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COMMITTEE ON FISHERIES

SUB-COMMITTEE ON AQUACULTURE

Fifth Session

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THE FAO FISHERIES AND AQUACULTURE DEPARTMENT'S EFFORTS IN IMPLEMENTING THE RECOMMENDATIONS OF THE PAST SESSIONS OF THE COFI SUB-COMMITTEE ON AQUACULTURE

SUMMARY

This document contains a brief overview of the efforts made by the FAO Fisheries and Aquaculture Department, towards implementing the recommendations of the past sessions of the COFI Sub-Committee on Aquaculture.

INTRODUCTION

1. The fourth Session of the Sub-Committee was held in Puerto Varas, Chile, from 6–10 October 2008, at the invitation of the Government of Chile. The report of the Fourth Session is provided as an information document, COFI:AQ/V/2010/Inf.5¹.

MAJOR RECOMMENDATIONS AND SUGGESTIONS OF THE SUB-COMMITTEE

2. The fourth Session of the Sub-Committee made a number of suggestions, comments and recommendations, and identified several priority areas for future work towards achieving the full potential of aquaculture for national, regional and global food security, poverty alleviation and human development. Details are provided in the Sub-Committee report COFI:AQ/V/2010/Inf.5

3. **Issues arising from the implementation of the recommendations of the past sessions of the Sub-Committee.** The following points have been taken into consideration:

- the need for further action to support the development of aquaculture in Africa, in particular the establishment of the Special Programme for Aquaculture Development in Africa (SPADA) and the Aquaculture Network for Africa (ANAF);

¹ Committee on Fisheries. Report of the fourth session of the Sub-Committee. Puerto Varas, Chile, 6–10 October 2008. FAO Fisheries Report. No. 891. Rome, FAO. 2009. 69p.

- continuing FAO's endeavour at the national, regional and global level to facilitate the use of information by all stakeholders in decision-making;
 - the importance of the establishment of the Aquaculture Network of the Americas (ANA) recognizing the relevance of creating aquaculture networks for the development of sustainable aquaculture;
 - The importance of FAO's continued support to countries in the development of policies and plans for aquaculture development with an ecosystem perspective so as to include other resource users. Other priority areas to be considered:
 - Incorporation of economic and social aspects in aquaculture;
 - Participation of women in aquaculture development;
 - Interaction between fisheries and aquaculture; and
 - Increase efforts towards improving the knowledge and management of aquatic animal health while building capacity at the regional levels;
 - Emphasized the need for improving efforts towards the support of small-scale aquaculture (SSA) underlining its relevance for most regions.
4. **Special event on the FAO Fisheries and Aquaculture Department's SPADA**, the following recommendation was made:
- Some delegates expressed the need for FAO to support their countries through SPADA including the implementation of the recommendations of the 2003 FAO-WARDA² Bamako workshop on rice-fish farming³.
5. **Technical Guidelines on Aquaculture Certification**, the following was recommended:
- The Sub-Committee recommended that finalization of the guidelines is given highest priority by FAO which should strive to secure financial resources to finalize the process and to support broad participation of Members in particular from developing countries. Several Members suggested that FAO should also seek extra-budgetary funding, as necessary, to ensure finalization of the guidelines;
6. **Improving the progress reporting on implementing the aquaculture related provisions of the 1995 FAO CCRF provisions relevant to aquaculture and culture-based fisheries**, with regard to the questionnaire for evaluating the progress being made in the implementation of the Code, it was recommended/suggested that:
- further work on the proposed reporting template is required, specifically referring to the need for criteria to be comprehensive and more generic and the need for benchmarking criteria to be country-specific and linked to the relevant sections in Article 9 of the CCRF;
 - the need to supplement rankings with contextual information;
 - criteria on the development of initiatives and criteria on their implementation be distinct within the questionnaire; and
 - recommended a revised pilot version of the questionnaire format be tested in different regions reflecting different environmental conditions in order to ensure global applicability.
7. **Towards better governance in aquaculture**, the following points have been taken into consideration:
- Self-governance was considered to be an additional desirable approach, and the need for capacity building at farmers and farm organization levels was underscored;
 - It was mentioned that the development of all types of aquaculture enterprises, i.e. small, medium and large, should be encouraged and the governance mechanisms

² Africa Rice Center

³ The report of the workshop is available at <ftp://ftp.fao.org/docrep/fao/008/y5867b/y5867b00.pdf>

should endeavour to support them. A few Members also suggested that governance measures should consider aquaculture management as an integral and integrated activity for the use of land and water resources;

- Some countries stressed the need for capacity building in areas such as strengthening governance schemes, aquaculture regulation and legislation, certification and traceability, food safety, the use of aquaculture insurance and appropriate governance for offshore farming;
- Technical assistance must take into consideration the different characteristics of each country or region. FAO has been requested to strengthen both south-south and north-south cooperation towards the improved exchange of expertise and experiences.
- Building awareness on success stories and highlighting the positive impacts of aquaculture were considered important. Some Members suggested that practical country case studies of successful governance models could be discussed by the Sub-Committee and disseminated in order to improve the sectoral management by other Members; and
- Upon the suggestion of several members, the Secretariat organized a side event to share good governance initiatives and experiences. Many members requested that this be planned also for the coming sessions.

