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Продовольственная и  
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Объединенных  
Наций

Organización  
de las  
Naciones  
Unidas  
para la  
Agricultura  
y la  
Alimentación

## COMMITTEE FOR INLAND FISHERIES AND AQUACULTURE OF AFRICA

### Fifteenth Session

Lusaka, Zambia, 9-11 December 2008

### INTERSESSIONAL AQUACULTURE ACTIVITIES

#### SUMMARY

This document introduces the Intersessional Activities on Aquaculture between the 14<sup>th</sup> and the 15<sup>th</sup> Session of CIFAA. Activities are summarized under the individual thematic areas of the framework of the Special Programme for Aquaculture in Africa (SPADA) namely strengthening (i) institutions and enabling frameworks, (ii) Networking and outreach, (iii) Capital and input supply (iv) Processing and marketing (v) Research and education (vi) Social, economic and environmental soundness (vii) Monitoring, evaluation and planning.

#### INTRODUCTION

1. Since the Fourteenth Session of the Committee for Inland Fisheries of Africa (CIFA) held in Accra, Ghana, 22-24 November 2006, many FAO activities on aquaculture have taken place at normative and field level with either general relevance for, or a specific focus on aquaculture development in Africa. These are briefly described in the following paragraphs, starting with activities of an overarching nature such as the Fourth Session of the FAO Committee on Fisheries' Sub-Committee on Aquaculture to more specific activities going on at regional, sub-regional, national or local level. These activities are grouped under the thematic areas of the FAO's Special Programme for Aquaculture Development in Africa (SPADA), namely strengthening (i) Institutions and enabling frameworks, (ii) Networking and outreach, (iii) Capital and input supply (iv) Processing and marketing (v) Research and education (vi) Social, economic and environmental soundness (vii) Monitoring, evaluation and planning.

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## SUMMARY OF INTERSESSIONAL AQUACULTURE ACTIVITIES

### *The Fourth Session of the COFI Sub-Committee on Aquaculture*

2. The Fourth Session of the Sub-Committee on Aquaculture of the Committee on Fisheries was held in Puerto Varas, Chile, from 6-10 October 2008. The Sub-Committee reaffirmed its support to FAO activities in aquaculture and expressed its satisfaction on progress made, especially considering limited financial resources. A special session on the Special Programme for Aquaculture Development in Africa (SPADA) was convened (see also section below on SPADA and Annex 1). Establishment of and support to regional aquaculture networks in Africa and Americas were stressed. Action on Coordinating Working Party on Aquaculture (CWP-Aquaculture) for improving aquaculture data and information was urged. Members commended the draft guidelines on certification in aquaculture and recommended that a technical consultation be convened as soon as possible in 2009 to review and finalize the revised guidelines. The Sub-Committee adopted the proposed new mechanism for reporting implementation of Code of Conduct for Responsible Fisheries (CCRF) aquaculture related provisions, with an interactive questionnaire format (also available on-line).

3. The Sub-Committee identified challenges and emerging issues such as improving governance, especially through self-governance by farmer's organizations; the need for guidelines, standards, manuals and better management practices (BMPs); the need for a regional approach to disease outbreaks; environmental issues with regard to seed, feed, discharge, escapee and environmental impact assessment (EIA); use of chemicals and food safety of aquaculture products; integration of aquaculture into water resource management and agricultural sector management plans, and inter-action between aquaculture and fisheries; capacity building at farm and farm's organization levels and empowering small farmers to become more competitive and meet trade requirements; publicity on achievements and positive developments of aquaculture; offshore aquaculture being of promising future but still requiring efforts in developing technology and regulatory framework; and climate change and possible mitigation strategy, etc.

4. The Fifth Session of the Sub-Committee will be held in Thailand in 2010. South Africa indicated its intention to host the Sixth Session.

### *FAO and climate change*

5. FAO and the Fisheries and Aquaculture Department have been carrying out several activities to address potential threats posed by climate change to fisheries and aquaculture. This included an expert workshop on Climate Change Implications for Fisheries and Aquaculture held in Rome in April, <sup>1</sup> the FAO High-Level Conference on World Food Security<sup>2</sup> and the International Symposium on Coping with Global Change in Marine Social-ecological Systems hosted by FAO (8-11 July 2008).<sup>3</sup> Details on these workshops, including the reports can be obtained online<sup>4</sup>. Climate change is modifying the distribution of marine and freshwater species and particularly in Africa will cause other effects such as increased river discharge in some regions while there may be more draughts in others. It is estimated that by 2020 between 75 and 250 million people in Africa are expected to be under water stress, and this and the competition for water resources will affect aquaculture operations and inland fisheries production, and is likely

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<sup>1</sup> Report of the FAO Expert Workshop on Climate Change Implications for Fisheries and Aquaculture. Rome, Italy, 7-9 April 2008. FAO Fisheries Report. No. 870. Rome, FAO. 2008. 32p.

