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**THIRD SESSION OF THE COFI ADVISORY WORKING GROUP ON
AQUATIC GENETIC RESOURCES AND TECHNOLOGIES**

Rome, 20–21 August 2019

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PREPARATION OF THIS DOCUMENT

This document is the report of the third session of the Committee on Fisheries (COFI) Advisory Working Group on Aquatic Genetic Resources (AqGR) and Technologies held in Rome, Italy, from 20 to 21 August 2019. The workshop is an FAO initiative aimed at seeking the support of experts in the implementation of a strategic approach to enhancing global efforts on the conservation, sustainable use and development of aquatic genetic resources. This report summarizes the presentations and main discussions of a two-day meeting of the experts which covered a range of important issues including the development of a global plan of action (GPA) for AqGR and the development of an information system on AqGR. Key points during the meeting were recorded by the elected Rapporteur of the Working Group supplemented by notes from the Secretariat. The document was prepared by Mr Graham Mair, Senior Aquaculture Officer, Aquaculture Branch (FIAA). The revised draft report was approved by the Chair, Vice-Chair and Rapporteur of the Working Group prior to final review by the full Working Group.

ABSTRACT

This report contains the main discussion points and general conclusions and recommendations from the third session of the Working Group convened from 20 to 21 August 2019 in FAO headquarters, Rome, Italy.

The Working Group was requested to address several issues as follow:

- review of the process of preparation of the first report on *The State of the World's Aquatic Genetic Resources for Food and Agriculture*; (SoWAqGR)
- provide input into the preparation of a GPA on AqGR (GPA);
- provide input into the development of a global information system on aquatic genetic resources including a registry of farmed types;
- provide input into the development of a strategic approach to work on AqGR at FAO; and
- review the terms of reference (ToR) of the Working Group and update its workplan.

The Working Group commended the Secretariat upon the completion of the SoWAqGR report and made a number of recommendations concerning the communication of the key messages from the report including the need to develop a full communication strategy.

The Working Group spent several hours discussing the draft outline of a GPA, supporting its high-level priority areas and identifying some long-term goals and specific activities within each of these areas. Some changes to the strategic priorities were recommended, and concern was expressed over the inclusion of microorganisms and ornamental species with suggestions made on how to limit the extent of inclusion of these groups.

The Working Group then reviewed the progress under the project to develop the registry of farmed types, including the report of the Expert Workshop on the “*Development of a Global Information System for Farmed Types of Aquatic Genetic Resources*”. The Working Group welcomed the progress made to date and encouraged FAO to move into the development phase for the registry and to evaluate its utility through regional workshops. Input was also provided into the drafting of a value proposition statement for the registry.

Finally, the Working Group reviewed FAO's draft strategic plan for its work on AqGR and its own ToR and workplan, agreeing on priority activities, including those on which the Working Group can provide input through intersessional work.

The Working Group made progress and provided a number of specific recommendations for FAO and for FAO's statutory bodies including the COFI Sub-Committee on Aquaculture. The Working Group expressed a desire to provide on-going support to the important activities of FAO with regard to AqGR.

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ABBREVIATIONS AND ACRONYMS

AqGR	Aquatic genetic resources for food and agriculture
Working Group	Advisory Working Group on Aquatic Genetic Resources and Technologies
CGRFA	Commission on Genetic Resources for Food and Agriculture
COFI	FAO Committee on Fisheries
COFI:SCA	FAO Committee on Fisheries Sub-Committee on Aquaculture
FAO	Food and Agriculture Organization of the United Nations
FIA	FAO Fisheries and Aquaculture Department
FIAA	FAO Fisheries and Aquaculture Department - Aquaculture Branch
GPA	Global Plan of Action
ICAR	Indian Council of Agricultural Research
ITWG AqGR	CGRFA Intergovernmental Technical Working Group on AqGR
IUCN	International Union for Conservation of Nature
R&D	Research and development
SoWAqGR	Report on <i>The State of the World's Aquatic Genetic Resources for Food and Agriculture</i>
SDG	Sustainable Development Goals
ToR	Terms of Reference