8. Opportunities for addressing the challenges in meeting the rising global demand for food fish from aquaculture, the following recommendations were made:

- Several Members highlighted the need for guidelines, standards, manuals and better management practices (BMPs) and requested the help of developed countries and FAO to provide further assistance;
- In pursuing aquaculture development in sub-Saharan Africa, the Members requested technical assistance so as to access high quality inputs such as improved fish seed and feed, credit, information and education for implementing their national aquaculture development plans and for dealing with the challenges at hand;
- The Sub-Committee emphasized the need for a regional approach concerning disease outbreaks and the need to establish an aquatic biosecurity framework and requested FAO to provide technical assistance through a regional technical cooperation project (TCP) under the umbrella of SPADA.
- Several Members as well as observers stressed the importance of the increasing demand of the aquaculture sector for feeds:
 - the important contribution of low value fish species for feed purposes was underlined;
 - research and development efforts should increasingly focus on alternative feeds;
 - the general improvement of feed resource use in feed manufacturing and the efficient use of farm-made feeds with locally available ingredients were also stressed;
 - attention to the issue of other users of fishmeal such as the pet food industry;
 - a number of African countries expressed the need for *Artemia* production as an alternative to fishmeal.
- Several countries stressed that well planned and well managed aquaculture leads to social benefits, improving food security and helping towards progress in achieving the Millennium Development Goals (MDGs). The need to educate the public on achievements and positive developments of aquaculture were mentioned. Critical issues identified were:
 - improving the governance, and organization of farmers;
 - environmental issues including effluents;
 - continued availability of fish feeds;
 - the integration of aquaculture into water resource management and agricultural sector management plans;

- other challenges mentioned included capacity building and farmer training to become more competitive and meet trade requirements, benefits and risks of seafood, sharing of best practices and the need to publicize positive impacts of certain aquaculture;
 - aquaculture in offshore areas was mentioned as promising but still requiring efforts in research as well as improvements in technology and regulatory framework; and
 - climate change and possibilities for mitigation as issues of increasing importance that could be dealt with in collaboration with other specialized agencies.
- Some countries mentioned the importance of food safety and the need for cost-effective certification and requested FAO to continue its work towards better market access including through the linkage, particularly, of small-scale farmers with fair trade organizations.
 - FAO was requested to provide technical assistance towards establishing and implementing an Association of Southeast Asian Nations (ASEAN) regional aquaculture development strategy including certification implementation, traceability and cluster farm management.
 - It was suggested that the Sub-Committee examine and report on the use of aquaculture technologies to enhance and rebuild depleted fisheries.

EFFORTS BY THE FISHERIES AND AQUACULTURE DEPARTMENT TOWARDS IMPLEMENTING THE ABOVE RECOMMENDATIONS

9. Due to various constraints, financial, human resources and in particular time, it was not possible to implement all recommendations of the Sub-Committee. Nevertheless, owing to the significant efforts made by the Fisheries and Aquaculture Department, considerable progress has been made on the implementation, which is reported in this document. We thank the member countries who provided extra-budgetary assistance.

10. SPADA is the Department's approach to aquaculture development in Africa and has been adopted by AU/NEPAD as a flagship programme through a MOU signed between FAO and AU/NEPAD. In the intercessional period considerable resources have been expended to elaborate the SPADA programme and a draft document is now available. Moreover, other activities under this programme have been earmarked for possible funding in the current biennium. FAO is assisting members with the issue of improved inputs and services including capacity building and in improving management and business management skills in at least a dozen countries in the Region within the broader context of SPADA. As an integral part of SPADA, the Aquaculture Network for Africa (ANAF) is receiving continued support from FAO through, among others, assistance to the "hub" in Jinja, Uganda, as well as establishing pilot national networks in Ghana and Zambia.

11. The ANAF website (<http://www.anafaquaculture.org>) has been developed to facilitate the exchange of aquaculture information in sub-Saharan Africa and to develop an informal, flexible and efficient network of regional experts to promote and accelerate the development of the sector in the region.

12. An Information System for the Promotion of Aquaculture in the Mediterranean (SIPAM) (<http://www.faosipam.org/>) to facilitate the exchange of aquaculture information in the region has been developed in collaboration with General Fisheries Commission for the Mediterranean (GFCM).

13. The Department has continued to publish and update the three aquaculture fact sheet collections: (i) National Aquaculture Sector Overview (NASO); (ii) National Aquaculture Legislation Overview (NALO); and (iii) Cultured Aquatic Species Information Programme

(CASIP) (<http://www.fao.org/fishery/aquaculture>) and a NASO Google-based map collection is being developed which will be available on the NASO web site in the second half of 2010.