<sup>2</sup> <http://www.fao.org/foodclimate/hlc-home/en/>

<sup>3</sup> <http://www.confmanager.com/main.cfm?cid=846&nid=6530> <

<sup>4</sup> <http://www.fao.org/foodclimate/expert/en/>.

to increase conflicts among water-dependent activities. Reduced livelihood options inside and outside the fishery sector will force occupational changes and may increase social pressures.

6. The potential for spatial displacement of aquatic resources and people as a result of climate change impacts will require existing regional structures and processes to be strengthened or given more specific focus. Adaptation strategies will need to be context and location specific and will need to consider impacts both short-term (e.g. increased frequency of severe events) and long-term events (e.g. reduced productivity of aquatic ecosystems). Options to increase resilience and adaptability include the adoption of adaptive and precautionary management within an ecosystem approach to fisheries (EAF) and to aquaculture (EAA).

#### *The FAO Special Programme on Aquaculture Development in Africa (SPADA)*

7. Following requests to FAO from Member Countries conveyed at the 3rd Session of the COFI Aquaculture Sub-Committee (2006), the 27th Session of COFI (2007) and reiterated during the 2007 High-Level Event on Aquaculture during the 32<sup>nd</sup> FAO Conference, the FAO Fisheries and Aquaculture Department adopted and launched SPADA: the Special Programme for Aquaculture Development in Africa. The Programme is a departmental priority, designed to build on the growing opportunities and emerging successes of aquaculture development in the region while identifying the key arenas and elements necessary to complement or catalyze country efforts. SPADA's objective is to assist African countries to improve economic and rural development by enhancing fish supply and distribution as well as benefiting nutrition through increased aquaculture production; this goal will be achieved by promoting sustainable aqua-businesses at national level including the necessary public and private support services. Its scope and approach covers all African countries at the national, sub-regional and regional levels. At the national level the programme will work with public and private institutions, service providers, NGOs/CSOs and the private sector to establish sustainable and responsible aqua-businesses which will, in turn, increase employment, fish supply and investment opportunities. At the sub-regional level SPADA expects to engage with Regional Economic Communities (RECs) to develop protocols for managing shared resources, trans-boundary movement of aquatic products as well as intra-regional trade and markets. At the regional level, the programme is anticipated to work closely with NEPAD in implementing its Action Plan including assistance to the recently established Aquaculture Network for Africa (ANAF) as well as relevant aquaculture bodies including the Committee on Inland Fisheries and Aquaculture for Africa (CIFAA). More detailed information can be found in the SPADA flyer which is made available to delegates of CIFAA in English, French and Spanish language versions.

#### *Strengthening institutions and enabling frameworks*

8. FAO has supported, and continues to support, the processes to develop national aquaculture development strategies and plans in many African countries including but not limited to Cameroon, the Democratic Republic of Congo, The Gambia, Ghana, Kenya, the Islamic Republic of Mauritania, Madagascar, Namibia, Nigeria, Senegal, Tanzania, Uganda and Zambia. Efforts are continuing to reach as many countries as possible and feasible with existing resources, and this will continue under SPADA.

9. The FAO Aquaculture Management and Conservation Service (FIMA) is implementing GCP/INT/936/JPN Project Component 2 on "Environmental Impact Assessment and Monitoring in Aquaculture". A global overview and synthesis on existing procedures and methodologies of environmental impact assessment and monitoring in aquaculture were produced, based on (i) four regional review studies and a study focusing on salmon cage aquaculture, as well as (ii) a Technical Workshop on Environmental Impact Assessment and Monitoring in Aquaculture, held in FAO, Rome, in September 2008. The regional review for Africa carries the following key messages: (i) Recently enacted Environmental Impact Assessment (EIA) legislation across the continent comprehensively encompasses aquaculture, a factor which the sector should take on

board as implementation and enforcement of these laws increases, (ii) EIA regulations are still being refined, providing opportunity for the sector to work with environmental authorities towards appropriate Environmental Assessment mechanisms for aquaculture, and (iii) at the present level of aquaculture development, African countries should consider opportunities for strategic studies using Strategic Environmental Assessment (SEA) for the sector rather than relying only on project-level environment impact regulations. Extending the assessment boundaries in this way will provide the information needed for good strategic planning (such as zoning decisions), as well as environmental information vital for the planning of individual projects. Successful SEA should make project-level EIA more efficient and less onerous.

