



# COMMITTEE ON FISHERIES

## SUB-COMMITTEE ON AQUACULTURE

### Ninth Session

Rome, 24–27 October 2017

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

### Executive Summary

This working document contains an overview of the efforts made by the FAO Fisheries and Aquaculture Department towards implementing the major recommendations of the past sessions of the Sub-Committee on Aquaculture of the FAO Committee on Fisheries.

### INTRODUCTION

1. The Eighth Session of the Committee on Fisheries (COFI) Sub-Committee on Aquaculture was held in Brasilia, Brazil, from 5 to 9 October 2015, at the kind invitation of the Government of Brazil. The report of the session is provided as an information document (COFI:AQ/IX/2017/Inf.5).

### MAJOR RECOMMENDATIONS AND SUGGESTIONS OF THE SUB-COMMITTEE

2. The Sub-Committee made a number of suggestions 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 (refer to COFI:AQ/IX/2017/Inf.5).

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3. A Session Background Document (COFI:AQ/IX/2017/SBD.1) was prepared which summarizes the actions taken by the FAO Fisheries and Aquaculture Department, in collaboration with Members and other relevant stakeholders, to address the decisions and recommendations directed to the Secretariat. In this Session Background Document the “Para” adheres with the paragraph number of the report of the Eighth Session of COFI-SCA (COFI:AQ/IX/2017/Inf.5) and “SP” adheres to FAO Strategic Objectives/Programmes.

## **THE CONTRIBUTION OF SMALL-SCALE AQUACULTURE TO FOOD SECURITY, RURAL EMPLOYMENT AND EMPOWERMENT**

4. The Rome Declaration on Nutrition was adopted at the Second International Conference on Nutrition.<sup>1</sup> In the declaration, world leaders and countries committed to eradicating hunger and preventing all forms of malnutrition worldwide. At FAO, food security and nutrition has been identified as a cross-cutting issue. In the next two to five years, FAO plans to:

- develop a strong, active interdepartmental working group on fish, food security and nutrition;
- build strong linkages between the COFI Sub-Committee on Aquaculture (COFI-SCA) and the COFI Sub-Committee on Fish Trade (COFI-FT), with other FAO departments and FAO colleagues to ensure fish is appropriately considered in food security and nutrition debates;
- develop an international network of scientists and practitioners who share a vision of maximizing the potential of fish to meet global food security and nutrition needs;
- prioritize a list of key issues on which the FAO Fisheries and Aquaculture Department should focus;
- identify sources of funding and mobilize resources to address key issues;
- ensure familiarity with and use of the FAO nutrition framework in developing field projects; and
- contribute a section on nutrition to the Intergovernmental Panel on Climate Change (IPCC) Special Report on the Oceans and Climate Change.

5. At the request of the Eighth Session of the Sub-Committee on Aquaculture, the FAO Fisheries and Aquaculture Department has recently initiated the formation of an interdepartmental working group on fish, food security and nutrition, which is charged with developing and implementing a programme of work.

6. An estimation of the contribution of fish to food security and nutrition and to family cash income has been carried out in Central American countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama), as well as in Chile, Colombia and Peru, through a study performed in coastal communities.<sup>2</sup>

7. A regional programme supported by the Government of Brazil through the Aquaculture Network for the Americas aimed at increasing the sustainability of resource-limited aquaculture farmers in a number of countries in Latin America and the Caribbean, namely Antigua and Barbuda, Colombia, Costa Rica, Guatemala and Paraguay. A series of integrated agri-aquaculture demonstration units were set up as field schools with farmers and farmers’ organizations. The multiplication factor of this

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<sup>1</sup> FAO. 2014. Second International Conference on Nutrition. FAO institutional websites. [online]. Rome. Updated November 2014. [Cited 04 July 2017]. [www.fao.org/about/meetings/icn2/background/en/](http://www.fao.org/about/meetings/icn2/background/en/)

<sup>2</sup> FAO. 2014. Contribución de la pesca y la acuicultura a la seguridad alimentaria y el ingreso familiar en Centroamérica. Panamá. 107 pp.  
Villanueva, J. & Flores-Nava, A. 2016. Contribución de la Pesca Artesanal a la Seguridad Alimentaria. El empleo rural y el Ingreso Familiar en Países de América del Sur. Oficina Regional de la FAO para América Latina y el Caribe, Santiago, Chile. 96 pp.

programme has been extremely encouraging, with more than 40 new farms in Guatemala and more than 200 in Paraguay stemming from each demonstration farm.

8. FAO continues to emphasize the need for increasing access to and consumption of fish among the rural poor as a strategy for improving food security and nutrition. This concept has been continuously included in all FAO-assisted projects and programmes implemented at both the national and regional levels.

9. A regional programme has been designed and implemented in Latin American and Caribbean countries to include fish in school-feeding programmes. FAO has also been active in promoting the role of fish and aquaculture products in diets and has had an active participation in global events, following up on the Second International Conference on Nutrition recommendations. The outcome has been a road map to implement pilot-scale projects in rural and urban marginalized territories where small-scale fishers and/or aquaculture farmers become suppliers of local school-feeding programmes. Pilot projects have already started in Costa Rica, Guatemala, Honduras and Paraguay, while a modification of the legal framework of school-feeding programmes has been submitted to Mexico's senate to improve school diets with fish products. In Africa, a simple technology for processing fish by-products into micronutrient-dense products for human consumption has been developed and tested.<sup>3</sup>

10. FAO is promoting a food-based approach advocating for the consumption of foods high in nutrients that are deficient in local diets.<sup>4</sup> Fish products are playing an increasingly important role here. Much remains to be done to mainstream fish in such global debates and to ensure its role is adequately reflected in and can be realized by national food security and nutrition policies. Key to this is fostering an understanding and clearly communicating the role fish can play in food security and nutrition.