14. The Department has initiated the development of an information system on aquaculture feed and fertilizer resources. This comprehensive web-based system designed to provide information on nutritional profile of selected aquaculture species (fish and crustacean) and a global database of aquaculture feed and fertilizers resources will be available on the FAO website by the second half of 2010.

15. The Department has recently initiated publication of quarterly Aquaculture Electronic Bulletin (<http://www.fao.org/fishery/e-bulletin>) to better disseminate FAO aquaculture publications and to provide information to member countries on ongoing aquaculture related activities.

16. FAORLC⁴ is in the process of implementing a technical cooperation project (TCP/RLA/3208) through which the needs and strengths of eight countries of South America (Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru and Uruguay) in terms of technology transfer in aquaculture and inland fisheries will be assessed and the results will be included in a regional report for member countries.

17. FAO Technical Guidelines for Responsible Fisheries No. 5 on Aquaculture Development and No. 5.1 on Good Aquaculture Feed Manufacturing Practice have both been translated into Russian.

18. Aquaculture Service (FIRA), together with FAOSLS⁵, organized a workshop⁶ to reactivate an aquaculture cooperation network in the Americas. The workshop was held from the 10-12 June, 2009 in Guayaquil, Ecuador. Participants ratified their interest to create ANA as an inter-governmental organization (IGO). An *ad interim* directive council representing Brazil, Chile, Ecuador, Mexico and OSPESCA⁷ was also agreed and Brazil was appointed as the *ad interim* Secretariat with an Executive Secretary for two years. The meeting for the formal signature by the adhering countries' aquaculture authorities at ministerial level, and therefore definitive formalization of the creation of the network, is expected to take place in Brasilia, Brazil, in April 2010.

19. The interaction between fisheries and aquaculture has been a core activity in several workshops for the implementation of the ecosystem approach to fisheries (EAF) and aquaculture (EAA). These have included activities with OSPESCA and also with INPESCA⁸ in Nicaragua where there is a pilot implementation of the EAF-EAA to deal with the interaction between both sectors particularly focusing on shrimp fisheries and aquaculture. A framework for the EAA to emphasize the need for the development of aquaculture with an ecosystem perspective is in the process of development. Several workshops have been held to pilot test the implementation of the approach including an APFIC⁹ workshop on the EAF and aquaculture, Colombo, Sri Lanka, 18-21 May 2009. CCRF Guidelines on EAA will be published in 2010.

20. With the financial assistance from the Government of Japan, a project entitled *Towards Sustainable Aquaculture: Selected Issues and Guidelines* (GCP/INT/936/JPN) has been successfully implemented, and has produced several technical guidance documents. They include:

⁴ FAO Regional Office for Latin America and the Caribbean. <http://www.rlc.fao.org>

⁵ Multidisciplinary Team for South America

⁶ <ftp://ftp.fao.org/docrep/fao/008/y6009b/y6009b00.pdf>

⁷ Organización del Sector Pesquero y Acuícola del Istmo Centroamericano

⁸ Instituto de Investigación Pesquera. <http://www.inpesca.cl>

⁹ Asia-Pacific Fishery Commission

- a. Fisheries and Aquaculture Technical Paper 527¹⁰ on the Environmental Impact Assessment and Monitoring in Aquaculture and
 - b. Technical guidelines entitled “Use of wild Fish/Fisheries Resources for Capture-based Aquaculture: an ecosystem prospective” (presently being finalized).
21. An expert workshop on “The Potential of Spatial Planning Tools to Support the Ecosystem Approach to Aquaculture” was held in November 2008 and the proceedings are in press¹¹. A Technical manual entitled “Geographic Information Systems (GIS) and Remote Sensing in Fisheries and Aquaculture” is under preparation. This technical manual is intended to be a guide to concepts and methods that readers could adopt for their own use of GIS in order to support the implementation of the ecosystem approach.
22. Legal frameworks and aquaculture development strategies with an EAA, and taking into consideration gender issues and the interaction of fisheries and aquaculture, have been formulated for several countries (namely, Bolivia, Paraguay and Peru) in Latin America.
23. The Fisheries and Aquaculture Department undertook many studies and projects during the last biennium. The relevant activities are listed below:
- a. A study on “understanding and applying risk analysis in aquaculture” which attempted to quantify the social risks in aquaculture¹².
 - b. A Project on Methodologies and Indicators for Evaluating the Contribution of Small-Scale Aquaculture to Sustainable Rural Development¹³.
 - c. An Expert Consultation on the Assessment of the socio-economic impacts of aquaculture held in Ankara, Turkey, 4-8 February 2008, which identified the socio-economic impacts of aquaculture and discussed available methods for their assessment¹⁴.
 - d. A desk study on “Assessment of comparative advantage in aquaculture” was completed. The study provides two methodologies to compare relative costs of production and to assess the species and markets where there is a likelihood of success.
 - e. A methodology for assessing the contribution of aquaculture to food security, poverty reduction and economic growth was completed and published¹⁵. The purpose is to allow policy makers to be able to assess and compare the contribution of aquaculture to their national economies, their poverty reduction efforts and to food security.
 - f. Contributed to the preparation of the book Gender in Agriculture Sourcebook – a joint initiative by the World Bank, FAO and the International Fund for Agriculture Development (IFAD) with a module on Gender-balanced family approach to aquaculture development in Asia¹⁶.

