “Building capacity to combat impacts of aquatic invasive alien species and associated trans-boundary pathogens in ASEAN countries” held in Malaysia on 12-16 July 2004 with the Department of Fisheries of Malaysia, NACA⁴², ASEAN⁴³, the WorldFish Center and the United States Department of State⁴⁴ aimed to better understand the relationship of aquatic invasive alien species and pathogens and their impacts (both positive and negative) and to identify management and capacity building needs to reduce the risks⁴⁵. Further work on this area has been conducted including an analysis of the impacts of introduction of several aquatic species into Asia region^{46,47}.

49. As recommended, follow-up activities of the Expert Consultation on Good Management Practices and Good Legal and Institutional Arrangements for Sustainable Shrimp Culture held in Australia in December 2000 were continued, including those of the Consortium on Shrimp Farming and the Environment. International Principles for Responsible Shrimp Farming has been developed (see COFI/AQ/III/2006/Inf. 8)⁴⁸. The Consortium is now working on reviewing and analysing the various certification systems in place with a view to ensure harmonized approaches and procedures for the development and implementation of shrimp aquaculture products certification systems.

50. The TCP/CHI/3002 project “Certification of the compliance on the Aquaculture Environmental Regulation in Chile” supports the establishment of a certification process of the Environmental Regulation for Aquaculture (RAMA); assists the government in developing a system of assessment of environmental performance at the farm-level including related certification of compliance with environmental regulations, based on technical review of parameters and requirements, legal and financial-economic feasibility appraisals of the certification system, and wide-ranging consultations with all concerned stakeholders including certification and accreditation companies (see also COFI/AQ/III/2006/7).

51. As requested by the Sub-Committee, a prospective analysis of future challenges in global aquaculture as a basis for a discussion of the longer term direction of the Sub-Committee’s work has been completed (see COFI/AQ/III/2006/8).

52. Responding to the need for financial assistance towards implementing some recommendations by the Sub-Committee, a unilateral trust fund (UTF) project has been established through the assistance by the Government of Japan, entitled “Towards Sustainable Aquaculture: Selected Issues and Guidelines”. The project addresses four thematic areas: (a) food safety of aquaculture fish, (b) environmental impact assessment and monitoring in aquaculture, (c) use of wild fish/fishery resources for aquaculture production, and (d) use of wild fish and/or other aquatic species to feed cultured fish and its implications to food security and poverty alleviation.

⁴² Network of Aquaculture Centres in Asia-Pacific (NACA).

⁴³ Association of Southeast Asian Nations (ASEAN).

⁴⁴ NACA. 2005. “Building capacity to combat impacts of aquatic invasive alien species and associated transboundary pathogens in ASEAN countries, July 12-16, 2004. Penang, Malaysia.” Bangkok, Network of Aquaculture Centres of Asia.

⁴⁵ Bartley, D.M., Bhujel, R.C., Funge-Smith, S., Olin, P.G., & Phillips, M.J. (comps./eds.). 2005. International mechanisms for the control and responsible use of alien species in aquatic ecosystems. Report of an Ad Hoc Consultation, 23-27 August 2003, Xishuangbanna, People’s Republic of China. Rome, FAO. 2005, 195p.

⁴⁶ Briggs, M., Funge-Smith, S., Subasinghe, R.P., & Phillips, M. 2005. *Introductions and movement of two penaeid shrimp species in Asia and the Pacific*. FAO Fisheries Technical Paper. No. 476. Rome, FAO. 78 p.

⁴⁷ De Silva, S., Subasinghe, R.P., Bartley, D.M. & Lowther, A. 2004. *Tilapias as alien aquatics in Asia and the Pacific: a review*. 2004. FAO Fisheries Technical Paper No.453. Rome, FAO. 65p.

⁴⁸ FAO/NACA/UNDP/WB/WWF. 2006. International principles for responsible shrimp farming. Network of Aquaculture Centres in Asia-Pacific. Bangkok. Thailand. 32p. In press.