11. Various papers on the present and future contributions of aquaculture to food security and nutrition have been developed by FAO, in conjunction with other organizations.<sup>5</sup>

12. An indicator system for assessing the contribution of small scale aquaculture (SSA) to sustainable rural development was developed using the Sustainable Livelihood Approach (SLA) and agreed criteria (accuracy, measurability and efficiency). The SLA as an analytical framework reflects the primary objective of an SSA system which is to balance the use and/or build up of the five livelihood capitals or assets (natural, physical, human, financial and social). Twenty indicators were included and for each the following are provided: detailed definition (name, brief description, unit of measurement), importance and relation to sustainability, what it measures and how it can be measured.<sup>6</sup>

13. Entry points that can guide small scale aquaculture (SSA) stakeholders in their contribution to food security, poverty alleviation and socio-economic development range from political support and partnerships, to financial strengthening of SSA activities through education, training, access to financial funds, infrastructure improvements and gender awareness. SSA also need to be put in the context of food security, poverty alleviation and socio-economic development.<sup>7</sup>

14. To increase adaptive capacity of small-scale aquaculture farmers to climate change, FAO is currently implementing a regional TCP (TCP/RAS/3603) to scale up innovative rice-fish farming and

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<sup>3</sup> Abbey, L., Glover-Amengor, M., Atikpo, M.O., Atter, A. & Toppe, J. 2016. Nutrient content of fish powder from low value fish and fish byproducts. *Food Sci Nutr*. doi:10.1002/fsn3.402

<sup>4</sup> See for example. FAO. 2011. *Combating Micronutrient Deficiencies: Food-based Approaches*, Edited by B. Thompson and L. Amoroso. FAO and CAB International. 432 pp.

<sup>5</sup> HLPE. 2014. *Sustainable fisheries and aquaculture for food security and nutrition*. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome, FAO. 118 pp.

<sup>6</sup> 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. 180 pp.

<sup>7</sup> Bondad-Reantaso, M.G. & Subasinghe, R.P., eds. 2013. *Enhancing the contribution of small-scale aquaculture to food security, poverty alleviation and socio-economic development*. FAO Fisheries and Aquaculture Proceedings No. 31. Rome. FAO. 255 pp.

climate-resilient tilapia farming practices in Bangladesh, Indonesia, the Philippines, Sri Lanka and Viet Nam by disseminating technical guidelines of good farming practices, supporting farm demonstrations and formulating national programs.

## **IMPLEMENTATION OF THE ECOSYSTEM APPROACH TO AQUACULTURE**

15. Several efforts are being made to promote the implementation of the ecosystem approach to aquaculture (EAA). A wider dissemination of the EAA is being promoted through a multipronged communication strategy that includes blogs, newsletters, publications and toolboxes.

16. FAO's Blue Growth Initiative<sup>8</sup> brings support and focus to promote and enhance the implementation of the FAO Code of Conduct for Responsible Fisheries (CCRF) and the ecosystem approach to fisheries and aquaculture (EAF/EAA).

17. Capacity-building and promotional activities on EAA during the intersessional period focused on the inclusion of EAA as an integral part of spatial planning for aquaculture and climate-change related projects.<sup>9</sup>

## **SPATIAL PLANNING TO PROMOTE AQUACULTURE GROWTH WITH EMPHASIS ON ENVIRONMENTAL PROTECTION**

18. FAO assisted Kenya and Saudi Arabia,<sup>10</sup> respectively, in the preparation of Atlases to illustrate potential areas for marine cage culture to support the development of environmentally sustainable and socio-economically responsible forms of mariculture. Angola, Costa Rica, United Arab Emirates and Oman benefited from FAO's technical assistance to record the location and production of aquaculture facilities as an essential step that can ultimately improve aquaculture zoning, site selection and area management.<sup>11</sup> These facilities and their evolution can be assessed against locations of sensitive ecosystems and habitats to highlight potential impacts and they can be used to assess environmental capacity of recipient waterbodies.

19. FAO is participating in two European Union-funded Horizon 2020 projects that are of relevance and importance to spatial planning. The first project entitled "An Ecosystem Approach to Making Space for Sustainable Aquaculture" included the preparation of an FAO review on current approaches to spatial planning including environmental, socio-economic, and governance considerations for aquaculture in marine and freshwater environments in Europe and in non-European Union Mediterranean and Black Sea countries, covering the General Fisheries Commission for the Mediterranean (GFCM) area of application and Canada and the United States of America. The second project "Marine Investment in the Blue Economy" investigated the potential of combining maritime sectors for each of the sea basins

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<sup>8</sup> FAO. 2015. *Achieving Blue Growth through implementation of the Code of Conduct for Responsible Fisheries*. Policy Brief. Rome, FAO. [www.fao.org/fileadmin/user\\_upload/newsroom/docs/BlueGrowth\\_LR.pdf](http://www.fao.org/fileadmin/user_upload/newsroom/docs/BlueGrowth_LR.pdf)

<sup>9</sup> FAO. 2017. *Training young people from around the world to bolster sustainable aquaculture*. Blue Growth blog. The Fisheries and Aquaculture Department institutional websites. [online]. Rome. [Cited 04 July 2017]. [www.fao.org/blogs/blue-growth-blog/training-young-people-from-around-the-world-to-bolster-sustainable-aquaculture/en/](http://www.fao.org/blogs/blue-growth-blog/training-young-people-from-around-the-world-to-bolster-sustainable-aquaculture/en/)

<sup>10</sup> Saunders, J., Cardia, F., Hazzaa, M.S., Rasem, B.M.A., Othabi, M.I. & Rafiq, M.B. 2016. *Atlas of potential areas for cage aquaculture: Red Sea – Kingdom of Saudi Arabia*. FAO Project UTF/SAU/048/SAU, "Strengthening and supporting further development of aquaculture in the Kingdom of Saudi Arabia". FAO and Saudi Ministry of Agriculture, Saudi Arabia. 104 pp.