¹⁰ <http://www.fao.org/docrep/012/i0970e/i0970e00.htm>

¹¹ Aguilar-Manjarrez, J., Kapetsky, J.M. and Soto, D. 2010. The potential of spatial planning tools to support the ecosystem approach to aquaculture. FAO/Rome. Expert Workshop. 19–21 November 2008, Rome, Italy. FAO Fisheries and Aquaculture Proceedings. No.17. Rome, FAO (in press).

¹² Bueno, P. 2008. Social risks in aquaculture, pp. 209-228. In Bondad-Reantaso, M.G., Arthur, J.R. and Subasinghe, R.P. (eds.). Understanding and applying risk analysis in aquaculture. FAO Fisheries Technical Paper. No. 519. Rome, FAO. 2008. 304p.

¹³ Kam, L.E. and Leung, Pingsun. 2008. Financial risk analysis in aquaculture, pp. 153-208. In Bondad-Reantaso, M.G., Arthur, J.R. and Subasinghe, R.P. (Eds.). Understanding and applying risk analysis in aquaculture. FAO Fisheries Technical Paper No. 519. Rome, FAO. 2008. 304p.

¹⁴ FAO.2008. Report of the Expert Consultation on the Assessment of Socio-economic Impacts of Aquaculture. Ankara, Turkey, 4-8 February 2008. FAO Fisheries Report. No. 861. Rome, FAO. 53p.
<http://www.fao.org/docrep/012/i0277e/i0277e00.htm>

¹⁵ Hishamunda, N.; J. Cai and P. Leung. 2009. Commercial aquaculture and economic growth, poverty alleviation and food security. Assessment framework. FAO Fisheries Technical Paper. No 512. FAO, Rome. pp.58

¹⁶ WB/FAO/IFAD. 2009. Gender in Agriculture Sourcebook. IBRD/WB. 764p.

24. Various technical publications (FAO and non-FAO contributed by FAO staff) and a number of ongoing TCPs and TCP facilities provide technical assistance to many countries to support FAO's efforts in improving knowledge and management of aquatic animal health and assisting countries to enhance compliance with international standards on aquatic animal health and as part of the capacity building process. These include the following: 1) Strengthening aquaculture health management in Bosnia and Herzegovina (TCP/BiH/3101), 2) Assistance to Western Balkan Countries for Improving Compliance with International Standards for Aquatic Animal Health (TCP/RER/3206)¹⁷, 3) Sustainable Aquaculture Development in the Republic of the Marshall Island: Risk assessment in aquaculture development (TCP/MAS/3101), 4) Identification of capacity building needs of the Malaysian fish inspection system to meet international market requirements (TCP/MAL/3201 (D)), and 5) Risk assessment in aquaculture development in Federated States of Micronesia (TCP/MIC/3201).

25. Three regional workshops on aquatic animal health management were held in Sarajevo¹⁸ and Zagreb (for Western Balkan countries) in May 2008 and September 2009; and in Jeddah, Saudi Arabia (for RECOFI¹⁹ Member states) in April 2008²⁰.

26. The Fisheries and Aquaculture Department is implementing a project on Prudent and Responsible Use of Veterinary Medicine in Aquaculture and the workshop is envisaged to identify effective and meaningful alternatives to antimicrobials for aquatic animal diseases, as a measure for enhancing biosecurity while conserving biodiversity of the aquatic environment and maintaining the safety of aquaculture products, and to produce CCRF Technical Guidelines on the prudent use of veterinary medicine in aquaculture.

27. A preliminary diagnostic of the small-scale, resource-scarce aquaculture producers sector, was carried out in 4 countries (Argentina, Chile, Ecuador and Paraguay). The results allowed identification of a series of weaknesses in terms of information availability and reliability as well as identifying cross-country issues that the sector is facing. Results were presented at the COPESCAL²¹ meeting in Manaus, Brazil in September, 2009.

28. Small scale aquaculture (carp and trout in ponds, cages and raceways) was supported by SEC under TCP/UZB/3103 through training sessions and a manual series of 5 extension manuals (in Russian).

29. The project on Methodologies and Indicators for Evaluating the Contribution of Small-Scale Aquaculture to Sustainable Rural Development organized two expert workshops and developed an indicator system that measures the contribution of SSA to rural development²². The indicator system has been pilot tested in several countries and general plans for up scaling the application of the indicator system are being made.

30. The Department is organizing the FAO/RIA²³ Expert Workshop "*Enhancing the Contribution of Small-Scale Aquaculture to Food Security, Poverty Alleviation, and Socio-Economic Development*", to be held in Hanoi, Viet Nam in April 2010. The objectives of the

¹⁷ Bondad-Reantaso, M.G., Arthur, J.R. and Subasinghe, R.P. (Eds.). 2009. Strengthening aquaculture health management in Bosnia and Herzegovina. FAO Fisheries and Aquaculture Technical Paper No. 524. Rome, FAO. 2009.