BACKGROUND

1. The establishment of the COFI Advisory Working Group on AqGR and Technologies (Working Group) and its ToR (see Annex 3) were approved at the 31st Session of the COFI in 2014. The Working Group is formed to advise the Food and Agriculture Organization of the United Nations (FAO) on matters concerning aquatic genetic resources for food and agriculture (AqGR) and associated technologies, and to enhance international cooperation on AqGR management. Ten experts were originally invited by FAO and confirmed as members of the Working Group in 2015, taking into consideration technical expertise, gender and geographical balance. The first meeting of the Working group was held in Brasilia, Brazil, 1–2 October, 2015 (FAO, 2015) and the second meeting in Rome, 19–20 October 2017 (FAO, 2017). The term of the original members of the group expired in 2017 and, following a process of consultation, the Working Group was reformed on June 17, 2019 with three new members replacing three of the original members. The retiring members, Anne Kapuscinski, Thuy Nguyen and Graham Mair, are thanked for their valuable contributions.
2. This third meeting of the Working Group provided guidance on issues identified below, particularly on the process leading to the completion of the first report on the SoWAqGR, the development of an information system on AqGR and most significantly, the preparation of a GPA on AqGR.
3. The agenda for the meeting, as approved in the opening session, is included as Annex 1 the list of participants including the members of the Working Group and the Secretariat is included as Annex 2.
4. The contribution from the Government of Germany for supporting much of the work of the COFI Working Group, is gratefully acknowledged.

OBJECTIVES OF THE MEETING

5. The objectives of the meeting were to:
 - a. inform the Working Group on inter-sessional and current activities and needs of FAO and its members countries with regards to AqGR;
 - b. provide feedback on the completed SoWAqGR and the process by which it was produced;
 - c. review and provide advice on the development of a GPA on AqGR;
 - d. review the report of the Expert Workshop “Development of a Global Information System for Farmed Types of Aquatic Genetic Resources”, provide feedback and provide advice on the next steps of the development of the registry;
 - e. review FAO’s draft strategic plan to support the conservation, sustainable use and development of AqGR; and
 - f. review the ToR of the Working Group and agreed its workplan.

OPENING

6. The members of the Working Group were welcomed by Mr Manuel Barange (FIA Director), Mr Matthias Halwart (Head – Aquaculture Branch) and Ms Irene Hoffman, Secretary of the Commission on Genetic Resources for Food and Agriculture (CGRFA). Mr Barange welcomed the participants and stressed the importance of the work done by the Working Group as currently the only Advisory Working Group of the Commission on Fisheries. Mr Halwart specifically welcomed the new members and thanked the members leaving the group, Thuy Nguyen, Anne Kapuscinski and Graham Mair, for the generous service and valued past input. Ms Irene Hoffman remarked upon the important role of the CGRFA in mainstreaming genetic resources into global frameworks and in negotiating GPAs

for genetic resources, including AqGR. She also invited members to consider the information system for AqGR that is being developed by FAO, as an instrument to monitor implementation of the GPA for AqGR, as is the case for other (terrestrial) genetic resource sectors (both animal and plant). The members of the Working Group introduced themselves including the three new members.

7. The Working Group elected a chair, a vice-chair and a rapporteur. Ms Ingrid Olsen was re-elected to continue as Chair, Mr István Lehoczky was elected as Vice-Chair and Mr Eric Hallerman was elected as Rapporteur. FAO introduced the background and objectives of this third Session of the Working Group along the lines presented in the prospectus that had been circulated to the members ten days prior. The Working Group was referred to the documents provided together with the prospectus (Annex 4).

DELIBERATIONS OF THE WORKING GROUP

The report on the State of the World's Aquatic Genetic Resources for Food and Agriculture

8. The Working Group reviewed the following documents:

- CGRFA-17/19/8.2 Rev.1 *Preparation of The State of the World's Aquatic Genetic Resources for Food and Agriculture* (FAO, 2019a);
- the final version of the report on SoWAqGR;
- the *In Brief* summary of the report on the SoWAqGR; and
- the draft glossary of terms on AqGR.

9. The Working Group acknowledged the quality of the SoWAqGR, and the *In Brief summary* and commended the Secretariat on the production of an excellent Report and a very readable summary.