<sup>11</sup> An excellent starting point for a spatial inventory of aquaculture with attributes that include species, culture systems and production is FAO's National Aquaculture Sector Overview map collection ([www.fao.org/fishery/naso-maps/naso-home/en](http://www.fao.org/fishery/naso-maps/naso-home/en)).

under study (i.e. Baltic, Atlantic, Mediterranean and Black Seas, and the Caribbean) and in the same place or on a specifically built platform in order to make more sustainable use of space and resources.

20. FAO, in partnership with the World Bank, published two key publications and policy guidelines on aquaculture zoning, site selection and aquaculture management areas under the ecosystem approach to aquaculture, the publications include guidance on environmental capacity of zones, farm sites and aquaculture management areas, biosecurity, and adequate planning required to take into account climate change impacts.<sup>12</sup> An FAO technical paper on marine spatial planning<sup>13</sup> was published to provide support to Regional Commission for Fisheries (RECOFI) members to plan and develop more sustainable fisheries and aquaculture sectors through a more unified approach to spatial planning and management of marine environments in the context of multiple users and uses.

## SEED AND FEED PRODUCTION

21. Technical assistance on feed and seed production and environmental monitoring were provided during the intersessional period through various mechanisms, such as projects implemented under the Technical Cooperation Programme (TCP) and projects/activities funded by donors and FAO regular funding, prioritized through FAO's Strategic Programme 2 on Sustainable Agriculture, Forestry and Fisheries. The assistance through TCP included:

- Bangladesh – development of the national feed quality monitoring protocol, and the revision of existing feed rules to meet the emerging demand of the country; and improved seed quality through the genetic selection programme, better hatchery management protocol and revision of hatchery rules.
- Kyrgyzstan – baseline study on availability of aquafeed and feed ingredients, capacity development of feed production, and analysis of the aquafeed value chain.
- The Philippines – guidelines on better management practices and training manual for feed production and management of tilapia and milkfish culture.
- Sri Lanka – improving aquaculture of Asian seabass through better feed and health management.

22. Under the Blue Growth Regional Initiative, FAO is assisting: (i) Sri Lanka in the development of water-based tilapia hatcheries; (ii) Bangladesh in assessing aquaculture environmental impacts in southern Bangladesh and proposing a mitigation plan; and (iii) Viet Nam in developing policy solutions for sustainable feed supply and good management practices to increase feed utilization efficiency for striped catfish.

23. Other activities/assistance include: (i) a life-cycle analysis of the greenhouse gas emissions on three aquaculture systems in Bangladesh, India and Viet Nam;<sup>14</sup> (ii) a workshop was organized in Costa Rica in November 2015<sup>15</sup> with the objective to address the environmental impacts of feeds,

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<sup>12</sup> Aguilar-Manjarrez, J., Soto, D. & Brummett, R. 2017. *Aquaculture zoning, site selection and area management under the ecosystem approach to aquaculture. A handbook*. Report ACS18071. Rome, FAO and the World Bank Group, Washington, DC. 62 pp. Includes a USB card containing the full document (395 pp.).

<sup>13</sup> Meaden, G.J., Aguilar-Manjarrez, J., Corner, R.A., O'Hagan, A.M. & Cardia, F. 2016. *Marine spatial planning for enhanced fisheries and aquaculture sustainability – its application in the Near East*. FAO Fisheries and Aquaculture Technical Paper No. 604. Rome, FAO. 89 pp.

<sup>14</sup> FAO. 2017. *Greenhouse gas emissions from aquaculture: a life cycle assessment of three Asian systems*. FAO Fisheries and Aquaculture Technical Paper No. 609. Rome, FAO. 120 pp.

<sup>15</sup> FAO. 2017. *Improving feed conversion ratio and its impact on reducing greenhouse gas emissions in aquaculture*. FAO Non-Serial Publication. Rome, FAO. 105 pp.

including the contribution of feeds to greenhouse gas emissions; and (iii) preparation of a training manual on “Feed production and management: a training manual for small-scale aquafarmers”.<sup>16</sup>

24. Workshop and capacity-building activities on seed and feed included:

- an Expert Workshop on Sustainable Use and Management of Artemia Resources in Asia, 6 to 9 November 2016, in collaboration with Tianjin University of Science and Technology, Tianjin, China;<sup>17</sup>
- a study on “Development of a proposal for credit facility for small-scale aquafarmers, hatchery operators and feed producers in Bangladesh” with the objective to develop model business plans for small-scale fish farmers, shrimp farmers, hatchery operators and feed manufacturers; and
- four case studies on “Strengthening, empowering and sustaining associations of small-scale aquaculture farmers and hatchery owners’ associations in Bangladesh, the Philippines, Sri Lanka and Viet Nam with the objective to prepare a regional synthesis.

