



COMMITTEE ON FISHERIES

SUB-COMMITTEE ON AQUACULTURE

Twelfth Session

Hermosillo, Mexico, 16–19 May 2023

IMPLEMENTATION OF 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 FAO towards implementing the major recommendations of the past sessions of the Sub-Committee on Aquaculture of the FAO Committee on Fisheries.

Suggested action by the Sub-Committee

The Sub-Committee is invited to:

- Review and comment on FAO'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 and recommendations, as required;
- Invite Members and Resource Partners to provide financial and/or human resources to implement the priority areas with regard to aquaculture; and
- Invite Members to reflect on the International Year of Artisanal Fisheries and Aquaculture and provide related recommendations.

INTRODUCTION

1. The Eleventh Session of the COFI Sub-Committee on Aquaculture was held virtually in Rome, Italy, from 24 to 27 May 2022. The report of the Eleventh Session is provided as Information Document COFI:AQ/XII/2023/INF.6.
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.
3. FAO published *The State of World Fisheries and Aquaculture 2022*¹ which was launched at the UN Ocean Conference in April 2022.

PART I: MAJOR RECOMMENDATIONS AND SUGGESTIONS OF THE SUB-COMMITTEE

A STRATEGIC FRAMEWORK TO MAXIMIZE THE CONTRIBUTION OF AQUATIC FOOD SYSTEMS TO THE SDGS – BLUE TRANSFORMATION

4. At its Tenth Session, the Sub-Committee recommended FAO to develop a global aquaculture sustainability programme.² FAO prepared a concept note for a Global Integrated Sustainable Aquaculture Programme (GISAP),³ which was presented at the Thirty-fourth Session of the Committee on Fisheries (COFI). At the session, COFI recommended further development of GISAP, including an implementation plan, considering middle-income countries.⁴
5. At the Eleventh Session of the Sub-Committee, FAO noted the need for and the focus of GISAP to be reviewed in the context of the thematic area of sustainable aquaculture following a restructuring of the FAO Fisheries and Aquaculture Division, to ensure that Members' needs are fully addressed.⁵
6. In July 2022, FAO launched its Blue Transformation Roadmap 2022–2030⁶ which outlines a roadmap for the transformation of aquatic food systems. The roadmap aligns with the 2021 Declaration for Sustainable Fisheries and Aquaculture of COFI and FAO's Strategic Framework. Aquaculture represents one of three core components of this roadmap with the objective that sustainable aquaculture intensification and expansion satisfy global demand for aquatic food and distribute benefits equitably.
7. With the Blue Transformation roadmap representing the overarching strategy for the Fisheries and Aquaculture Division, the original objectives of GISAP are being integrated into the Blue Transformation operational arrangements.

INTERNATIONAL YEAR OF ARTISANAL FISHERIES AND AQUACULTURE

8. In 2017, the Seventy-second Session of the General Assembly of the United Nations proclaimed 2022 as the International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022), with FAO serving as the lead agency, in collaboration with other relevant organizations and bodies of the United Nations system. IYAFA 2022 proved to be an excellent opportunity to celebrate the diversity of small-scale artisanal fisheries and aquaculture, including women and youth, to share the current and potential contributions to achieving the Sustainable Development Goals (SDGs) and highlight related innovation, and to build and strengthen related support and partnerships at all levels. IYAFA 2022 was officially launched on 19 November 2021 to pay tribute and link to the currently informal World Fisheries Day.

¹ www.fao.org/publications/sofia/2022/en

² www.fao.org/3/ca7417t/CA7417T.pdf, paragraph 33.

³ www.fao.org/3/ne706en/ne706en.pdf, Annex 2.

⁴ www.fao.org/3/cb8322en/cb8322en.pdf, paragraph 10b.

⁵ www.fao.org/3/cb9459en/cb9459en.pdf, paragraph 12.

⁶ www.fao.org/3/cc0459en/cc0459en.pdf

The official closing ceremony held at FAO in Rome on 31 March 2023 marked a push to continue the momentum and usher in a new era of support for small-scale aquaculture and fisheries.⁷

9. Regional launch ceremonies, national celebrations, and side events at major conferences have taken place throughout the International Year. The IYAFSA 2022 website,⁸ available in all six UN languages, provides a complete list of events, supporters, key messages and relevant publications. A monthly newsletter, video messaging and an active social media presence further amplify the messages of IYAFSA.