53. Project implementation is continuing at different stages. Relevant information are being collected and analysed. It is envisioned that possible management regimes and options for targeted response measures with due consideration of feasibility and affordability of possible implementation of such measures and guidelines will be developed.

54. The Danish government is providing support for two years to an APO⁴⁹ based in FAO-RAPI (Bangkok) who will develop an Asia Regional Programme on Food Safety in Aquaculture, with special emphasis on small-scale aquaculture.

Progress on intersessional activities

55. Under the Fisheries Department's work programme on methodology and guidelines for sustainable fisheries enhancement, especially stocking, in inland water bodies, CCRF guidelines on responsible stocking practices are being developed, covering both biotechnical and social issues. Under this activity, the objectives on culture-based enhancements will be identified. These will, *inter alia*, include increasing the harvest from specific fisheries, rebuilding depleted stocks, conserving specific aquatic organisms, maintaining genetic diversity, promoting social welfare and harmony, and increasing economic status of the area.

56. FAO Fisheries Technical Paper 429⁵⁰ contains a number of case studies representing various scenarios and situations using sea ranching and marine hatchery enhancement (e.g. marine stocking in Norway, stock enhancement of barramundi in Australia for recreational fisheries, sea cucumber restocking in the Pacific Islands, sturgeon restocking in Caspian Sea; flounder stocking in Japan) to generate income, re-establish fisheries and conserve biodiversity.

57. The Fisheries Department convened several workshops on the responsible use of exotic (alien) and genetically improved cultured organisms and published several documents on the subject (Gupta *et al.* 2004⁵¹; Bartley *et al.* 2005⁵²). These activities are leading to the creation of Technical Guidelines in support of the CCRF on the responsible use and control of alien species in fisheries and aquaculture.

58. Recently, FAO in collaboration with WorldFish Center (WFC) and funded by DFID, convened a workshop with industry and government officers on Genetic Management of Aquaculture Stocks in Sub-Saharan Africa, Accra, Ghana, in March 2006. The proceedings will be published in late 2006.

59. Recognizing that documentation is a first step in the sustainable use of biodiversity, FAO has published material and created a database on traditional use of biodiversity in rice-based ecosystems (Halwart and Bartley 2005⁵³) and has convened workshops supported by the FAO/Netherlands Partnership Programme in Bangkok on documentation and the nutritional importance of that biodiversity.

60. In cooperation with APEC, NACA, Thailand's Department of Fisheries, and Mexico's SAGARPA⁵⁴, CONAPESCA⁵⁵, and INP⁵⁶, two training workshops on risk analysis for the safe movement of live aquatics were successfully conducted in Thailand (1-6 April 2002) and Mexico (12-17 August 2002), with a total of 130 participants comprising regulatory authorities,

⁴⁹ Associate Professional Officer (APO).

⁵⁰ Bartley, D.M. & Leber, K.M. (eds.). 2004. *Marine ranching*. Rome, FAO. 213p.

⁵¹ Gupta, M.N., Bartley, D.M., & Acosta, B. (eds.). 2004. *Use of genetically improved and alien species for aquaculture and conservation of aquatic biodiversity in Africa*. World Fish Center Conference Proceedings 68. 113p

⁵² Bartley, D.M., Bhujel, R.C., Funge-Smith, S.; Olin, P.G., Phillips, M.J. (Comps/eds). 2005. *International mechanisms for the responsible use and control of alien species in aquatic ecosystems*. Report of an Ad Hoc Expert Consultation. Xishuangbanna, People's Republic of China, 27-30, August 2003. Rome, FAO. 195p.

⁵³ Halwart, M. & Bartley, D.M. 2005. Aquatic biodiversity in rice-based ecosystems. Studies and reports from Cambodia, China, Lao PDR and Viet Nam (CD-Rom). Rome, FAO.

⁵⁴ Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SAGARPA).