## BIOSECURITY INCLUDING AQUATIC ANIMAL HEALTH

25. Technical assistance on biosecurity and aquatic animal health was provided during the intersessional period through various mechanisms at different levels:

- inter-regional level – e.g. to 17 countries from Asia and Latin America;
- regional level – e.g. through regional TCPs involving five countries from the Western Balkans, eight countries from RECOFI and ten countries in the Southern African region; and
- national level – e.g. to Central African Republic, the Democratic Republic of the Congo, Fiji, Indonesia, Malaysia and Palau.

26. The range of assistance included awareness and dissemination of the current state of knowledge and development of national action plans for acute hepatopancreatic necrosis disease; and surveillance and emergency preparedness for infectious myonecrosis virus (inter-regional); development of national and regional strategies on aquatic animal health and biosecurity frameworks;<sup>18</sup> emergency disease investigation<sup>19</sup> and capacity-building on risk analysis for aquatic animal movement, aquatic epidemiology, active surveillance and emergency preparedness.

27. Aquatic animal diseases were included in the last six quarterly issues of FAO’s Early Warning Bulletin.<sup>20</sup> Countries were also made aware of an emerging disease of tilapia, the tilapia lake virus (TiLV).

28. The Norwegian Veterinary Institute (NVI) and the Aquaculture Branch (FIAA) of the Fisheries and Aquaculture Department are exploring funding mechanisms to provide support to enhancing biosecurity governance and aquatic animal health capacity of member states. A first initiative is to start

<sup>16</sup> FAO. 2017. *Feed production and management: a training manual for small-scale aquafarmers*. FAO Fisheries and Aquaculture Technical Paper No. 611. Rome, FAO. 120 pp.

<sup>17</sup> FAO. 2017. Report of the FAO Expert Workshop on Sustainable Use and Management of Artemia Resources in Asia. Tianjin, China, 7–9 November 2016. FAO Fisheries and Aquaculture Report No. 1198, Rome, FAO. 25 pp.

<sup>18</sup> FAO. 2017. *Report of the Introductory Training Course on Risk Analysis for Movements of Live Aquatic Animals for RECOFI Members and the Roundtable Meeting on RECOFI Regional Aquatic Biosecurity*, Muscat, Sultanate of Oman, 1–5 November 2015. FAO Fisheries and Aquaculture Report No. 1149. Rome, FAO.

<sup>19</sup> FAO. 2017. *Report of the International Emergency Fish Disease Investigation Mission on a Suspected Outbreak of Epizootic Ulcerative Syndrome (EUS) in the Democratic Republic of the Congo*, 13–19 March 2015. Rome, FAO. 58 pp.

<sup>20</sup> FAO. 2017. *Early Warning Bulletin*. FAO institutional websites. [online]. Rome. Updated January 2017. [Cited 04 July 2017]. [www.fao.org/food-chain-crisis/early-warning-bulletin/en](http://www.fao.org/food-chain-crisis/early-warning-bulletin/en).

a discussion forum for establishing an international response team for emerging diseases in aquaculture. The ultimate aspiration is to establish a long-term programme that will address biosecurity and aquatic animal health challenges affecting the sustainability of the aquaculture sector.

29. Antimicrobial resistance (AMR) is another new area of emphasis for FAO. The FAO Action Plan on Antimicrobial Resistance 2016–2020<sup>21</sup> supports the implementation of the FAO Conference Resolution 4/2015 and the World Health Organization-led Global Action Plan on AMR that highlights the necessity of adopting a “One Health” approach, involving public health and veterinary authorities, the food and agriculture sectors, financial planners, environmental specialists and consumers. It addresses four major focus areas:

- improve awareness of AMR and related threats;
- develop capacity for surveillance and monitoring of AMR and AMU (antimicrobial use) in food and agriculture;
- strengthen governance related to AMU and AMR in food and agriculture; and
- promote good practices in food and agricultural systems and the prudent use of antimicrobials.

30. An ongoing project “Strengthening Capacities, Policies and National Action Plans on Prudent and Responsible Use of Antimicrobials in Fisheries” has two components, namely: (i) aquaculture (participating countries: China, Malaysia, the Philippines, Viet Nam); and (ii) fish product safety and quality (participating countries: Bangladesh, the Philippines, Thailand, Viet Nam). Enhanced knowledge on antimicrobial usage, prudent and responsible use of antimicrobials in aquaculture and improved skills in antibiotic residue testing by Competent Authorities on Fisheries and Aquaculture is expected by the end of project implementation. A publication on “Responsible Management of Bacterial Diseases in Aquaculture” is being finalized to support efforts at reducing the use of antibiotics and thus avoid AMR, as well to find alternatives to antibiotics.

## **ENVIRONMENTAL PROTECTION, BIODIVERSITY AND INVASIVE SPECIES**

31. Work on environmental protection, biodiversity and invasive species during the intersessional period continued to be pursued as an integral part of the ecosystem approach to aquaculture (EAA). Technical assistance on EAA was provided via TCPs and European funded projects on the “Ecosystem Approach to Making Space for Sustainable Aquaculture” and “Tools for Assessment and Planning of Aquaculture Sustainability”.

32. The third biennial survey of the implementation of the Code of Conduct on Responsible Fisheries, as it applies to aquaculture, was carried out in 2017 and the results which include environmental protection and biodiversity are presented at in this session.