10. IYAFSA 2022 was a major milestone in enhancing global awareness about, understanding of, and action to support the contribution of small-scale artisanal fisheries and aquaculture to sustainable development, and more specifically in relation to food security and nutrition, poverty eradication and the use of natural resources. At the same time, IYAFSA 2022 promoted dialogue and collaboration between and among small-scale artisanal fishers, fish farmers, fish workers, governments and other key partners along the value chain, as well as further strengthening their capacity to enhance sustainability in fisheries and aquaculture and enhance their social development and well-being.

11. In Asia, to commemorate IYAFSA 2022, INFOFISH organized two webinars that put the spotlight on Asia as home to the world's majority of small-scale fishers and aquaculturists. The main objectives of the webinars were to raise awareness, launch the IYAFSA 2022 photobook, promote the results of the Illuminating Hidden Harvests study, and advocate policy support for small-scale fisheries and aquaculture.

12. In Latin America and the Caribbean, FAO launched an opening ceremony immediately after the global launch to contextualize the goals and objectives of IYAFSA 2022 within the region, with the aim of inspiring action-oriented celebrations across the continent throughout the year.

13. In South America, FAO organized two webinars on fish consumption and another on the establishment of small-scale fisheries and aquaculture associations. FAO conducted two national-level surveys for members of the IYAFSA Committee for South America: the first survey aimed to review the status of the sectors' seafood safety and quality for artisanal fisheries products. FAO organized a separate virtual meeting among the three subregional IYAFSA Committees to identify key activities to support the IYAFSA in Latin America and the Caribbean beyond 2022.

14. The Mesoamerican IYAFSA Committee is constituted by the national fisheries authorities and represented by the Organization of the Fisheries and Aquaculture Sectors of the Central American Isthmus, the Confederation of Artisanal Fisherfolk of Central America, the Indigenous Fisherfolk Alliance, and a number of small-scale aquaculture organizations of the subregion. The Plan of Action of the Mesoamerican Committee has three main objectives: (i) enhancing the inclusion of small-scale fisheries/small-scale aquaculture in national social protection systems; (ii) strengthening partnerships and networking among small-scale fisheries/small-scale aquaculture; and (iii) organizing a subregional forum for sharing information and experiences among small-scale fisheries and small-scale aquaculture.

15. In the Western Central Atlantic Fishery Commission region, IYAFSA activities were led by diverse partner organizations, including academia, civil society, and fisherfolk and aquafarmer associations, with representation from the South American and Mesoamerican committees. Activities ranged from local to regional level, in an effort to capture the multiscaled dimension of IYAFSA. Activities within the region were celebrated under the theme of recovery and resilience, with gender and youth as cross-cutting themes.

⁷ www.fao.org/newsroom/detail/IYAFSA-2022-closes-with-many-concrete-results-310323/en

⁸ www.fao.org/artisanal-fisheries-aquaculture-2022

16. The sub-Saharan Africa Steering Committee of IYAFSA and the respective national and subregional partners conducted activities to celebrate the small-scale fisheries and aquaculture sector to recognize their contribution to millions of riparian communities' well-being and nature across the region. Activities included national and regional launch events across the region as part of this initiative, a hybrid meeting on fish safety in Uganda, and activities at the Nineteenth Session of the Committee on Inland Fisheries and Aquaculture in Africa and the Organisation of African, Caribbean and Pacific States Seventh Meeting of Ministers in charge of aquaculture and fisheries.

17. In North Africa, FAO organized several events within the IYAFSA framework, including a technical workshop in Tunisia on a "Market system approach for resilient agro-aquaculture food systems in desert and arid countries" which was attended by participants from five countries of the subregion (Algeria, Libya, Mauritania, Morocco and Tunisia) as well as two countries from the Near East and North Africa region (Egypt and Oman). The workshop focused on aquaculture production systems in arid lands, with particular attention to value chains analysis of the products; it succeeded in generating a portfolio of investment projects for funding by potential donors in the region.