10. In addition, FIMA and its collaborators have been in the process of developing a framework for an “Ecosystem Approach to Aquaculture” (EAA). This is another component of the FAO project “Towards sustainable aquaculture: Selected issues and guidelines” (GCP/INT/936/JPN), implemented with the support of the Government of Japan. An expert workshop held in Spain in 2007 agreed that: “*An ecosystem approach for aquaculture (EAA) is a strategy for the integration of the activity within the wider ecosystem in such a way that it promotes sustainable development, equity, and resilience of interlinked social and ecological systems*”. The strategy is guided by three principles that ensure the contribution of aquaculture to sustainable development and follows the Code of Conduct for Responsible Fisheries: i) aquaculture should be developed in the context of ecosystem functions and services with no degradation of these beyond their resilience capacity; ii) aquaculture should improve human well-being and equity for all relevant stakeholders; and iii) aquaculture should be developed in the context of (and integrated to) other relevant sectors. Three scales/levels of EAA application were identified: the farm; the waterbody and its watershed/aquaculture zone; and the global, market-trade scale. The EAA should be very relevant to assist aquaculture development in Africa specially considering that this is a rather new sub-sector in the region. For example, the EAA provides a unique opportunity to the development of the Volta project (GCP/RAF/417/SPA) where the relevant waterbody/ecosystem goes beyond countries’ boundaries and requires shared and agreed objectives and standards.

11. The project *Intra-African Training and Dissemination of Technical Know-how for Sustainable Agriculture and Rural Development with African-ASEAN Countries Cooperation within the Framework of South-South Cooperation* (GCP/INT/046/JPN) comprises an aquaculture component which supports the development of the Special Programme for Aquaculture Development in Africa (SPADA). Two groups of workshops are being held in Burkina Faso and Uganda, respectively. The objectives of the workshops are to: (i) review the current situations and constraints of rice development and aquaculture in each country; (ii) share key technologies and programmes, such as Japan’s cooperation achievements and SPADA, to be applied to LDCs in Africa; and (iii) support to formulate national or regional based proposals and strategies for sustainable productivity increase and market development especially in rice and aquaculture. Participating countries in the Burkina Faso workshops are Benin, Burkina Faso, Chad, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo. The countries participating in the Uganda workshops are Burundi, Cameroon, Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mozambique, Rwanda, Tanzania, Uganda and Zambia. The first workshops were held from 20-24 October 2008 in Ouagadougou, Burkina Faso, and from 3-8 November 2008 in Kampala, Uganda. Government institutions as well as the private sector were invited. Country reports were presented giving an update of the present status of aquaculture. SPADA was presented as well as concepts of National Aquaculture Development Strategies (NADS), as well as technical details on aquaculture technologies in relation to integrated irrigation-aquaculture, aquaculture in rice-based systems, and pond aquaculture. Participants then prepared action plans to be implemented in the period until the next workshops, and include the conduct of national stakeholder workshops, and subsequently the drafting of proposals to enable the first steps towards implementation of respective national aquaculture development strategies. The next workshops are planned for early 2009, involving the same country groupings, and are to be held again in Burkina Faso and Uganda, respectively.

12. One of the objectives of the project *GCP/INT/046/JPN Enhancement of Efficiency for Effective Knowledge and Information Sharing of FAO's Resources* is to produce and utilize manual(s) on Japanese and FAO's technologies/know-how for effective South-South Cooperation (SSC). The FAO Liaison Office in Japan (LOJ) is the implementing agency of this project. The objective of these manuals is to disseminate technology of good practices conducted by FAO and Japanese experience to the implementing partners in the Least Developed Countries (LDCs) of Sub-Saharan Africa to increase agricultural production and productivity. It is planned to transfer these technologies through SSC practices. The main target beneficiaries of this project are small scale farmers involved in the agriculture, forestry and fishery sectors in the LDCs of Sub-Saharan Africa. The manuals will be provided for the sister project GCP/INT/053/JPN. The implementing staff from LOJ attended both workshops conducted by GCP/INT/053/JPN in Burkina Faso and Uganda, where draft outlines of the manuals were presented to participants and suggestions for modifications were received. The draft manuals will be further refined and shared with project partners for comment.

(ii) *Networking and outreach*

13. TCP/RAF/3102 *Support to the aquaculture subsector in the riparian countries around Lake Victoria* started in 2006 with the aim to assist LVFO to collect and catalogue information on the aquaculture systems and methods currently being used on the lake and to undertake an analysis of these systems to identify the preconditions for their use and the possibilities for replicating these systems on a larger scale. Furthermore, the project was put in place to increase the capacity of the LVFO to coordinate the activities of the participating national aquaculture agencies, to act as a network hub and to provide advice on best practices. A recent (September 2008) meeting of the LVFO Regional Working Group concluded that the TCP project has demonstrated the need for an Aquaculture Unit (AQU) to be established in LVFO, the regional strategy drafted by the group should form the bases for the Terms of Reference for the AQU, the information tools (e.g., investment tool, databases, etc.) developed through the project to varying degrees have proven useful in trials, political will is needed to move the agenda forward and a series of final training sessions for the LVFO team culminating in a short and limited formal project closure is necessary, and there is an immediate need to address the problem of over exploitation of catfish bait in the Lake Basin, an issue that has both aquaculture and capture fisheries dimensions.