33. A separate paper report on the current status of the State of the World’s Aquatic Genetic Resources document was prepared for this meeting. FAO provided inputs to the United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) on use of aquatic biodiversity, in which attention was drawn to the fact that aquaculture was unusual in its reliance on biodiversity and ecosystem services, which was not being given appropriate consideration. A workshop on diversification as a response to climate change and other drivers was held in June 2016.<sup>22</sup>

34. No normative work has been carried out on invasive species during this intersessional period, although FAO continues to raise the issues surrounding development of aquaculture based on alien

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<sup>21</sup> FAO. 2016. *The FAO action plan on antimicrobial resistance 2016–2020*. Rome, FAO. 17 pp.

<sup>22</sup> Harvey, B., Soto, D., Carolsfeld, J., Beveridge, M.C.M. & Bartley, D.M. eds. 2017. *Planning for aquaculture diversification: the importance of climate change and other drivers*. FAO Technical Workshop, 23–25 June 2016, FAO Rome. FAO Fisheries and Aquaculture Proceedings No. 47. Rome, FAO.

germplasm in TCP and other proposals from countries. FAO considers risks are attendant not only with species but also with strains (e.g. impacts of feral farmed Atlantic salmon on wild populations).

## **IMPACTS ON CLIMATE CHANGE, ITS MITIGATION AND ADAPTATION**

35. Through regional initiatives, such as the Water Scarcity Initiative in the Near East and North Africa Region, FAO is implementing activities that focus on the smart use of water through the promotion and development of water saving using integrated agri-aquaculture production systems. Such systems can reduce water requirements for the production of high-quality protein (fish) and fresh vegetable products, securing food security and nutrition for rural populations living in remote and arid areas.

36. Efforts were made by FAO to increase awareness and build capacity in aquaculture insurance as one of the climate-risk management tools during the intersessional period. Information from national pilot programmes on aquaculture insurance in China and Viet Nam was collected, which also included information on the role and prospects of insurance for climate-resilient tilapia farming in the Philippines. A regional workshop on the “Development of aquaculture insurance system for small-scale farmers” took place in September 2016 in Kasetsart University in Bangkok, Thailand, to discuss these issues for developing insurance for the Thai shrimp sector.

37. The Paris Agreement, adopted by the 21st Session of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP21) in 2015, explicitly mentions food security and oceans, a significant breakthrough in the climate arena. The COP22 provided further confirmation that food security, agriculture and oceans are gaining increasing visibility. Climate change has now become a priority topic for FAO, as reflected in the recently created Department on Climate, Biodiversity, Land and Water and in the development of an interdepartmental working group within the department.

38. Moreover, upon request by the Members, a strategy to guide FAO’s work on climate change was approved by the Programme Committee in November 2016, and it is now mandatory that all departments report on climate change to their respective Technical Committees. The COFI-FT and COFI-SCA have increased their collaboration on climate change matters, including in the preparation of a paper on the “Impact of climate change on future fish supply, trade and consumption”, presented at the 16th Meeting of the COFI-FT in Busan, Republic of Korea, in September 2017. The likely impacts of climate change, via changes in the incidence of disease, damage to aquaculture facilities, ocean acidification, changes in sea levels and flooding on aquaculture production, were considered and discussed in the wider context of fish production and fish trade.

39. In terms of funding, in addition to the contributions of governments (mainly Japan and Norway), FAO successfully submitted several project proposals to the Global Environment Facility’s Special Climate Change Fund and the Least Developed Countries Fund. The recent accreditation of FAO to the Green Climate Fund officially adds to the possibilities of accessing climate funds and develop national or regional programmes of work.

## **CULTURE-BASED FISHERIES**

40. The Asia-Pacific Fishery Commission (APFIC)/FAO regional consultation workshop, “Improving the Contribution of Culture-based Fisheries and Fishery Enhancements in Inland Waters to Blue Growth”, was held in Negombo, Sri Lanka, from 24 to 28 May 2015. The workshop was attended by 33 participants and supported by the FAO Regional Office for Asia and the Pacific (RAP), the APFIC, the Fisheries and Aquaculture Department of FAO in Rome, and the Australian Centre for International Agricultural Research. The workshop developed monitoring indicators for stocking, and



reviewed a decision matrix for evaluating success/progress towards objectives for stocking initiatives. Also presented were regional guidelines for stocking and background reviews of the status of stocking, culture-based fisheries and enhancements. The outcome is an FAO/APFIC review, *Responsible Stocking and Enhancement of Inland Waters in Asia*,<sup>23</sup> which provides guidance on the development of responsible stocking programmes and, importantly, guidance on how such programmes should be evaluated objectively. It is expected that this will assist those who are involved in stocking programmes and their management and contribute to sustainable, equitable and environmentally acceptable practices in capture fishery stocking.

41. The first draft of the *State of the World's Aquatic Genetic Resources for Food and Agriculture*<sup>24</sup> (see also working document (COFI:AQ/IX/2017/6) and information document (COFI:AQ/IX/2017/Inf.8) has been prepared by the FAO Fisheries and Aquaculture Department under the umbrella of the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA), and the second revised draft is in preparation. Over 89 countries have responded and provided information – in many cases, information not previously reported to FAO on, inter alia, various aspects of stocking and culture-based fisheries.

42. FAO continues to provide sustainable long-term support to the European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC), and the Secretariat undertakes all the necessary actions to facilitate the holding of the EIFAAC Plenary Sessions and the Management Committee meetings. The FAO Regional Office for Europe and Central Asia (REU), where the responsibility lies for overseeing the EIFAAC, in cooperation with the FAO Fisheries and Aquaculture Department, provides all the necessary support; at present, arrangements are being made by the REU to allow for the holding of the next EIFAAC Session in Poland in September 2017. During the restructuring of EIFAAC, Members decided to keep EIFAAC as an FAO Article VI body.