NORMATIVE WORK AT THE GLOBAL LEVEL

AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE

18. Following the adoption of the Global Plan of Action for the Conservation, Sustainable Use and Development of Aquatic Genetic Resources for Food and Agriculture by the FAO Council in December 2021,⁹ the Global Plan of Action (GPA) was published and made available in all UN languages.¹⁰

19. The Third Session of the Intergovernmental Technical Working Group on Aquatic Genetic Resources (ITWG-AqGR)¹¹ and the Eighteenth Regular Session of the Commission on Genetic Resources for Food and Agriculture (Commission)¹² requested FAO to develop a system for monitoring its implementation, including the development of quantifiable indicators for inclusion in the information system under development by FAO, as appropriate. FAO has developed a draft strategy for monitoring the implementation of the GPA, including indicators of the status of aquatic genetic resources (AqGR), which was reviewed at the Fourth Session of the ITWG-AqGR, which was held from 21 to 23 February 2023 (See COFI:AQ/XII/2023/INF.7).¹³

20. The Commission requested FAO to assist Members in implementing the GPA, and invited donors to provide extra-budgetary funds in support. FAO has been approached by several countries seeking support for various actions related to the implementation of the GPA. Funding has been secured and initiatives have been developed for activities in Chile and Indonesia.

21. The prototype of AquaGRIS,¹⁴ the global information system for AqGR for food and agriculture, was released in May 2022. The Government of Germany has confirmed the continuation of its support to the further development of AquaGRIS and a full version is expected to be released in 2023.

22. In response to a request from the Second Session of the ITWG-AqGR,¹⁵ FAO is preparing two guidelines on genetic management on *ex situ in vitro* gene banking and genetic management for stocking programmes.

⁹ www.fao.org/3/nh512en/nh512en.pdf

¹⁰ www.fao.org/documents/card/en/c/cb9905en

¹¹ www.fao.org/3/ng378en/ng378en.pdf, paragraph 19.

¹² www.fao.org/3/nh331en/nh331en.pdf, paragraph 59.

¹³ www.fao.org/aquatic-genetic-resources/activities/itwg/en/

¹⁴ www.fao.org/fishery/aquagris/home

¹⁵ www.fao.org/3/CA1316EN/ca1316en.pdf, paragraph 25.

23. FAO has carried out activities for the implementation of a communication strategy on its work on AqGR, including the finalization of a glossary/thesaurus of terms and the publication of three case studies exemplifying key issues. In addition, in collaboration with the Norwegian Food Research Institute, FAO developed an online training on “Aquaculture Breeding and Genetics”.

AQUATIC ANIMAL HEALTH

24. The second FishVet Dialogue is planned for 2023 or 2024, this time as an in-person event, in collaboration with the World Organisation for Animal Health (WOAH), the Norwegian Veterinary Institute and the Norwegian Agency for Development Cooperation (Norad).

25. The first in-person meeting of the Technical Working Group (TWG) of the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB) was held in Gaeta, Italy, in June 2022. The TWG finalized the PMP/AB Guidance for Application, containing the rationale, vision, mission, scope, goals and benefits of the PMP/AB and describing the four stages. It also presents a checklist, and a general stepwise flowchart for PMP/AB stage completion. The TWG will work to finalize several PMP/AB toolkits, including risk analysis, farm-level biosecurity, private-public sector partnership, emergency preparedness, cost-benefit analysis of biosecurity systems, disease burden and e-learning training modules ahead of its next meeting in Thailand.

26. A region (Asia) and a subregion (East Africa, Lake Victoria) have begun implementing the initial activities of Stage 1 of the PMP/AB. For example, FAO, through a Norad-funded project (GCP/GLO/352/NOR: Responsible use of fisheries and aquaculture resources for sustainable development – Component 3) is assisting the Network of Aquaculture Centres in Asia-Pacific (NACA) in developing a regional biosecurity strategy. There are three phases to this collaboration, namely: Phase 1: Understanding how to improve aquaculture biosecurity through PMP/AB and initiate a self-assessment and gap analysis; Phase 2: Finalization of a regional biosecurity strategy and building country and regional consensus on the next steps; and Phase 3: Presentation of the strategy to the NACA Governing Council and mobilizing resources to pilot test and/or implement PMP/AB at the national level. Similar processes are being implemented in countries bordering Lake Victoria under project GCP/RAF/519/EU-EAC True Fish Farming Story in Lake Victoria Basin (TRUE-FISH). Several countries are also the focus for PMP/AB pilot testing at national levels, namely Bangladesh, China, Indonesia and Sri Lanka.