¹⁸ FAO. 2009. Report of the Western Balkan Regional Seminar/Workshop on Aquatic Animal Health. Sarajevo, Bosnia and Herzegovina, 19-21 May 2008. FAO Fisheries and Aquaculture Report No. 879. Rome, FAO. 2009. 25p.

¹⁹ Regional Commission for Fisheries

²⁰ Arthur, J.R., Reantaso, M.B. and Lovatelli, A. 2008. RECOFI Regional aquatic animal health capacity and performance survey: Summary of survey results and analysis. In FAO/Regional Commission for Fisheries. Report of the Regional Technical Workshop on Aquatic Animal Health. Jeddah, Kingdom of Saudi Arabia, 6-10 April 2008. FAO Fisheries and Aquaculture Report. No. 876. Rome, FAO. pp. 21-99.

²¹ Commission for Inland Fisheries of Latin America. <http://www.fao.org/fishery/rfb/copescal/en>

²² Bondad-Reantaso, M.G. & Prein, M. (eds.). 2009. Measuring the contribution of small-scale aquaculture: an assessment. FAO Fisheries and Aquaculture Technical Paper. No. 534. Rome, FAO. (in press)

²³ Research Institute for Aquaculture, Viet Nam

expert workshop are: (i) to understand SSA: its contribution/potential contribution and challenges/issues facing small-scale producers; (ii) to identify and elaborate entry points for enhancing the contribution of SSA to food security, poverty alleviation and socio-economic development; (iii) to identify concrete action plans to protect SSA from threats, risks, shocks, crises and emergencies; and (iv) using i, ii, and iii above as basis for preparing FAO CCRF Technical Guidelines for Enhancing the Contribution of Small-Scale Aquaculture to Food Security, Poverty Alleviation and Socio-Economic Development.

Special event on the FAO Fisheries and Aquaculture Department's SPADA

31. A meeting of the Committee for Inland Fisheries and Aquaculture for Africa (CIFAA) *ad hoc* Working Group on aquaculture networking was held at the Nigerian Institute for Oceanography and Marine Research (MIOMR) in Lagos from 24-27 August, 2009. The Working Group initially comprised of Cameroon, Ghana, Mali, Uganda and Zambia with collaborators from the New Partnership for Africa's Development (NEPAD), WorldFish and FAO. Over the years, Nigeria, Kenya, Tanzania and Mozambique formally joined the group.

32. The 15th Session of CIFAA was held in Lusaka, Zambia, from 9-11 December 2008.

33. An FAO FI Position Paper on Aquaculture Development in Africa has been prepared for the African Fisheries Ministers Conference scheduled to be held in 2010.

34. The Projects "Aquaculture Investments for Poverty Reduction in the Volta Basin: Creating Opportunities for Low-Income African Fish Farmers through Improved Management of Tilapia Genetic Resources" (Spain funded) and "Rice-Aquaculture-Irrigation-markets" (Japan-funded) are continued.

Technical Guidelines on Aquaculture Certification

35. Following the conclusion of the 4th Session of the COFI Sub-Committee on Aquaculture, FAO incorporated the comments of the member countries into the draft technical guidelines on aquaculture certification. In this regard a Technical Consultation, where the guidelines were discussed and revised, was held in Rome from 15-19 February 2010. These revised guidelines are presented to the 5th Session of the COFI Sub-Committee on Aquaculture for consideration (see COFI:AQ/V/2010/4).

Improving the progress reporting on the implementing the aquaculture related provisions of the 1995 FAO CCRF provisions relevant to aquaculture and culture-based fisheries

36. With regards to the above recommendations, three major activities were taken up. These were a) re-drafting the questionnaire based on the recommendations of COFI/SCA/IV, b) testing and evaluating the questionnaire by selected experts, focal points from various regions, and c) conducting an expert workshop to draft and recommend a final version of the questionnaire and recommend strategic and technical actions regarding its use. The test and evaluation activity were carried out during November and December of 2009. The expert workshop on the CCRF questionnaire was held on 12-15 January 2010 in the FAO Regional Office for Asia and the Pacific (RAP), Bangkok, Thailand. Eleven countries including the most prominent producers in different regions plus one IGO, OSPESCA (on behalf of the Central American states) and the Network of Aquaculture Centres in Asia-Pacific (NACA) participated in the activities. The most relevant aspects of these activities are presented in working document COFI/AQ/V/2010/5.

Towards better governance in aquaculture

37. Through TCPs, the FAO Fisheries and Aquaculture Department assisted 3 countries in Africa and 1 in Latin America in elaborating aquaculture development strategies, plans and

aquaculture code or law as a governance tools and initiated the same activity in 2 more countries, one in Africa and another in Latin America.