10. The Working Group deliberated on the priority areas of actions and major findings contained in the SoWAqGR, the *In Brief* and the draft glossary, and **provided the following recommendations to FAO:**

- a. The FAO secretariat should develop a proactive communication strategy for the SoWAqGR and its key messages, identifying the appropriate media for the various messages.
 - i. The FAO secretariat should make efforts to publish and deliver the key messages of the report to wider spectrum of aquaculture stakeholders through scientific publications, major aquaculture conferences and outreach articles in major international print media.
 - ii. The FAO secretariat should consider presenting the key findings of the SoWAqGR at the following forthcoming conferences:
 - World Seafood Congress, Malaysia, Sept 9-11, 2019;
 - European Aquaculture Conference, Berlin, Oct 7-10, 2019; and
 - World Aquaculture Conference, Singapore, June 8-12, 2020.
- b. The FAO secretariat should encourage member countries to distribute their country reports and the SoWAqGR and its In Brief summary widely within their countries.
- c. The FAO secretariat should consider how member countries might best implement genetic resources management plans and monitor ongoing and potential future genetic losses in wild stocks.

- d. The FAO secretariat should consider finalizing the Glossary associated with the SoWAqGR, make it available as a stand-alone glossary, and correctly integrate the terms into FAO's existing Term Portal¹ Some members of the Working Group offered to support to this process and provided links to existing related glossaries.
- e. The FAO secretariat should initiate the planning for the second SoWAqGR report, and all FAO member countries, including the ones without information for the first report, should be encouraged to prepare country reports and share their country report on AqGR.
- f. The Working Group advised that subsequent work on AqGR should have a balanced view on both conservation of AgGR and their development for food security.
- g. The Working Group advised that future questionnaires for AqGR information should be reformulated to be less cumbersome, include succinct instructions and explanations of key terms, and explore innovative ways to encourage more countries to respond to the questionnaire, ultimately supporting development of decadal reports. Based on experience to date, noting the large amount of work required, the Working Group further recommended that FAO should encourage FAO member countries' focal points to work with a national task force to complete the questionnaires, and to consider the development of a system for the collection of information prior to the development of the next SoWAqGR.
- h. With regard to resolving data acquisition and processing issues regarding aquatic genetic resources, the Working Group advised FAO secretariat to consult and follow the processes on how other bodies within FAO that handled similar data for terrestrial livestock, plant and forest trees resolved similar data acquisition and processing issues.
- i. The Working Group recommended that Thematic Background Studies (TBS), that had been prepared for the SoWAqGR should be published rapidly or updated prior to publication, especially for time-sensitive information such as in the Genome-based Biotechnologies in Aquaculture TBS.
- j. The FAO secretariat should draft guidelines for improvement to the process for the preparation of the next SoWAqGR based on the lessons learned from the preparation of the first report.

11. The following recommendations were specifically made by the Working Group to be delivered to statutory FAO bodies, particularly the FAO COFI's Sub-Committee on Aquaculture (COFI:SCA):

- The Working Group commended FAO on the production of an excellent SoWAqGR and a very concise and readable summary (the *In Brief* of the SoWAqGR), which provide valuable new information on the status of AqGR.
- The Working Group recommends that FAO further develops and implements a proactive and comprehensive communication strategy to ensure that the SoWAqGR and its key messages are widely disseminated and reach the key stakeholders in member countries.
- The Working Group recommends that FAO and national focal points continue to engage on issues related to AqGR, that countries disseminate the results of the SoWAqGR, and their own country reports in-country, that FAO makes the country reports available online, and that countries consider establishing AqGR management plans based on these and other resources.

¹ FAO's term portal is an on line resource for definitions of a range of terms and can be found at www.fao.org/faoterm/en/

- The Working Group advises that countries that did not provide country reports do so and recognized the value of these countries engaging with FAO (for example, in the development of information systems and the GPA).

Guidance on the development of a Global Plan of Action on Aquatic Genetic Resources

12. The Working Group reviewed the document prepared for the 17th Regular Session of the CGRFA (FAO, 2019b) entitled “Options for Follow-up to *The State of the World's Aquatic Genetic Resources for Food and Agriculture*” which included an outline GPA.

13. Recommendations of the Working Group on the structure and priorities of the outline GPA:

The working group agreed that the objectives and principles outlined in this document are appropriate and that they should be voluntary, collaborative and based on national needs and priorities. It is understood that this GPA is primarily for actions to be taken by Member Countries and it is FAO’s role to support Member Countries to implement the strategic priorities.