27. With respect to the FAO Action Plan on Antimicrobial Resistance (2021–2025), FAO continues to work with FAO Reference Centres on antimicrobial resistance (AMR) and aquaculture biosecurity, four of which have been recently designated, including the Pearl River Fisheries Research Institute and the Yellow Sea Fisheries Research Institute both under the Chinese Academy of Fisheries Science (CAFS). FAO also continues to work with partners to this end.

28. On risk assessment and risk management, FAO is developing an e-learning module on risk analysis in aquaculture (as part of the PMP/AB toolkit). Implementing biosecurity measures is one of the major goals of the PMP/AB, and the use of specific pathogen free (SPF) seed is now considered as part of a biosecurity strategy to prevent the introduction of infected animals into aquaculture systems. SPF stocks have provided a means for the safe introduction of *Penaeus vannamei* around the world. Development of SPF stocks has long been recommended by FAO during previous aquaculture millennium conferences (the latest being during the Global Conference on Aquaculture

Millennium +20)¹⁶ under the thematic review paper *Biosecurity: Reducing the Burden of Disease* and again captured in *SOFIA 2018* and *SOFIA 2020*.¹⁷

CLIMATE CHANGE

29. The FAO Strategy on Climate Change 2022–2031 was endorsed by the 170th Session of the FAO Council in June 2022. It guides FAO in providing strengthened support to Members in their ambitions to address climate change in agrifood systems and in the implementation of the Paris Agreement. The strategy aims to address a broad range of interlinked challenges, including biodiversity loss, desertification, land and environmental degradation, the need for accessible, renewable energy, and food and water security. Information relevant to fisheries and aquaculture is available on a dedicated website.¹⁸

30. FAO was actively engaged in multiple events at the Twenty-sixth and Twenty-seventh Sessions of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), ensuring fisheries and aquaculture were addressed. In collaboration with partners of the United Nations system, the ocean community and the private sector, FAO used the opportunity to reinforce its commitment to continue supporting countries to achieve sustainability and climate resilience in fisheries and aquaculture.

31. At the regional level, the General Fisheries Commission for the Mediterranean (GFCM), in line with its 2030 Strategy, has been promoting algae culture (including seaweed farming and microalgae production) in order to improve the resilience of the sector in the face of climate change. An online workshop on the status and future of seaweed farming in the Mediterranean and the Black Sea was organized in 2021 and several workshops took place in 2022: a workshop on aquaculture and nature-based solutions at the Barcelona Global Seafood Expo and workshop on micro and macroalgae, both held in Spain and co-organized with the Regional Government of Catalonia, a workshop on sea urchin and seaweed production and management in the Mediterranean, held in Italy and co-organized with the Italian Ministry of Agricultural, Food and Forestry Policies, the Campania Region and the Community of Procida, and the International Workshop of Algae Innovation co-organized with Saudi Arabia's Ministry of Environment, Water, and Agriculture and the King Abdullah University of Science and Technology, held in Saudi Arabia.

OTHER INTERSESSIONAL WORK

32. FAO and CAFS initiated the Global Sustainable Aquaculture Advancement Partnership (GSAAP) to improve global and regional networking for aquaculture, strengthen capacity building for aquaculture stakeholders, develop and disseminate new knowledge products, and facilitate the collection and sharing of knowledge and success stories in sustainable aquaculture development. GSAAP is a global network of aquaculture stakeholders, intended to support international collaboration to enhance scientific understanding of aquaculture, promote continuous innovation of sustainable aquaculture technologies, and fully harness aquaculture improvement for achieving the SDGs. FAO convened the first meeting of the 18 founding members of GSAAP in November 2022.

33. The International Artemia Aquaculture Consortium (IAAC) was presented during the Global Conference on Aquaculture Millennium +20 in September 2021 during the event “SDG aligned Artemia aquaculture workshop”. The Eleventh Session of the Sub-Committee on Aquaculture noted with appreciation the IAAC as an example of international cooperation, appreciated the work on Artemia,

¹⁶ Subasinghe, R., Alday-Sanz V., Bondad-Reantaso M.G., Huang Jie, Shinn A.P and P. Sorgeloos (in press) *Biosecurity: Reducing the Burden of Disease*. In: Mair, G.C., Halwart, M., Yuan, D. and B.C. Pierce (Eds.). Special issue: FAO/NACA Global Conference on Aquaculture Millennium+20 - Aquaculture for Food and Sustainable Development. Thematic Reviews. Journal of the World Aquaculture Society. 54(2).