38. A thematic review on offshore aquaculture governance including in waters beyond national jurisdiction will be presented at the global Conference on Aquaculture, 22-25 September 2010, Phuket.

39. Thematic review on “Improving governance measures in aquaculture feed production and management” has been completed. This information obtained from the aforementioned thematic review will allow us to develop BMPs and tools, provide much needed advice to farmers and other stakeholders, and to assist our Members in improving governance. The output of this thematic review will be the publication of a Fisheries and Aquaculture Technical Paper “Assessment of demand and supply of aquaculture feed ingredients for sustainable aquaculture production”. The findings of the desk study will serve as a major discussion paper for the Global Conference on Aquaculture 2010.

40. A Regional Latin America TCP facility project (TCP/RLA/3208) is aimed at identifying and promoting knowledge transfer among countries of the sub-region (Latin America: Brazil, Chile and Paraguay), including governance aspects in aquaculture.

41. TCP project TCP/BGD/3101 on Developing a National Shrimp Seed Certification System in Bangladesh to develop guidelines for shrimp seed quality assurance in the country is nearing completion.

42. The Central Asia Regional Programme for Fisheries and Aquaculture Development (FishDev–Central Asia), GCP/RER/026/TUR under FAO-Turkey Partnership Programme (FTPP), was developed in 2008 and 2009 and recently started implementation; it provides training to government officials and fish farmers in a range of aquaculture aspects to Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan.

43. RAPI (Regional Office for Asia and the Pacific) supported “Support to identification of options and potential scheme for aquaculture insurance in Thailand” through a joint workshop by FAO and Thailand Department of Fisheries (DOF), Bangkok, 23-25 August 2009.

44. RAPI/LEGN supported the Lao People's Democratic Republic for the development of fisheries and aquaculture legislation.

45. With the assistance of the Government of Japan, through the GCP/INT/053/JPN (Intra-African Training and Dissemination of Technical know-how for Sustainable Agriculture and Rural Development) three regional workshops were organised. Experts from ASEAN Countries including Viet Nam, Indonesia, Philippines, Cambodia as well as from Africa, were convened to share their countries’ experiences and know-how with farmers and African government representatives.

46. A Trust fund project “Support to Fishery and Aquaculture management in the Kyrgyz Republic (GCP/KYR/003/FIN)” provides North-South collaboration to the aquaculture sector in Kyrgyzstan; amongst others 5 students are receiving MSc training in aquaculture management in Finland under this project.

47. A desk study on “Aquaculture governance” has been initiated. It discusses practical and successful governance models, including self-governance that has been used in some FAO Member countries. The aim is to draw lessons from these experiences from which other Member States can learn from as they strive to develop aquaculture. A draft is under review, and a publication is expected before the end of 2010.

48. RAPI has contributed a chapter entitled “Recent Developments in Rice-Fish Culture in China: A Holistic Approach for Livelihood Improvement in Rural Areas” to NACA/Springer/IDRC²⁴ publication on “Success stories in Asian Aquaculture”²⁵.

49. Following the presentation of the paper on “Moving aquaculture further offshore: governance issues and challenges”, a “Side Event” will be organised for Member States present at the 5th Session of the Sub-Committee on Aquaculture to exchange experiences on Aquaculture governance.

Opportunities for addressing the challenges in meeting the rising global demand for food fish from aquaculture

50. SEC in partnership with FIRA and the Marine and Inland Fisheries Service (FIRF) has developed the FAO–WSCS²⁶–IUCN²⁷–UNDP²⁸–World Bank–GEF²⁹/CASpECo³⁰ “Technical Guidelines on Sturgeon hatchery practices and hatchery management” which will be published in the 2nd quarter of 2010. In addition an extension manual on sturgeon hatchery practices is being finalized with financial support from TCP/TUR/3202.

51. TCP/CPR/3202 on better management of freshwater aquaculture in Pingjiang County, Hunan Province, China is currently being implemented.

52. Of the five key thematic areas identified for targeted action under the project *Towards Sustainable Aquaculture: Selected Issues and Guidelines* (GCP/INT/936/JPN), Component 4 of the project addressed the issue of “Use of wild fish and/or other aquatic species as feed in aquaculture and its implications to food security and poverty alleviation”. One of the major points of this component is the publication of a technical paper “Fish as feed inputs for aquaculture: practices, sustainability and implications”³¹. This technical paper provides a comprehensive review of the use of wild fish as feed input for aquaculture and discusses the existing practices, analyses the sustainability of feed/reduction fisheries and reviews the implication.

53. Component 4 of the above-mentioned project strived to develop technical guidelines on sustainability issues of reduction/feed fisheries, including its improved management and the criteria for its sustainable use as aquafeeds based on ten guiding principles developed at the FAO Expert Workshop, Kochi, India, 16-18 November 2007³². The technical guideline³³ will eventually assist policy-makers to decide ways and means of utilizing low-value fish, *inter alia* through the development and application of methodologies to estimate optimal allocations of fish for animal and human purposes.