14. Significantly improved information flow has long been identified as one of the major needs for the sub-sector's development. In order to achieve this, efficient information channels are necessary at all levels; national, sub-regional and regional. Recent efforts by FAO have been aimed at facilitating the establishment of ANAF on the basis of a decision by the Fourteenth session of CIFAA. An *ad hoc* Working Group (WG) met in Kribi, Cameroon, in 2007 to establish a workplan incorporating the necessary tasks leading to a formal and legal panAfrican institution: ANAF. Further stakeholder consultations on the network have taken place in July and August 2008 with the assistance of the German Agency for Technical Cooperation (GTZ), and the *ad hoc* WG is expected to report back to CIFAA in December 2008 (see also Information Document Inf. 6 and the separate WG Report which has been made available). During the intersessional period, FAO has facilitated an online ANAF stakeholder forum accessible at <http://www.fao.org/fi/fima/anaf-forum/forum.html> and is in the process of establishing an internet-based network similar to the Regional Aquaculture Information System in the Gulf Region (RAIS) where members can share and access information from the region which is crucial for the development of aquaculture in their own country and in order to respond to (a) the increasing need to develop a regional system facilitating the exchange of information among the ANAF member countries; (c) to assist the private and public sectors to have quick and easy access to information required for decision making, both on specific technical matters and for the design and assessment of new aquaculture projects; and (d) to respond to the increasing public demand

for up-to-date information concerning aquaculture at national and regional level. These tools assist with improved access to current information. Fractionation of aquaculture programmes at national and regional levels has been a barrier to effective sub-sectoral programming; improved information channels potentially enhancing needed co-ordination. Inherent in the SPADA approach is the improved co-ordination also facilitated by national task forces and steering committees with wide stakeholder representation to guide the development of national programmes. An information system has been developed by using the Open Source Content Management System TYPO3<sup>5</sup> which has a user-friendly language allowing rapid data entry from the administrators and easy retrieval from end users. Nine databases have been developed to store regional aquaculture information. These databases are the following: *Annual aquaculture statistics; Aquaculture experts; Production centres; Suppliers, Research institutions, Research and development programmes, Photo library, Virtual library, Selected links*. During the first phase of development of the Web site, the WGA National Focal Points (NFP) have been requested to collect aquaculture national data and information from different national sources to feed the system. Data submitted by the NFPs have been therefore uploaded into the system.

15. A “User-friendly investment decision-making tool” to assess the profitability level of aquaculture ventures, has been developed. This model, which enquires into the farm details, production parameters, input and investment costs can be used by anyone who is already in the aquaculture business or who is interested in venturing into the farming business. It can be especially used by small- and medium-scale farmers to estimate the level of investment and expected profits in order to make the decision of whether to farm, continue farming or not. For now, this tool should assist farm owners and managers to make more informed management decisions on Tilapia and African catfish (*Clarias*) farms, but it can be easily extended to cover the farming of any species.

#### *Capital and input supply*

16. Several FAO TCPs have started including TCP/SIL/3104 *Assistance to fish farmers*, TCP/MLW/3101 *Support to small-scale fish farming enterprises*, TCP/NIR/3203 *Sustainable aquaculture systems for Nigeria*, TCP/GAM/3202 *Sustainable Aquaculture Systems* and TCP/KEN/3202 *Strengthening fish production through adoption of improved aquaculture technology*, and provide the necessary technical advice and backstopping on the use and application of resource and planning tools in order to establish sustainable, private-sector driven fish farming through pilot sustainable production units that will ensure reliable supply of quality seed and farmer-friendly aquaculture technologies.

17. GCP/RAF/417/SPA *Aquaculture Investments for Poverty Reduction in the Volta Basin: Creating Opportunities for Low-Income African Fish Farmers through Improved Management of Tilapia Genetic Resources* supports the countries of the Volta Basin in developing an improved strain of *Oreochromis niloticus* along with responsible policies and practices for using this genetically improved strain in small- and medium-size enterprises in the area. This sub-regional project serves as an umbrella for co-ordination to facilitate the establishment of national task forces and other field programmes as well as bringing on board new development partners. One of the efforts is to develop links with the feed industries in an attempt to ensure that, as higher quality seed is available, the corresponding high quality feed will also be accessible.

18. Other FAO TCPs which aim at assisting Member countries to ensure an orderly and sustainable aquaculture development were implemented. They include TCP/DRC/3102 (A) “Assistance à la définition d'une stratégie, d'un plan de développement de l'aquaculture et d'une loi sur la pêche et l'aquaculture en République Démocratique du Congo », TCP(MAU)3103 (D)

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<sup>5</sup> TYPO3 is a **free Open Source Content Management System** for enterprise purposes on the web and in intranets. It offers full flexibility and extendability while featuring an accomplished set of ready-made interfaces, functions and modules (See [www.typo3.org](http://www.typo3.org) for more technical information).