¹⁷ SOFIA 2018: www.fao.org/3/i9540en/i9540en.pdf; SOFIA 2020: www.fao.org/3/ca9229en/ca9229en.pdf

¹⁸ www.fao.org/fishery/en/climatechange

and supported FAO efforts to explore the development of technologies and sustainable management of Artemia resources. The IAAC¹⁹ is hosted by NACA, with the participation of over 40 partners from 28 countries. Members have identified priorities and started initiatives related to guidelines on appropriate use, training and capacity development, certification, genetic characterization, biosecurity and as a fishmeal replacement.

34. FAO convened two sessions of “Seaweed Aquaculture Policy Dialogue”: the first with participation of 20 countries in Asia and Africa; the second with the participation of 24 countries in Latin America and the Caribbean. These dialogues brought together major stakeholders in the seaweed aquaculture space to support international cooperation and capacity building initiatives to address policy gaps and develop or strengthen national strategies.

35. FAO has been working on social responsibility since the inclusion of this mandate in 2017 at the Sixteenth Session of the FAO COFI Sub-Committee on Fish Trade (COFI:FT), developing guidance in order to address labour rights, decent working conditions and social protection throughout the fisheries and aquaculture value chains. FAO organized several consultations worldwide, with the broad stakeholder involvement from the sector, including trade unions, international organizations, and governments, among others. In 2021, FAO organized a series of informal virtual regional consultations with Members to present and discuss the ongoing work. In response to Members’ recommendations, FAO is developing guidance which will be partially presented to the next Session of COFI:FT.

36. For additional intersessional work on the Guidelines for Sustainable Aquaculture, algae, women in aquaculture, and the Code of Conduct for Responsible Fisheries, please refer to dedicated Working Documents COFI:AQ/XII/2023/3, COFI:AQ/XII/2023/4, COFI:AQ/XII/2023/5, and COFI:AQ/XII/2023/6, respectively.

PART II: FAO SUPPORT TO AQUACULTURE EXTENSION AND CAPACITY BUILDING BY REGION

37. FAO has continued its support to sustainable aquaculture development through regional fisheries bodies (Article VI and Article XIV) that recognize aquaculture in their mandates, specifically the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission, Committee for Inland Fisheries and Aquaculture of Africa, Commission on Inland Fisheries and Aquaculture for Latin America and the Caribbean, General Fisheries Commission for the Mediterranean, European Inland Fisheries and Aquaculture Advisory Commission, and Regional Commission for Fisheries.

38. At the national level, FAO has continued its efforts supporting capacity development in all its levels, to support the long-term strengthening of inclusive extension systems through various projects; they are summarized below by region.

ASIA AND THE PACIFIC

39. The FAO Regional Office for Asia and the Pacific in collaboration with NACA developed a white paper on aquaculture transformation²⁰, innovations and investment for sustainable intensification and expansion of aquaculture, intended to provide guidance on the translation of the global vision and targets for the FAO Blue Transformation into clear and workable strategies. The paper was also a background document for the High-Level Meeting on Aquaculture Transformation in Asia and the Pacific Region, convened through the FAO Regional Technical Platform on Aquaculture.

¹⁹ Website of International Artemia Aquaculture Consortium www.artemia.info/

²⁰ FAO & NACA. 2023. Aquaculture transformation – Innovation and investment for sustainable intensification and expansion of aquaculture in Asia and the Pacific region. Bangkok, FAO. <https://doi.org/10.4060/cc4962en>. www.fao.org/3/cc4962en/cc4962en.pdf

40. The FAO Regional Office for Asia and the Pacific, the WOA, the WOA regional representation for Asia and the Pacific and the WOA subregional representation for South-East Asia prepared the draft paper “Regional Guidelines for the Monitoring and Surveillance of Antimicrobial Resistance, Residues and Use: Volume 5 on Monitoring Antimicrobial Use at Farm Level”. The draft is undergoing expert reviews and will be published in 2023.