54. FAO organized two consultations to discuss aquatic biosecurity framework in southern Africa: (i) FAO Workshop on the Development of an Aquatic Biosecurity Framework for Southern Africa held in Lilongwe, Malawi in April 2008³⁴ and (ii) FAO Aquatic Biosecurity

²⁴ International Development Research Centre, Canada

²⁵ http://library.enaca.org/emerging_issues/success_stories/success-stories-asian-aquaculture.pdf

²⁶ World Sturgeon Conservation Society

²⁷ Marine Programme of the World Conservation Union

²⁸ United Nations Development Program

²⁹ Global Environment Facility

³⁰ Caspian Environment Programme

³¹ Hasan, M.R.; Halwart, M. (eds.). 2009. Fish as feed inputs for aquaculture: practices, sustainability and implications. FAO Fisheries and Aquaculture Technical Paper, No. 518. FAO, 2009. 407 pp.

³² FAO, 2008. Report of the FAO Expert Workshop on the Use of Wild Fish and/or Other Aquatic Species as Feed in Aquaculture and its Implications to Food Security and Poverty Alleviation, Kochi, India, 16-18 November 2007, FAO Report No. 867, Rome, FAO. 31p.

³³ FAO Technical Guidelines for Responsible Fisheries on the “Use of wild fish and other aquatic species as feed in aquaculture (in prep.)

³⁴ FAO. 2009. Report of the FAO Workshop on the Development of an Aquatic Biosecurity Framework for Southern Africa. Lilongwe, Malawi, 22-24 April 2008. FAO Fisheries and Aquaculture Report No. 906. Rome, FAO. 2009. 56p.

Framework for Southern Africa: A Scoping Meeting of Fisheries and Veterinary Authorities, held in Namibia in October 2009.

55. An ongoing regional TCP - TCP/RAF/3111 Emergency assistance to combat epizootic ulcerative syndrome (EUS) in the Chobe-Zambesi River system provided the necessary basic aquatic animal health capacity building and skills to implement a surveillance programme for EUS.

56. A regional TCP project entitled “Reducing the dependence on the utilization of trash fish/low value fish as feed for aquaculture of marine finfish in the Asian region (TCP/RAS/3203)” is currently being implemented in Thailand, China, Indonesia and Viet Nam in collaboration with NACA. The project is expected to address the issue of the direct use of trash fish/low-value fish in marine fish farming in Asia through a direct involvement of farmers in reducing the perception that the trash fish/low value fish perform better than pellet feeds. The project is expected eventually to contribute to the development of better feed management practices in small-scale finfish farming that would contribute to improved efficiency of feeding practices and conformity to market related requirements.

57. An FAO regional TCP project “Advice to Central Asian Governments on the feasibility of commercial fish and livestock feed production” is being implemented by SEC and FIMA to provide advisory services on fish and livestock feed production enhancement to four Central Asian countries (*i.e.* Tajikistan, Uzbekistan, Kazakhstan and Kyrgyzstan).

58. Recognizing the increasing importance of the use of aquatic macrophytes as feed in SSA, a global review was undertaken and a technical paper published³⁵. This technical paper presents a global review on the use of aquatic macrophytes as feed for farmed fish, with particular reference to their current and potential use by small-scale farmers.

59. A synopsis of currently available feed ingredients has been compiled and published as a technical paper³⁶. The technical paper presents an up-to-date overview of the major feed ingredient sources and feed additives commonly used within industrially compounded aquafeeds, including feed ingredient sources commonly used within farm-made aquafeeds, and major fertilizers and manures used in aquaculture for live food production.

60. A study entitled “Impact of rising feed ingredient prices on aquafeeds and aquaculture production” was undertaken in response to soaring food prices (particularly cereal grain) worldwide during 2007-2008 and a technical paper³⁷ investigating and evaluating the underlying reasons for the recent dramatic rise in prices of many of the commodities (e.g., soybean, corn, fishmeal, fish oil, rice and wheat) commonly used in aquafeed production and its consequences for the aquafeed industry was published. This review also includes initiatives which search for substitution of fishmeal and fish oil to position the industry to meet the challenge of securing aquafeed for sustaining aquaculture.

61. The Department has initiated a work programme entitled “On-farm feeding and feed management”. The objectives of this work programme are to evaluate the mechanisms available for introducing cost and ingredient saving feed management strategies for finfish and crustacean culture and to develop suitable guidelines for dissemination to the aquafarmers. Under this work programme, a number of country- and species-specific case studies and global reviews have been

³⁵ Hasan, M.R. and Chakrabarti, R. 2009. Use of algae and aquatic macrophytes as feed in small-scale aquaculture: a review. FAO Fisheries and Aquaculture Technical Paper No. 531. Rome, FAO. 2009. 123 p.

³⁶ Tacon, A.G.J.; Metian, M.; Hasan, M.R. 2009. Feed ingredients and fertilizers for farmed aquatic animals: sources and composition. FAO Fisheries and Aquaculture Technical Paper. No. 540. Rome, FAO. 2009. 210p.