« Formulation d'un cadre stratégique et réglementaire et d'un plan de développement durable de la pêche et de l'aquaculture continentales en République Islamique de Mauritanie », TCP/SEN/3102 (D) : "Appui à la formulation des directives techniques et d'un plan d'investissement en pisciculture pour les petites et moyennes entreprises", TCP/SEN/3103 « Mission de formulation d'un plan stratégique opérationnel, d'un code juridique, fiscal et douanier en matière d'aquaculture au Sénégal », "TCP/CMR/3103 (D) "Mise en place d'un plan de développement durable de l'aquaculture au Cameroun" et TCP/PRC/3201 (D) : "Appui à l'élaboration d'une stratégie, un plan de développement et un cadre réglementaire pour un développement durable de la pêche et de l'aquaculture en République du Congo".

19. Two CIFAA Member countries (Egypt and Cameroon) attended the "FAO international workshop on technical guidelines for the responsible use of wild fish and fishery resources for capture-based aquaculture production". The workshop organized by the Food and Agriculture Organization of the United Nations (FAO) was held in Hanoi, Viet Nam, from 8 to 12 October 2007. The objective of the workshop was to produce a draft set of technical guidelines that would assist policy-makers in developing informed and appropriate capture-based aquaculture regulations that would take into account the use and conservation of the aquatic resources exploited. All background species information and review papers prepared by the experts attending the workshop have been printed in the FAO Fisheries Technical Paper No. 508<sup>6</sup>. The technical guidelines are currently being revised and will be finalized and available in 2009.

20. For an assessment of freshwater fish seed resources for sustainable aquaculture<sup>7</sup>, six African countries (Cameroon, Egypt, Ghana, Nigeria, Uganda and Zimbabwe) participated in the country assessment which formed the basis for a regional synthesis of the fish seed supply in Africa. The findings of this global review indicated that in Africa, availability and quality of fingerlings for stocking in aquaculture ponds have been repeatedly identified as a key constraint to the development of African aquaculture. Government hatcheries have generally failed to achieve sustainability and the private sector is impeded by the lack of marketing information and appropriate technological assistance. At present, the main aquaculture species in the continent are Nile tilapia (*Oreochromis niloticus*) and the African sharp-tooth catfish (*Clarias gariepinus*). While the tilapias are easy to reproduce on-farm, poor broodstock management had resulted in reduced growth rates in many captive populations. Catfish on the other hand are reproduced in hatcheries, but availability of broodstock and high mortality rates in larvae are key problems still requiring research. Of the countries reviewed, Egypt (1.2 billion tilapia and 250 million carp fingerlings produced) and Nigeria (30 million fingerlings produced) report the highest number of modern private commercial hatcheries, although most of these are unregulated and lack accreditation and certification systems. Ghana, Cameroon, Uganda and Zimbabwe rely almost entirely on semi-commercial systems producing unreliable quantities and quality of seed. Interventions to improve the quality of extension services, make credit more available, build partnerships between private and public sectors to address key researchable topics and undertake adaptive research, improve fish seed quality through selective breeding and development of NGOs and farmer organizations as partners in delivery of key services are recommended to improve the availability of fish seed to African fish farmers. In addition, support for the development and implementation of Strategic Frameworks for Aquaculture Development to target extension efforts and clarify the expected roles for various stakeholders and establish the foundation for realistic and practicable legislation was strongly recommended.

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<sup>6</sup> Lovatelli, A.; Holthus, P.F. (eds). Capture-based aquaculture. Global overview. *FAO Fisheries Technical Paper*. No. 508. Rome, FAO. 2008. 298 p.

<sup>7</sup> Bondad-Reantaso, M.G. (ed). 2007. Assessment of freshwater fish seed resources for sustainable aquaculture. FAO Fisheries Technical Paper. No. 501. Rome, FAO. 2007. 628p.

### *Processing and marketing*

21. There are many activities undertaken in this regard as it ultimately concerns the consumption of aquatic products from both capture fisheries and aquaculture. A major focus, as underscored in the NEPAD Action Plan, will be intra-regional marketing and trade in aquaculture products including inputs. One example of widely applicable methods for improved fish processing is smoking in specialized ovens (e.g. the Chorkor system) which have been promoted in UTF/NIR/047/NIR *The National Special Food Security Programme, Nigeria*. Another example is the application of a Technological Platform Approach which has been successful in the Republic of Chad where better handling, storage and processing of fish resulted in improved hygiene and sanitation, improving fish quality and value and thus access to urban markets.

### *Research and education*

22. This is an area that requires special efforts and targeted resources and is likely to be picked up only when ANAF becomes operational. Collaboration is envisaged *inter alia* with the Sustainable Aquaculture Research Networks in Sub-Saharan Africa (SARNISSA). On the education side, it will include capacity building on application of resource and planning tools such as the African Water Resource Database.