41. In China, FAO signed a Memorandum of Understanding with Shanghai Ocean University regarding the activities of the Centre for Ecological Aquaculture, providing a framework for collaboration towards the shared goals and objectives to promote the application of the Ecosystem Approach to Aquaculture and sustainable aquaculture development in all dimensions of sustainability, especially the ecological dimension.

42. In the Democratic People’s Republic of Korea, FAO provided technical inputs to support the expansion of non-fed aquaculture, particularly that of key bivalve species of commercial interest. Three detailed and highly practical manuals have been produced, covering a variety of modern and sustainable farming systems for oysters and mussels, and one manual on artificial scallop seed production. Ongoing activities include the production of a technical manual on the production of the Pacific oyster triploid seed and the preparation of the National Oyster Aquaculture Development Strategy and Action Plan.

43. In the Islamic Republic of Iran, FAO provided technical support for marine cage culture development, including: (i) the development of a roadmap for marine cage culture; (ii) a demonstration of cage cleaners and fish pumps; and (iii) capacity building of government staff, farmers and private sector.

44. In the Lao People’s Democratic Republic, FAO supported the implementation of rice-fish systems for 600 farming families in two northern provinces towards strengthening food security and nutrition. FAO is also providing training in climate change adaptation and farm diversification to increase resilience, again through rice-fish farming, and building upon successful previous work.

45. In Pakistan, FAO supported a feasibility study for the development of shrimp and fish farming in Punjab and Sindh provinces and identified suitable areas for fish farming and shrimp hatcheries. FAO facilitated a dialogue among stakeholders and improved their awareness on the potential of aquaculture investment for enhancing livelihoods and food security in the country.

46. In Thailand, FAO supported the responsible and prudent use of antimicrobials and effective mitigation of AMR risk in aquaculture. The main objectives include: (i) improving the governance in antimicrobial use (AMU); (ii) awareness raising on AMR risk and prudent use of antimicrobials and health management practices (HMPs) at the farm; (iii) developing national guidelines and advocating materials on AMU and HMPs; and (iv) enhancing the knowledge of laboratory staff on standardized methods for AMR monitoring and surveillance aquaculture.

AFRICA

47. FAO, along with the partners of the Lake Victoria Fisheries Organization and the Sustainable Fisheries Initiative, supported the organization of the International Conference on Artisanal Fisheries and Aquaculture (ICAFA) with the theme “Breaking new grounds to recognize and celebrate the contribution of small-scale fisheries and aquaculture towards food security and nutrition.” ICAFA attracted 300 participants, from 16 countries, representing global stakeholders from across the fisheries and aquaculture value chain. ICAFA enhanced awareness and actions to support the sustainable contribution and development of artisanal fisheries and aquaculture to food security, nutrition, income, and environment, and further facilitated sharing of blue economy innovations and research findings along with their translation into practice, dialogue and collaboration among stakeholders.

48. For the Southern African Development Community, FAO commissioned a review titled “Success Stories in Tilapia Production Upscaling Using Low-cost Technologies Enabling Smallholders to Access Markets.” FAO also implemented a capacity development programme with the objective to build entrepreneurship and technical knowledge among public authorities and private sector actors and also to strengthen networking.

49. In Côte d’Ivoire, FAO organized exchange visits on recirculation aquaculture systems and biofloc technology to demonstrate the potential to sustainably intensify tilapia production, which saw farmers and technicians from across the country engage and improve their knowledge and technical capacities in these farming systems.

50. In Malawi, FAO supported pond and cage-based operations run by small-scale farmers through the FiRM project, which includes introduction of good aquaculture management practices and capacity development activities.

51. In Madagascar, FAO is supporting small-scale tilapia cage culture feasibility assessments and, as part of this process, is assisting government efforts to upscale tilapia cage technology and farms.

52. In Mozambique, FAO in partnership with “Fundação para o Desenvolvimento da Comunidade” supported the adoption of integrated aquaculture-agriculture practices that contribute to building resilient livelihoods against climate and health-nutrition-related shocks. It has provided employment and on-the-job training, and more than 100 youth (half of them female) and 30 women from the community were trained in topics including Good Aquaculture practices, business planning, agro-livestock best practices, fish processing and value addition, and entrepreneurship.

53. In Namibia, as a part of the FAO/Benguela Current Convention’s initiatives to support resilience of fisheries and marine aquaculture to the impacts of climate change, FAO supported environmental impact assessments towards the establishment of marine aquaculture zones in the key areas where marine aquaculture is operational and has potential to be developed.