⁵⁵ Comisión Nacional de Acuicultura y Pesca (CONAPESCA).

⁵⁶ Instituto Nacional de la Pesca (INP).

administrators and aquatic animal health specialists responsible for the trade of live aquatic animals, representing 37 countries in Asia-Pacific and the Americas⁵⁷. A manual on risk analysis for the safe movement of aquatic animals was also produced⁵⁸.

61. The FAO Regional Office for Asia and the Pacific supported by the Fisheries Department and in collaboration with the ASEAN Secretariat and the Thai Department of Fisheries, organized the “FAO-ASEAN Strategic Planning Workshop on Harmonization of Standards for Shrimp Export-Import” held in Thailand, 4-6 November 2003. The workshop recommendations included points for action by the ASEAN member countries and specific technical recommendations for improving the ability for ASEAN countries to address issues relating to the safety and trade of seafood (specifically shrimp)⁵⁹.

62. Considering the importance of feed as a major resource for future aquaculture development, a study and analysis of feed and nutrients (including fertilizers) for sustainable aquaculture development has been undertaken. An expert workshop on the use of feed and fertilizer for sustainable aquaculture development was held in China P.R. from 18-21 March 2006. The workshop outputs include key issues identified and recommended actions (i.e., policy guidelines, studies & research, capacity building, extension and application) which will facilitate and enable policy makers at global and regional levels to implement improved aquaculture practices and farming systems through optimal utilization of feed and fertilizer resources. Details of the proceedings will be available in a Workshop Report to be published in 2006. Certain recommendations are discussed/included in the Prospective Analysis for Future Aquaculture Development (see COFI/AQ/III/2006/8 and COFI/AQ/III/2006/Inf. 7).

63. In 2005, the Fisheries Department, as one of its regular programme activities, conducted a series of regional aquaculture development trends reviews, with the view to make a global appraisal of the status of aquaculture and the trends in its development. These regional reviews and the resulting global review or synthesis were done in parallel with and complementary to the development of NASOs (see COFI/AQ/III/2006/4) and the preparation of a Prospective Analysis of Future Aquaculture Development. Seven regional aquaculture development trends reviews were made⁶⁰ and the outcomes from these reviews were synthesized into a global synthesis document entitled – *The State of World Aquaculture 2006*⁶¹ (see COFI/AQ/III/2006/Inf. 9).

SUGGESTED ACTION BY THE SUB-COMMITTEE

64. The Sub-Committee is invited to discuss the working document and the relevant information documents and make appropriate suggestions and recommendations.

⁵⁷ Arthur, J.R. & Bondad-Reantaso, M.G. (eds.). 2004. *Capacity and awareness building on import risk analysis (IRA) for aquatic animals*. Proceedings of the Workshops held 1-6 April 2002 in Bangkok, Thailand and 12-17 August 2002 in Mazatlan, Mexico. APEC FWG 01/2002, NACA, Bangkok, 203 p.

<http://www.enaca.org/modules/mydownloads/singlefile.php?cid=21&lid=528>

⁵⁸ Arthur, J.R., M.G. Bondad-Reantaso, F.C. Baldock, C.J. Rodgers and B.F. Edgerton. 2004. Manual on risk analysis for the safe movement of aquatic animals (FWG/01/2002). APEC/DoF/NACA/FAO. 59 p. APEC Publication Number: APEC # 203-FS-03.1.

<http://www.enaca.org/modules/mydownloads/singlefile.php?cid=21&lid=527>

⁵⁹ <http://www.apfic.org/modules/mydownloads/visit.php?cid=42&lid=12>

⁶⁰ FAO. *Regional review on aquaculture development*. 1-7. 2005. FAO Fisheries Circular No. 1017/1-7. Rome. FAO. xxpp.

⁶¹ FAO. 2006. *The state of world aquaculture 2006*. FAO Fisheries Technical Paper. No. 500. Rome, FAO. xxxp.