### *Social, economic and environmental soundness*

23. A desk study on *Cage Culture – Regional Reviews and Global Overview*<sup>8</sup> was prepared by FAO-FIMA with the aim to assess the current situation and the future prospects of cage aquaculture around the globe. The study was financially supported by regular as well as extra-budgetary programme funds, specifically the Japanese Trust Fund Programme Towards Sustainable Aquaculture: Selected Issues and Guidelines and the Global Partnerships for Responsible Fisheries (FAO FishCode Programme). This document, published in 2007, contains nine commissioned papers on cage aquaculture including a global overview, one country review for China, and seven regional reviews for Asia (excluding China), northern Europe, the Mediterranean, sub-Saharan Africa, Latin America and the Caribbean, northern America and Oceania. The content of the papers is based on the broad experience and sound knowledge of the authors with advice and help received from many experts and reviewers around the globe. The papers were presented to a distinguished audience of some 300 participants from over 25 countries during the FAO Special Session on Cage Aquaculture – Regional Reviews and Global Overview at the Asian Fisheries Society (AFS) Second International Symposium on Cage Aquaculture in Asia (CAA2), held in Hangzhou, China, from 3 to 8 July 2006. On the same subject of cage aquaculture, FAO-FIMA commissioned the translation of FAO Conference Proceedings No. 6 on *Cage Culture in Africa*<sup>9</sup> into French in 2008<sup>10</sup>.

24. 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 addresses the issue of “Use of wild fish and/or other aquatic as feed for aquaculture and its implications to food security and poverty alleviation”. Under this component, four regional reviews including one for Africa and the Near East and five country-specific case studies were

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<sup>8</sup> Halwart, M.; Soto, D.; Arthur, J.R. (eds.) Cage aquaculture – Regional reviews and global overview. *FAO Fisheries Technical Paper*. No. 498. Rome, FAO. 2007. 241 pp.

<sup>9</sup> Halwart, M.; Moehl, J.F. (eds.) 2008. FAO Regional Technical Expert Workshop on Cage Culture in Africa. Entebbe, Uganda, 20-23 October 2004. FAO Fisheries Proceedings No. 6. Rome, FAO. 113p.

<sup>10</sup> Halwart, M.; Moehl, J.F. (éds.) 2008. Atelier régional d’experts de la FAO sur la pisciculture en cage en Afrique. Entebbe, Ouganda, 20-23 octobre 2004. *FAO Compte rendu des pêches*. No. 6. Rome, FAO. 129p.

conducted and an expert workshop was convened in Kochi, India, from 16-18 November 2007<sup>11</sup>. The regional reviews specifically addressed the role of feed and reduction fisheries that may impinge on food security and poverty alleviation in these four regions and elsewhere, including sustainability of these finite resources and environmental implication of the direct use of fish as feed.

25. Based on the findings of the regional reviews and case studies and in consultation with relevant stakeholders, the Fisheries and Aquaculture Department has developed ten guiding principles on the “Use of wild fish and/or other aquatic species as feed for aquaculture and its implications to food security and poverty alleviation” from the perspectives of fisheries management considerations, ecosystem and environmental impacts, ethical issues and responsible use, aquaculture technology and development and statistics and information needs for management. The ten guiding principles are: 1) aquaculture should not utilize resources from unsustainable fisheries; 2) guidelines for responsible fisheries should be employed where wild aquatic organisms are harvested for use as feed; 3) reduction fishery and feed fishery operations should not significantly impact the environment or create significant negative ecosystem level impacts, including impacts on biodiversity; 4) using fish as feed should not adversely impact the livelihoods and compromise food security of poor and vulnerable groups; 5) the use of fish as feed should not be permitted to be governed by the market forces alone; 6) formulation of policies related to the use of fish as feed should not exclude other users of this primary resource; 7) aquaculture should be encouraged to make progressive moves from using wet fish as feed to formulated/compound feeds; 8) the use of fish as feed should not compromise food safety and quality of aquaculture products; 9) the use of alternative raw materials (both animal and plant) should not compromise food safety and quality of aquaculture products; and 10) management of fisheries requires a sound knowledge base and a decision making process involving the participation of different stakeholders. It was concluded that the use of fish as feed is acceptable provided that such use is governed by the above guiding principles on the understanding that these principles should be equally applicable to all users of wild fish.

26. Since the confirmation, in June 2007, of the occurrence of the epizootic ulcerative syndrome (EUS)<sup>12</sup> in Botswana, by an International Emergency Disease Investigation Task Force organized by FAO<sup>13</sup>, and official notification to the World Animal Health Organisation (OIE) by the Government of Botswana in July 2007, various technical assistance to strengthen long-term aquatic biosecurity capacity in Southern Africa has been ongoing. A number of activities are ongoing to achieve this including the following: (1) FAO Technical Cooperation Project (TCP/RAF/3111 [E]) *Emergency assistance to combat EUS in the Chobe-Zambesi River*, participated by 7 southern African countries<sup>14</sup>); a week-long training course in November 2007, University of Zambia, on basic aquatic animal health management, EUS diagnosis and

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<sup>11</sup> 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. 31pp.