54. In Nigeria, FAO is working with the United States Agency for International Development Feed the Future Innovation Lab for Fish, the University of Ibadan, Nigeria, and the University of Georgia, United States of America, to promote a process of farm diversification through integrated agriculture-aquaculture (rice-fish) production systems. Also FAO, through the FISH4ACP project aims to stimulate Nigeria’s catfish sector by supporting the private sector for enhancing productivity, increasing domestic production of high-quality feed and seed, and improving access to exports markets.

55. In Zambia, FAO has supported the development of the aquaculture sector in areas including: 1) governance instruments such as the national strategy on aquatic animal health, fish feed standards and upgrading of the food safety regulatory framework for fisheries and aquaculture products; 2) the development of a training curriculum and three manuals on sustainable aquaculture, business and governance; food safety for inspectors; and fish processing. Four training sessions benefitted more than 300 stakeholders of which 45 percent were women (comprised of senior and medium-level government officials, fisheries extension officers, farmers and financial institutions; and 3) assisted the development of a national aquaculture statistics system related information.

56. In Zimbabwe, FAO is working to expand the tilapia aquaculture value chain under the FISH4ACP project, first starting with a value chain analysis of the economic, social and environment sustainability profile of the sector, and then followed by an upscaling strategy and programme of action to unlock the potential in the sector, working in close consultation with the Government of Zimbabwe and key value chain stakeholders.

EUROPE AND CENTRAL ASIA

57. FAO engaged with the European Aquaculture Society annual meeting in Rimini, Italy through an FAO Special Day which presented FAO's work on global and regional processes, AqGR, trade and markets and IYAFA 2022 with specific relevance to European stakeholders.

58. FAO organized several regional workshops in Türkiye with the Central Union of Aquaculture Producers of Türkiye, and saw participation from Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Türkiye, and Uzbekistan. The workshops focused on biosecurity and aquatic animal health; aquaculture value chains, post-harvest management, international fish trade; and aquaculture planning and policy development.

59. In Albania, the GFCM provided technical assistance on identification and management of allocated zones for aquaculture (AZA) as well as on production carrying capacity estimation for finfish and shellfish farming. Support on AZA identification in inland waters has been ongoing in collaboration with AdriaMed and the Albanian Ministry of Agriculture and Rural Development.

60. In Georgia, the GFCM and FAO Georgia provided technical assistance on fine-tuning the Georgian new law and strategy for aquaculture. Within the framework of the EU-funded project "Support to Environmental Protection and Fight against Climate Change in Georgia" and in collaboration with experts and the Ministry of Environmental Protection and Agriculture of Georgia, the GFCM also delivered technical assistance to enhance capacity-building on AZA identification and management in coastal areas.

61. In Kyrgyzstan, Tajikistan, Türkiye, Uzbekistan, FAO organized multistakeholder workshops, round-table discussions, and events as part of the International Year of Artisanal Fisheries and Aquaculture 2022 celebrations.

62. In Romania, the GFCM organized an online training on small-scale shellfish farming with the support of the National Institute for Marine Research and Development "Grigore Antipa".

63. In Türkiye and in Romania, an online training was organized by the GFCM through the Black Sea Aquaculture Demonstration Centres in collaboration with experts and was attended by more than 4 000 participants from 40 countries.

64. In Türkiye, an online demonstration training on finfish pathology was organized within the GFCM Aquaculture Demonstration Centre. An online training on sturgeon aquaculture was also organized from 15 to 19 November 2021 in collaboration with experts from the CFRI in Trabzon. Moreover, the International Symposium on Fisheries and Aquatic Sciences was organized in collaboration with the GFCM and the Central Fisheries Research Institute in Trabzon, with more than 200 people attending physically.

65. The Central Asian and Caucasus Regional Fisheries and Aquaculture Commission has launched a regional study on cataloguing of AqGR from Central Asia and Caucasus region.

66. Within the scope of the current partnership between FAO and the University of South Bohemia in České Budějovice, a regional workshop was organized on "Sustainable approaches to inland aquaculture and fisheries – advances in novel technologies".