14. The Working Group supported the four priority areas identified in the outline. The Working Group was particularly supportive of the area relating specifically to development of AqGR for aquaculture, which differs in focus from priority areas in GPAs for other agricultural sectors, as this reflected the situation that valuable genetic resources still exist in the wild for aquaculture species and that genetic improvement of AqGR is far less advanced than in these other sectors. The Working Group suggested a revision of the wording of the priorities areas, removing the action verbs from the titles but not changing the intent and focus of the areas. The proposed revised wording for these high-level priority areas is as follows:

- priority area 1: National, regional and global characterization, monitoring and information systems for AqGR²;
- priority area 2: Appropriate development of AqGR for aquaculture;
- priority area 3: Sustainable use and conservation of AqGR; and
- priority area 4: Policies, institutions and capacity building for AqGR management.

15. The Working Group reviewed the GPA outline and deliberated on strategies to further develop the GPA. For this exercise, the Working Group divided into two sub-groups with group one working on priority areas 2 and 3 and group two working on priority areas 1 and 4. The groups addressed the following questions for each priority area:

- Question 1: What should be the long-term goals for each priority area?
- Question 2: Can you identify specific actions that could be taken within the strategic priorities?
- Question 3: Which strategic priorities within each priority area are likely to deliver the greatest positive impact towards the long-term goal?
- Question 4: Which are the most urgent strategic priorities within each priority area?

16. The outcome of the discussion on answers to the aforementioned questions for each priority area are summarized in Annex 5.

17. **Recommendations of the Working Group for the implementation and financing of the GPA or any of its elements:** The Working Group expressed some concerns about the broad scope of activities under the GPA even with the limitation to farmed species under national jurisdictions. The Working Group was specifically concerned about the large diversity of aquatic microorganisms

² Note the word “regional” has also been added to this priority area by the Working Group.

(specifically the many microalgae being cultured) produced for a wide range of purposes including biofuels production. The Working Group recommended that the GPA restrict inclusion of microorganisms to those grown to be used directly as human food and those used as aquafeeds (for example, those produced in hatcheries as larval feeds). Concern was also expressed about the inclusion of ornamental species in the GPA, particularly in relation to the large number of farmed types (including strains and varieties) that would then need to be included in an information system on farmed types.

18. The Working Group recommended that member countries consider the appropriate application of public support and encourage private investment in genetic improvement including through public-private partnership. Investment in breeding programmes, including by government, must be considered long-term as more than two generations (or e.g. 2-8 years) may be required to clearly demonstrate the benefits (average 10-20 percent per generation) to the farmers. There is a need to identify existing channels of support such as national and international funding organizations, e.g. African Development Bank, Asian Development Bank, World Bank and philanthropic organizations. Consideration should also be given to cooperative breeding programmes, farmer investments, levies and engagement with industry associations. Funding should consider embedding research and development (R&D) goals and strategies for continuity beyond specific project cycles.

19. Specific recommendations of the Working Group to FAO regarding the Global Plan of Action:

- a. FAO should consider limiting the inclusion of microorganisms in the GPA to those used directly for human food and those used as aquafeeds.
- b. FAO should consider critically whether and how ornamental species should be included in its future activities on AqGR (e.g. GPA and information systems).

20. Recommendations by the Working Group to be delivered specifically to FAO bodies regarding the GPA (particularly the COFI-AQ):

- The Working Group reviewed the outline GPA on AqGR, as presented to the CGRFA and made available to this Sub-Committee (COFI:AQ/X/2019/2.1 Appendix). The Working Group broadly supported the proposed priority areas for the GPA and developed and proposed to FAO appropriate long-term goals for these priority areas. The Working Group also suggested revisions to the strategic priorities under these areas and further proposed some specific actions under these revised strategic priorities.
- The Working Group expressed concerns about the scale of work involved with the inclusion of ornamental species in all aspects of the GPA and also proposed to limit the scope of aquatic microorganisms to be included in the GPA.
- The Working Group recommends that the GPA set an appropriate balance of genetic improvement for food security and conservation priorities reflecting the relatively early stage of the development of aquatic genetic resources and the urgent need for genetic improvement for growing sustainable aquaculture.