## **SUPPORT TO REGIONAL AQUACULTURE BODIES**

43. Regional fishery bodies (RFBs) are increasingly taking cooperative action at the regional level on fisheries management and aquaculture development; they have a relevant role in the global and regional dialogue on fishery and aquaculture governance. The geographical coverage of RFBs has expanded and currently about one-third of existing RFBs include aquaculture in their mandate.

44. Selected examples of recent initiatives among RFBs include the action taken by the GFCM through a task force, which is finalizing a strategy for the sustainable development of aquaculture in the Mediterranean and the Black Seas; and the formal establishment of the Aquaculture Network for Africa as an aquaculture unit within the structure of the African Union – Interafrican Bureau for Animal Resources.

45. Performance reviews are a good practice increasingly being carried out by RFBs to improve their efficiency. FAO has produced and disseminated a critical review of RFBs' performance review implementation.<sup>25</sup> In addition, FAO hosts and supports the Regional Fishery Body Secretariats Network (RSN), the scope of which is to facilitate and support exchange of technical knowledge and information on critical and emerging issues among secretariats of 53 RFBs and related networks. As highlighted at the sixth meeting of the RSN, the Network's scope is to promote the role played by RFBs in the conservation, management and sustainable use of fish stocks and aquaculture resources and to foster the cooperation and coordination among RFBs as an effective way to strengthen fisheries and

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<sup>23</sup> FAO. 2015. *Responsible stocking and enhancement of inland waters in Asia*. FAO Regional Office for Asia and the Pacific, Bangkok. RAP Publication 2015/11. 142 pp.

<sup>24</sup> FAO. 2017. *The State of the World's Aquatic Genetic Resources for Food and Agriculture – draft report*. Commission on Genetic Resources for Food and Agriculture. Sixteenth Regular Session. Rome.

<sup>25</sup> FAO. 2015. *The implementation of performance review reports by regional fishery bodies, 2004–2014*, by Péter D. Szigeti & Gail L. Lugten. FAO Fisheries and Aquaculture Circular No. 1108. Rome, FAO.

aquaculture governance at the regional and global scale. The FAO/RSN Secretariat also produces a newsletter with relevant information on RFBs activities and achievements.<sup>26</sup>

## **FAO'S BLUE GROWTH INITIATIVE AND AQUACULTURE**

46. The Global Blue Growth Initiative of FAO has expanded its aquaculture work significantly since 2015. It supports the implementation of policies and tools, such as spatial planning for sustainable aquaculture development and intensification in selected countries: Bangladesh, Kenya, Sri Lanka and Viet Nam, and promotes integrated agri-aquaculture and climate-resilient tilapia farming in participating countries of the Regional Blue Growth Initiative. Work has also progressed on integrating aquaculture with other sectors, such as with rice and livestock in Indonesia and in Africa where South-South cooperation is being used to build capacity for integrating different sectors. FAO's work with Small Island Developing States (SIDS) includes the development of seaweed farming and value chains in Kiribati, the Philippines and Saint Lucia, and aquaponics in Barbados.

47. In the Asia-Pacific region the Blue Growth initiative has provided support to several countries in the region by: (i) developing and implementing regional and national aquaculture strategies; (ii) promoting innovative management systems and production practices; (iii) increasing the resilience of small farmers to climate-related risks and impacts; and (iv) improving access of small farmers to quality production inputs, technology and market. Technical assistance included two regional TCPs on: (i) pilot application of aquaculture planning and management tools for sustainable growth in selected southeast Asian countries", and (ii) scaling up of innovative rice-fish farming and climate-resilient Tilapia pond culture practices for blue growth in Asia.

## **RESEARCH AND EDUCATION FOR AQUACULTURE DEVELOPMENT**

48. Considering the diversity of aquaculture practices and systems in the world, the prioritization of research issues by region may be the better option. FAO can facilitate the regional initiatives in identifying researchable issues after assessing the regional needs. Thus, FAO may help the regions or countries to establish a robust process for setting up priorities in research and education. FAO can work with regional organizations, regional aquaculture networks and FAO regional fishery bodies in agreeing on a priority-setting process in research and education in the regions depending on the stage of its development and needs.

49. Collaboration and partnerships through consortia led by institutions of international renown and international networking within the region are effective mechanisms for improving the quality of educational programmes.

50. Efforts continue to strengthen the underlying basis of the five principles outlined in FAO's Common Vision for Sustainable Food and Agriculture.<sup>27</sup> In this regard, a number of particularly relevant cross-sectoral technologies and practices for small agricultural producers have been identified and documented in the Technologies and Practices for Small Agricultural Producers (TECA) website.<sup>28</sup>

51. Seventeen projects have implemented linkages on technology transfer and innovation: six TCPs and eleven extra-budgetary funded (EBF) projects. TCPs dealt with regional and global linkages to

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<sup>26</sup> FAO. 2017. Regional fishery bodies (RFB) – Website. RSN Newsletter. The Fisheries and Aquaculture Department institutional websites. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 12 November 2013. [Cited 04 July 2017]. [www.fao.org/fishery/rsn/newsletter/en](http://www.fao.org/fishery/rsn/newsletter/en).

<sup>27</sup> FAO. 2017. Sustainable Food and Agriculture – website. FAO institutional websites. In: FAO [online]. Rome. Updated 12 November 2013. [Cited 04 July 2017]. [www.fao.org/sustainability/en](http://www.fao.org/sustainability/en).