<sup>12</sup> EUS is serious fish disease which has swept across Japan, Australia, many countries in Asia and the United States of America since the first outbreaks were reported in the early 1970's, causing major losses in fresh and estuarine fish species in many countries for over three decades. Estimates of losses to EUS include the following: (i) USD100M in Thailand during 1983-1991; (ii) USD4.8M in Bangladesh during 1988-1989; (iii) USD235 000 in Indonesia during 1980-1987; (iv) USD300 000 in Pakistan in 1996; and (v) USD700 000 annually in Eastern Australia. EUS is an OIE listed finfish disease, thus, OIE members countries are obliged to make an official notification to OIE in the event of an occurrence or an outbreak.

<sup>13</sup> The Task Force is a joint undertaking by the Food and Agriculture Organization of the United Nations (FAO), the Botswana Department of Wildlife and National Parks (DWNP), the Aquatic Animal Health Research Institute (AAHRI) of Thailand's Department of Fisheries and the Network of Aquaculture Centres in Asia and the Pacific (NACA); the Botswana mission was undertaken from 18-26 May 2007.

<sup>14</sup> Angola, Botswana, Malawi, Mozambique, Namibia, Zambia and Zimbabwe; Mauritius participated in the training/workshop in Zambia.

preparation of a targeted surveillance design for EUS attended by 22 key staff of 8 countries; (2) FAO Regional Workshop on Development of an Aquatic Biosecurity Framework for Southern Africa, April 2008, Malawi (also known as Lilongwe Workshop), which presented the outcomes of an aquatic biosecurity capacity assessment questionnaire and identified a number of key regional capacity-building activities; and (3) OIE Regional Workshop on OIE Standards, A Lever for Growth in the Fisheries and Aquaculture Sector in Southern Africa, June 2008, Mozambique (also known as the Maputo Workshop) which recognized the role of veterinary and aquatic animal health professionals in the development and sustainability of the fisheries and aquaculture sectors.

27. The following activities are foreseen in 2009: (1) final workshop of TCP/RAF/3111 (February 2009) which will present the outcomes of the EUS surveillance and EUS extension material; a week long training course for aquaculture/fisheries and veterinary personnel on aquatic animal health management and an introduction to risk assessment in aquaculture; and a 3-week training course on aquatic animal health for two key staff (Uganda and Zambia) at AAHRI (OIE Reference Laboratory for EUS) of Thailand; (2) finalization of a regional TCP on aquatic biosecurity; (3) a joint FAO/OIE Mission: Evaluating Needs and Requirements for Strengthening of Veterinary and Fisheries Competent Authorities on Aquatic Animal Health in SADC Member States with the view to prepare a long-term aquatic biosecurity capacity building programme and implementation mechanism for Southern Africa in cooperation with relevant regional and international development partners.

28. With the ongoing efforts and focus on aquaculture development for Africa, bio-security and aquatic animal health management will be a critical and essential requirement for sector development and sustainability, and has been duly recognised by the FAO Members during the 4<sup>th</sup> Session of the COFI Sub-Committee on Aquaculture.

29. A desk study on Understanding and applying risk analysis in aquaculture<sup>15</sup> recognizes the wide applicability of risk analysis as an important tool that provides insights and assists in making decisions that will help to avoid negative impacts (e.g. environmental degradation, introduction and spread of pathogens, pests and invasive species; genetic impacts; unsafe foods; and negative social and economic impacts), thus helping aquaculture to proceed in a more socially and environmentally responsible manner. There exist considerable scope to develop and expand the use of risk analysis for the benefit of aquaculture and the social and physical environment in which it takes place. Seven risk sectors were identified in this study, i.e., pathogen risks, food safety and public health risks, genetic risks, ecological (pests and invasives) risks, environmental risks, financial and social risks. Risk analysis as applied to the seven risk sectors have many commonalities but also many differences. An overriding feature is a firm foundation in drawing upon the results of scientific studies, the use of logic (deductive reasoning) in the process and the application of “common sense” in assessing risks and applying risk management measures. An integrated approach to risk analysis will assist the sector in reducing risks to successful operations from both internal and external hazards and can similarly help to protect the environment, society and other resource users from adverse and often unpredicted impacts. This could lead to improved profitability and sustainability of the sector and at the same time improving the public’s perception of aquaculture as a responsible, sustainable and environmentally friendly activity.

#### *Monitoring, evaluation and planning*

30. Current work done by FIMA and its partners focuses on the provision of timely and accurate information concerning the use of cultured species (**FAO Cultured Aquatic Species**), legislation (**FAO National Aquaculture Legislation Overviews - NALOs**) and overviews on the national aquaculture sector (**FAO National Aquaculture Sector Overviews - NASOs**). For Africa, information on NASOs and NALOs is currently available for 14 and 4 countries,

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<sup>15</sup> Bondad-Reantaso, M.G., Arthur, J.R. and Subasinghe, R.P. (eds). 2008. Understanding and applying risk analysis in aquaculture. FAO Fisheries and Aquaculture Technical Paper. No. 519. Rome, FAO. 306p.

respectively, and is expected to be consistently maintained and updated in close collaboration with ANAF.