Guidance on development of a Global Information System for farmed types of AqGR

21. The FAO secretariat presented an overview of the development process of the global information system for farmed types of aquatic genetic resources based on the final draft of the *“Report on the Expert Workshop on the Development of a Global Information System for Farmed Types of Aquatic Genetic Resources”*. The Working Group was requested to review the report and provide guidance and recommendations on the process moving forward.

22. **Review of the report of the Expert Workshop on the registry of Farmed Types** - the Working Group supported the main findings of the Expert Workshop and specifically agreed to the list of farmed

types proposed by FAO for inclusion in the registry of farmed types and agreed that FAO field test the system based on the proposed categorisation. FAO was advised to consider to include additional species in the prototype information system, such as the Chinese Carps. However, it was understood that the information to be included in the prototype was limited by time and available funding. There was a specific request to review the name and definition of the new farmed type of “captive propagated” introduced by the Expert Workshop, and there was consensus in the Working Group that both the category and its name were appropriate additions to the list of farmed types.

23. Indicators for SDG 2.5:

The Working Group spent some time deliberating on the role of AqGR in relation to indicators for Sustainable Development Goal (SDG) target 2.5 (UN, 2016):

“By 2020 maintain the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge as internationally agreed”

This SDG has two indicators that relate specifically to genetic diversity as follows:

- “2.5.1 Number of plant and animal genetic resources for food and agriculture secured in medium or long term conservation facilities”
- “2.5.2 Proportion of local breeds, classified as being at risk, not-at-risk or unknown level of risk of extinction”

24. It is generally understood that aquatic plants and animals are not included in this target and there is currently no mechanism to quantify AqGR related to this indicator. The Working Group considered it to be desirable to incorporate indicators relevant to AqGR for SDG 2.5. In order for AqGR to be considered in a revision of the indicators for SGD 2.5, it would be necessary to develop appropriate indicators specific to AqGR. Therefore, FAO should consider the development of such indicator(s), among others, during the development of the information system, for discussion at a future Working Group meeting.

25. **Value proposition for the information system on AqGR** - The Working Group developed a value proposition statement for the information system that can be utilized to briefly describe the benefits and deliverables from such a system. Members of the group were asked to identify key elements of the value proposition, targeting priority stakeholders. During this process, the Working Group recommended the addition of aquaculture producers to the list of primary stakeholders. The Working Group identified solutions to the problems that the successful development of a *global information system for farmed types of aquatic genetic resources* system can deliver, in the absence of viable alternative information sources. The various inputs received were integrated into a draft value proposition statement as follows:

The lack of reliable and accessible information on aquatic genetic resources (AqGR) for food and agriculture, especially below the level of the species, significantly constrains effective decision making on the conservation, sustainable use and development of these important resources. While a few countries have national-level information systems, there is currently no standardized resource that can record information on stocks, strains, varieties, hybrids or other farmed types of AqGR. Development of such a knowledge system for AqGR will enable producers, resource managers and conservationists, policy makers and researchers alike to make informed decisions on effective management, conservation, sustainable utilization and appropriate exchange of these resources.

26. The following recommendations were made by the Working Group:

- a. Designation as a “strain” must be accompanied by information documenting its distinctiveness and/or documenting its breeding history relative to all other farmed types of the same species produced in that country. If distinctiveness cannot be demonstrated and breeding history is not available, then the farmed type should be designated as “captive-propagated”. It was agreed that “documented breeding history” should include at least two generations of a structured breeding programme.
- b. FAO should provide comprehensive guidance to national focal points and others entering information into the registry, such as a schematic diagram that assists in the identification of farmed types and includes some worked examples (e.g., “red tilapias are not all the same strain”). Guidance should clarify that the frame of reference for definition of strains (e.g. “GIFT” or particular Hungarian carp strains) is at the national level, in order to ensure uniformity in designating farmed fish strains accurately.
- c. Discretion in designating strains is vested in a country’s national focal point.
- d. A “synthetic line” generated by crossing of different species over more than one generation, should be termed as both “introgressed” and “captive propagated” farmed types until it can be defined and documented as a strain (although it would still be classed also as introgressed, even as a strain).
- e. In the development of the registry, consideration should be given to harmonization of information and categories with those that might already exist in country or globally (e.g., CITES labeling system for caviar).
- f. Consideration needs to be given to what minimal level of information is needed to be entered before a farmed type entry can be adopted/included in the global information system, to avoid the risk of having too many empty fields.
- g. Consideration should also be given to commercial sensitivities and management of confidential or traceable information to as not to discourage producers from providing relevant information.