<sup>28</sup> FAO. 2017. Technologies and practices for small agricultural producers (TECA) – website. FAO institutional websites. In: FAO [online]. Rome. Updated 12 November 2013. [Cited 04 July 2017]. <http://teca.fao.org>.

support Caribbean SIDS, Pacific SIDS, Asia, or were global. TCP assistance included strategic planning, business planning, new aquaculture practices for climate change adaptation, and aquatic animal health. Extra-budgetary funded projects involved bilateral South-South cooperation, trilateral, regional or global linkages to support African SIDS, Caribbean SIDS, East Africa, West Africa, Southern Africa, Asia, or were global. Extra-budgetary assistance included strategic planning, management of aquatic genetic resources, new aquaculture practices for climate change adaptation, new practices for employment generation, aquaculture certification and aquatic animal health.

52. Ten activities driven by FAO strategic objectives have also implemented linkages on technology transfer and innovation at the global or regional level. The scope of the assistance was in East and West Africa, Southern Africa, Asia, or global. The assistance included access to technologies for employment generation, entrepreneurship, and insurance in aquaculture, climate change, biosecurity and emergency preparedness for aquatic animal health.

53. Several interventions have used the farmer field school (FFS) approach to capacity development, which offers space for hands-on group learning, enhancing skills for critical analysis and improved decision-making by local people. Ongoing aquaculture projects using FFS include rice-fish culture in Burkina Faso and Guinea-Bissau, building on regional experience developed with master trainers in neighboring countries in previous years. Ongoing rice-fish projects in China, Indonesia and the Lao People's Democratic Republic also use an FFS approach, as does a tilapia project in Haiti.

## **IMPROVING LIVELIHOODS THROUGH DECENT EMPLOYMENT IN AQUACULTURE**

54. FAO continues its work on poverty reduction, including decent work and social protection in fisheries and aquaculture.

55. FAO is implementing a subregional project called “Promoting Agricultural Diversification to Reduce Poverty, Fight Malnutrition and Enhance Youth Employment Opportunities in Eastern Africa” to assist farmers in Burundi, Kenya, Rwanda and Uganda in their transformation into business-oriented rural and peri-urban entrepreneurs.

56. In addressing the challenges of decent work in fisheries and aquaculture, and the associated links to poverty reduction efforts and socio-economic development, FAO works closely with international and national partners, including concerned authorities, industry (fisheries, aquaculture, processing, trade), civil-society organizations including human and community rights’ initiatives and fish workers’ unions, certification bodies, research and development institutions, media, consumers, and international organizations such as the International Labour Organization (ILO), the International Maritime Organization (IMO) and the Organisation for Economic Co-operation and Development (OECD). Given the ethical dimensions and political interest, and the relevance for international markets, the upcoming session of the COFI-FT will discuss social sustainability (including labour) issues in fish value chains and trade.

57. FAO, through the Africa Solidarity Trust Fund (ASTF), has involved and encouraged government partners and the private sector to engage with young aquaculture entrepreneurs. Young farmers value their labour cost and run their construction, fish farming or poultry activities as a business and generate living incomes.

58. Most beneficiaries of the ASTF and TCP aquaculture projects in Eastern Africa, mainly rural unemployed or underemployed young women and men, receive start-up production input kits, and young farmers enjoy intensive training on entrepreneurship, business, nutrition and collective cooperation. Many beneficiaries have diversified their livelihood by initiating other secondary income activities in the agriculture sector and subsidiary enterprises of the poultry and aquaculture sectors. The success of small ventures has stimulated the FAO-China South-South cooperation efforts to further support the projects with feed experts from China.

59. Through a subregional project in six West African countries, which aims at “creating agribusiness employment opportunities for youth through sustainable aquaculture systems and cassava value chains”, FAO promotes models for sustainable and decent jobs for youth by facilitating “mentorship” in Côte d’Ivoire, vertically integrated chain activities in Ghana, development of structuring activities in Guinea-Bissau and Burkina Faso, and start-up activities driven by a good professional environment and market dynamism in Nigeria and Senegal. Additional FAO capacity-development efforts in sub-Saharan Africa covered training on the “business approach to aquaculture”. Further, FAO initiated reviews of occupational safety and health issues in aquaculture, including their risk management.

60. Since 2014, FAO is hosting, with the collaboration of partners such as ILO and the seafood industry, the annual event of the Vigo Dialogue on Decent Work in Fisheries and Aquaculture. Decent work issues have attracted significant media attention as well as interest by major certification initiatives active in the seafood sector. FAO is promoting such stakeholder dialogues to facilitate better understanding and communication, as well as commitments for action to help overcome poor work and livelihood conditions of fish workers and their communities.

61. FAO and ILO continued close collaboration on decent work issues in fisheries and aquaculture. The proposal for an International Year of Artisanal Fisheries and Aquaculture made at the last session of COFI could be a significant opportunity for emphasizing and expanding collaboration between labour and fisheries/aquaculture authorities at national and subnational levels with a view to help address decent work issues in aquaculture.