LATIN AMERICA AND THE CARIBBEAN

67. FAO signed a Letter of Agreement with the University of Concepcion in Chile to conduct a review on the status of policies and climate change adaptation plans for aquaculture in Latin America and the Caribbean, which includes: a regional review of policies and climate change adaptation plans

for aquaculture; eight case studies; interviews with aquaculture specialists with expertise in climate change from the Caribbean, Mesoamerica and South America, respectively; and one FAO publication.

68. In Chile, FAO is providing technical assistance with a new project entitled “Strengthening management and governance for the conservation and sustainable use of globally significant biodiversity in coastal marine ecosystems in Chile” aimed at creating an enabling environment to develop and implement a governance system that mainstreams, coordinates and articulates public, private and civil society institutions for the conservation and sustainable use of marine and coastal ecosystems.

69. In Dominica, Grenada, Saint Kitts and Nevis, and Trinidad and Tobago, FAO is supporting the development of aquaculture industries and improving the resilience of aquatic food production sectors through the project *Resilient Aquaculture for Food Security and Well-being in the Caribbean*, sponsored by Mexico. Indicative activities include small-scale prawn and tilapia aquaculture with Indigenous Peoples in Dominica; improved sea moss value chains in Grenada; and business skills training and the promotion of aquaponic production in Saint Kitts and Nevis and Trinidad and Tobago, as well as business skills training.

NEAR EAST AND NORTH AFRICA

70. The GFCM in collaboration with the Regional Commission for Fisheries organized a webinar on the experience of the aquaculture sector facing the COVID-19 pandemic through best practices and mitigation measures.

71. In the Mediterranean and Black Sea region, the GFCM conducted two online courses on the use of geographic information system in the establishment of AZA with the aim of providing an insight into the methodologies applied to perform the spatial analysis and identify the most suitable sites for aquaculture development.

72. For the Mediterranean and the Black Sea countries, the GFCM published four guidelines tailored to the region: Guidelines in support of social acceptability for sustainable aquaculture development,²¹ Guidelines on assessing and minimizing the possible impacts from the use of non-indigenous species in aquaculture,²² Guidelines on aquaculture restocking and stock enhancement,²³ and Guidelines for streamlining aquaculture licensing and leasing processes.²⁴

73. In the Maghreb, FAO conducted a value chain analysis of freshwater aquaculture and inland fishery products in four countries of the subregion (Algeria, Mauritania, Morocco and Tunisia), and supported the development of four national reports and one subregional synthesis. The results of this analysis will be presented at the Sixth Edition of the Maghreb Aquaculture days in Nouakchott, Mauritania.

74. In Egypt, the GFCM organized a dedicated training for farmers on best farm management practices in Alexandria within the new Aquaculture Demonstration Centre facilities.

75. In Tunisia, FAO convened a national workshop on “Capture-based aquaculture in dams: potential and perspectives” providing an opportunity both to discuss issues related to the development of aquaculture in Tunisian dams and to encourage young entrepreneurs to invest in aquaculture.

²¹ www.fao.org/3/cc2299en/cc2299en.pdf

²² www.fao.org/3/cc3207en/cc3207en.pdf

²³ www.fao.org/3/cc3840en/cc3840en.pdf

²⁴ www.fao.org/3/cc3103en/cc3103en.pdf

76. In Tunisia, the GFCM organized a training on sustainable aquaculture practices for young women from Mediterranean and Black Sea countries to encourage them to take leadership roles in the aquaculture sector. Twenty-one participants from 16 countries toured Tunisia's most successful and innovative aquaculture farms.

77. In United Arab Emirates, FAO supported i) development of guidelines for implementing aquatic biosecurity at the farm level, ii) analysis of the technical and economic performance of recirculating aquaculture systems, iii) development of business models for expansion of sustainable mariculture along the coast, and iv) conducting market surveys and fish tasting experiments for developing local fish breeds based on consumer tastes.

78. In Bahrain, FAO supported i) designing a modern hatchery for native species and ii) supporting the formulation and implementation of a national biosecurity strategy in line with FAO PMP/AB.

79. In the Gulf Cooperation Council States, FAO promoted communication and cooperation through a series of events, both online and in-person, at the Global Expo Dubai 2020 (United Arab Emirates), Saudi International Marine Exhibition and Conference (Saudi Arabia) and the Oman Science Festival (Oman), which focused on SDG14, IYAFA 2022, Blue Transformation and climate change.