31. The Secretariat at the twelfth session of CIFA presented document CIFA/XII/2002/Inf.8, “Status and Development of the African Water Resource Database”. The paper provided a summary on the status and development of the AWRD in order to determine its use and future development. The AWRD is a set of data and custom-designed tools, combined in a geographic information system (GIS) analytical framework aimed at facilitating responsible inland aquatic resource management with a specific focus on inland fisheries and aquaculture.

32. The AWRD can be immediately applicable to assist in a wide variety of recent issues addressed at CIFA such as: Improving the reporting on status and trends in inland fisheries and aquaculture; Co-management of shared inland fisheries resources; Transboundary movements of aquatic species; and Increased participation of stakeholders in the decision making process about watershed area uses. The Committee at the twelfth session recommended that: further action should be taken to promote the use of GIS and RS in aquaculture and fishery development; partnerships and collaborative activities should be established among institutions, sub-regions and regions and other groups possessing relevant sources of information; workshops should be convened to address the issues related *inter alia* to the effective cooperation and collaboration mechanisms, and the maintenance of the AWRD. It was suggested that the outcome of these workshops would provide elements to develop pilot project proposals; projects should be developed on the use of GIS and RS in responsible fisheries.

33. The AWRD publication was published in 2007 and is presented in two parts in order better to inform readers of various levels of familiarity with the benefits of spatial analysis for aquatic resources management. The first part describes the AWRD and is divided into two main sections. The first presents a general overview and is addressed to administrators and managers while the second is written for professionals in technical fields. The second part is a “how to” supplement and includes a technical manual for spatial analysts and a workbook for university students and teachers.

34. Based on one of the recommendations by the CIFA Committee, the AWRD archive and tools were made available for download in late 2007 from FAO’s GeoNetwork and GISFish GIS portals at <http://www.fao.org/fishery/gisfish/id/2389> and are available upon request to FAO/FIMA (i.e. E-mail: FI-Inquiries) in a set of two DVDs, or ten CD-ROMs.

35. At present, two TCPs employ the AWRD (TCP/CMR/3103 *Mise en place d’un plan de développement durable de l’aquaculture au Cameroun*, and TCP/MAU/3103 *Formulation d’un cadre stratégique et réglementaire et d’un plan de développement durable de la pêche et de l’aquaculture continentales*) as well as activities supported through the TCP Facility in Zambia.

36. African countries should consider opportunities for strategic studies and collaborative work using GIS (better defined as spatial tools) on (i) Spatial tools for planning and monitoring aquaculture development and (ii) Aquaculture statistics with emphasis on spatial tools for data collection. This will require technical follow-up in terms of

- Identification of mechanisms to establish cooperation and collaboration for the use and development of the AWRD in CIFA countries
- Development of strategies to promote research, education, training and decision-making, using the AWRD
- Broadening the potential user base, and Identification of partners and co-operators;
- Evaluation of the utility of the AWRD and reassessment of the user base; and
- Improved accuracy and functionality for inventory of water data.

## **Annex 1. SPADA SPECIAL EVENT at the Fourth Session of the Sub-Committee on Aquaculture**

The Secretariat introduced the Special Event starting with a presentation on the FAO Fisheries and Aquaculture Department's Special Programme for Aquaculture Development in Africa (SPADA) outlining the goal and thematic areas of SPADA.

This was followed by a presentation by the New Partnership for African Development (NEPAD), which highlighted the congruence of the NEPAD Action Plan for the Development of African Fisheries and Aquaculture and SPADA.

Presentations from Uganda and Kenya focused on the countries efforts, potential and constraints in achieving SPADA objectives. Uganda, one of the founding countries of the newly established Aquaculture Network for Africa (ANAF), specifically highlighted its role in advancing and promoting the network. Kenya, one of the prospective members of ANAF, provided an overview of how the country could develop its national aquaculture programme meeting the expectations of SPADA.

Many countries expressed their appreciation for FAO's efforts on launching SPADA to accelerate aquaculture development in the region. African countries expressed their gratitude for such dedicated efforts building on the lessons learned in the region.

It was highlighted that there is a need to support small producers who are often at the limit of economic sustainability but also stressed the relevance of promoting private sector development. Building capacity to provide adequate extension services and providing credit for new entrants to aquaculture were considered important. Aquaculture should be integrated into national agricultural development programmes; in particular the integration into irrigation schemes provides opportunities for increased production and economic returns.

Some African countries requested assistance from FAO in helping to address regional and interregional cooperation, stressing the role of SPADA and ANAF on these matters.

The Secretariat acknowledged the appreciation shown by delegates on the SPADA initiative, and reiterated its call to members for participating in and supporting SPADA to become a driver of sustainable development of aquaculture in Africa.