## **EFFORTS TOWARDS IMPROVING AQUACULTURE DATA, INFORMATION AND STATISTICS: THE PAST, PRESENT AND FUTURE**

62. FAO provides national fisheries and aquaculture statistics to the United Nations Statistics Division (UNSD) on a regular basis for inclusion in the United Nations Statistics Yearbook. FAO Fishery and Aquaculture Statistics datasets are updated once per year. The UNSD standard listing and grouping of countries and territories is used by FAO as a reference list to report on the status and trends in global aquaculture development, such as FAO’s State of World Fisheries and Aquaculture (SOFIA) and FAO’s Brief overview of Aquaculture 2015 and six regional reviews on status and trends in aquaculture development.<sup>29</sup>

63. FAO collaborates with OECD on the annual OECD-FAO Agriculture Outlook publication, which includes 10-year projections for the fisheries and aquaculture sector in terms of production, trade and consumption. FAO also collaborates with the World Customs Organization (WCO) to improve the coverage of fish and fishery products in the Harmonized System (HS) classification, used as a basis for the collection of customs duties and international trade statistics.

64. The systematic collection and reporting of statistics by FAO Members for status and trends reporting on aquaculture development is an integral part of the CCRF guidelines. Whether or not a systematic data collection on aquaculture is in place is one of the criteria in the assessment of national implementation and compliance of the code.

65. Recommendations on mechanisms and strategies for data collection have been taken into account in the planning, design and implementation of regional and national projects by FAO. In data-poor countries, a statistics collection component needs to be included in national aquaculture development strategies and/or plans, as appropriate.

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<sup>29</sup> FAO. 2017. Aquaculture Regional Reviews. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 8 February 2017. [Cited 04 July 2017]. [www.fao.org/fishery/regional-aquaculture-reviews/en](http://www.fao.org/fishery/regional-aquaculture-reviews/en)

66. FAO's global aquaculture statistics are being further strengthened through the preparation of the revised State of the World's Report on Aquatic Genetic Resources (refer to COFI:AQ/IX/2017/6 and COFI:AQ/IX/2017/Inf.8). The Aquatic Sciences and Fisheries Information System (ASFIS) list of "species items" will continue to be updated annually by FAO. Upon receiving reports from Members, FAO will expand the ASFIS list to include existing and potential cultured species, including hybrids.

67. For the 2012 revision of Harmonized System (HS2012), FAO proposed the introduction of separate codes for aquaculture and capture fisheries origin for selected species. This proposal was not accepted by the WCO Harmonized System Committee because of the difficulties in distinguishing the origin of the species at customs level and for the concern that this breakdown could become a market barrier to trade. FAO then suggested WCO member countries to insert this breakdown in their national classifications based on the Harmonized System, but currently only a few countries have introduced this specificity.

## **PROGRESS IN OTHER AREAS SINCE THE LAST TIME THE ISSUE WAS ON THE AGENDA OF THE SUB-COMMITTEE**

### **Strengthening international cooperation**

68. Major international conferences, together with FAO COFI-SCA, the network of FAO regional fishery bodies as well as bilateral and tripartite cooperation arrangements in the form of South-South cooperation and regional networking, constitute the principal platforms to advance international cooperation. Recent progress in promoting international cooperation in aquaculture includes the following:

69. Two aquaculture training centres: the Songhai Centre in Porto Novo, Benin, and the Freshwater Fisheries Research Center in Wuxi, China, a designated FAO Centre of Excellence. With FAO support, the centres have hosted training workshops for international participants. This included training for Regional Initiative countries on integrated farming in Africa including Côte d'Ivoire, Kenya, Mali and Zambia and a regional training workshop on integrated agro-aquaculture for Blue Growth in Asia held in Kunming, China, from 12 to 17 June 2017 with Bangladesh, China, Indonesia, the Lao People's Democratic Republic, Myanmar, the Philippines and Viet Nam.

70. Development of the State of the World's Aquatic Genetic Resources: COFI and CGRFA support this work; COFI established the Advisory Working Group on Aquatic Genetic Resources and Technologies while the Commission established an ad hoc Intergovernmental Technical Working Group on Aquatic Genetic Resources.

71. The FAO Interregional Initiative for Small Island Developing States: supports the Global Action Programme by providing policy advice, analyses and technical assistance. Under this initiative, an ongoing project (GCP/RAF/506/MUL, "Adoption of efficient and climate-smart agriculture practices in African SIDS"), funded by the African Solidarity Trust Fund includes specific provisions for intraregional knowledge exchange among the African SIDS.

72. The Micronesian Association for Sustainable Aquaculture: was established in December 2016 as a subregional intergovernmental network organization, whose programmes and projects focus on interactions between aquaculture, coastal resources, coastal-based livelihoods and coastal as well as marine ecology. Institutional partnerships with agencies working in these areas will promote international cooperation.

73. A Scoping Workshop on the Assessment of Capacity Needs for Developing Countries under the FAO-China South-South cooperation Trust Fund Phase II was held in Changsha, China, from 26 to 30 June 2017. Assistance is considered within the framework of China's Belt and Road Initiative and

inter alia includes support on aquaculture and integrated agri-aquaculture provided by the Freshwater Fisheries Research Center.

74. International cooperation could be further advocated through strategic partnerships, expanded bilateral and South-South cooperation arrangements, more foreign direct investments and joint ventures, greater use of consortiums in aquaculture, and assured sustainability of existing networks.

#### **GUIDANCE SOUGHT**

75. The Sub-Committee is invited to:

- review and comment on the information and background documents pertaining to FAO Fisheries and Aquaculture Department's efforts in implementing the recommendations of the past sessions of the COFI Sub-Committee on Aquaculture;
- reflect on the progress and achievements and provide advice, as required, to strengthen and prioritize the recommendations in the next inter-sessional period; and
- request Members and interested donors to provide financial and/or human resources to implement the priority areas in regards to aquaculture, as considered important by the Sub-Committee.