³⁷ Rana, K.J., Siriwardena, S. and Hasan, M.R. Impact of rising feed ingredient prices on aquafeeds and aquaculture production. FAO Fisheries and Aquaculture Technical Paper. No. 541. Rome, FAO. 2009. 63p.

initiated including organization of an expert workshop on “*On-farm feeding and feed management in aquaculture*” to be held in Manila, Philippines, April 2010.

62. A desk study on aquaculture governance in Southeast Asia with emphasis on policies applied was completed and results published³⁸. The aim is to provide lessons from which countries within and outside the region can learn in their effort to enhance aquaculture.

63. A programme in support of offshore mariculture development has been initiated. An expert workshop on offshore mariculture development will be organized in March 2010. The aim of the planned workshop is to provide to the Members governance measures in support of offshore aquaculture development.

64. Two reviews are being conducted one on "Spatial perspectives on the sustainable development of marine aquaculture from a global viewpoint" and the other on "Remote sensing for marine off-the-coast and offshore aquaculture" as a follow-up of the findings of Fisheries Technical Paper No. 458 on “GIS, Remote sensing and mapping for the development and management of marine aquaculture”. The perspective is global and the approach intended to employ example applications aimed at resolving many of the important issues in marine aquaculture, especially for off-the-coast and offshore aquaculture.

65. FAO Fisheries and Aquaculture Department organized an Expert Workshop on “Climate Change Implications for Fisheries and Aquaculture” in April 2008, and the proceedings of workshop have been published as an FAO Fisheries and Aquaculture Technical Paper 530³⁹. Several other actions undertaken by the Department involving both fisheries and aquaculture preparedness and mitigation have been described in document COFI/AQ/V/2010/6. The Department also participated in and contributed to the FAO Expert Meeting: Climate-related Transboundary Pests and Diseases including Relevant Aquatic Species, held in Rome, Italy from 25-27 February 2008.

66. FAO is updating the Fisheries Technical Paper “Assessment and management of fish safety and quality”⁴⁰. Update includes chapters on emerging issues like climate change and fish safety. The updated technical paper is expected to be published in second quarter of 2010.

67. The Department is implementing projects to demonstrate Good Aquaculture Practices to improve safety of aquaculture products. The demonstration is being done in ponds of small scale fish farmers. Some of the ongoing projects are: a) TCP "Improvement of aquaculture food safety in Hubei Province, China"; b) FMPP⁴¹ project to understand prevalence of fishborne trematodes (liver flukes and minute intestinal flukes) in aquaculture ponds and risk factors for infection of fish with fish-borne trematodes in Vientiane Province, Laos, which is expected to be followed-up with demonstration of control measures for these fish-borne parasites in farmers ponds; Good aquaculture practices to minimise use of antimicrobials and improve aquaculture food safety in India.

68. An FMPP supported Expert Workshop on "Application of Biosecurity measures to control Salmonella in sustainable aquaculture" was organized in Mangalore, India during January 2010. The Workshop has addressed both public health and trade impacts of Salmonella in aquaculture systems and management options for national authorities.

³⁸ Hishamunda, N., P. Bueno, N. Ridler and F. Yap. 2009. Analysis of aquaculture development in Southeast Asia: a policy perspective. FAO Fisheries Technical Paper. No 509. 72 p. Rome, Italy.

³⁹ Cochrane, K., De Young, C., Soto, D. and Bahri, T. (Eds). 2009. Climate change implications for fisheries and aquaculture: overview of current scientific knowledge. FAO Fisheries and Aquaculture Technical Paper. No. 530. Rome, FAO. 212p. <http://www.fao.org/docrep/012/i0994e/i0994e00.htm>

⁴⁰ Huss, H.H; Ababouch, L; Gram, L. 2003. Assessment and management of seafood safety and quality. FAO Fisheries Technical Paper. No. 444. Rome, FAO. 230p. <http://www.fao.org/docrep/012/i0994e/i0994e00.htm>

⁴¹ FAO/Multi-donor Partnership Programme

69. FAO co-sponsored the 8th World Seafood Congress in Agadir, Morocco 4-7 October, 2009, in which there were thematic papers on aquaculture certification, private standards, and fish safety including views of aquaculture producers, retailers and regulatory agencies. FAO supported participation from developing countries in this Congress.

70. Technical assistance to the project; TCP/MAL/3201 (D) Identification of capacity building needs of the Malaysian fish inspection system to meet international market requirements, has been provided.

71. A FAO regional review study on Inland Fisheries Resource Enhancement and Conservation in Asia is currently being conducted and an FAO expert workshop on inland fisheries resource Enhancement and conservation in Asia has been organized 8-11 February 2010. Country review papers and regional synthesis paper will be published by RAPI.

72. FAO is involved with fish supply and demand projections, including aquaculture, with a) OECD-FAO, b) the Fish to 2030 project with the World Bank, IFPRI and the University of British Columbia, and c) the Foresight project with the U.K. Department of Science.