27. **Recommendations by the Working Group to be delivered specifically to FAO bodies** (particularly the COFI:AQ) regarding the global information system for farmed types of aquatic genetic resources:

- The Working Group also reviewed the draft report on the Expert Workshop on the Development of a global information system for farmed types of aquatic genetic resources held from July 29 to August 1 in Rome. The Working Group commended the FAO and the experts on the initial work on the development of the registry and endorsed the categorization of farmed types to be used in the registry, and proposed that FAO move forward with the development of a prototype registry on the basis of the conclusions from this expert workshop, and implement regional consultations to support its further development.

Strategic approach to work on aquatic genetic resources

28. The Working Group reviewed the first draft strategic plan for FAO’s work on AqGR. The Working Group agreed that it is helpful to have such a strategic plan and encouraged FAO not only to finalize the plan but also to maintain it as a living document that can be regularly updated.

29. The Working Group specifically reviewed the provisional list of proposed activities drawn from previous lists developed by the Working Group and also requests received from a range of other sources including the Intergovernmental Technical Working Group on AqGR for Food and Agriculture. Tasks and associated outputs were ranked by priority high, medium and low. The resulting list of activities is shown in Annex 6.

30. The Working Group members offered the following comments and recommendations, including offers of assistance to FAO, regarding its strategic approach to enhancing conservation, sustainable use and development of AqGR:

- a. FAO is invited to encourage development agencies to better coordinate aquaculture development grants.
- b. Some subset of or the whole Working Group might work together to develop a communication plan for the SoWAqGR and/or to write articles for that purpose.
- c. The Working Group is interested to participate in the preparation of a publication that models the potential impacts of selective breeding for reaching specific goals, as the results might encourage enthusiasm for the promotion and uptake of genetic improvement.
- d. There is a need to develop a greater understanding of the utility of digital sequence information of AqGR, e.g. for access and benefit sharing.
- e. The Working Group agreed to send suggestions and links (or copies) of useful publications on guidelines and best practices for AqGR, to the Secretariat for posting on FAO's website subject to copyright restrictions.
- f. There should be a focus on offering presentations and sessions at selected conferences (e.g., World Aquaculture Society, International Association for Genetics in Aquaculture) to facilitate networking on issues and to build capacity regarding AqGR. These sessions may have varying degrees of specificity to issues pertaining particularly to species or groups (e.g., tilapias, carps). FAO was requested to prepare presentations that members of the Working Group could present on behalf of FAO if FAO is not represented at the meeting.
- g. Promote the development of appropriate next generation sequencing based on technologies as an approach for detecting potential farm escapees from aquaculture facilities.
- h. Promote application of broodstock management and genetic improvement tools including on a regional basis through FAO's Technical Cooperation Programme as requested by countries.
- i. It is important to quantify the economic impacts of selective breeding.
- j. FAO should watch out for International Union for Conservation of Nature (IUCN) Green List listings – they may provide useful information on conservation, sustainable use and development of AqGR and point to some success stories.
- k. Working Group member offered to assist in developing guidelines for gene banking.
- l. Working Group members shared existing stock enhancement guidelines (Miller and Kapuscinski 2003, Jones et al. 2006, Blankenship and Leber 2005) which may prove useful as is or with modification.
- m. WorldFish, through its Working Group member, is willing to collaborate with FAO on experiences with access and benefit sharing regarding AqGR.

Review of Terms of Reference and work plan:

31. The Working Group reviewed and reaffirmed its ToR (Annex 3). The Working Group noted that it has made progress in implementing its work plan for 2017 – 2019, with four out of 13 planned activities completed and a further five on-going. The Working Group identified five new activities for 2019-2021 (see Annex 6). The work plan will be reviewed after the next sessions of COFI – AQ and COFI to include any additional tasks.

Closing and arrangements for next session

32. The Working Group gratefully acknowledged the leadership of the chair Ms Ingrid Olesen and the support of Mr Eric M. Hallerman as the Working Group Rapporteur. The Working Group also thanked the Secretariat for their work in the organization of the session.

33. The next meeting of the Working Group is provisionally planned to be held in conjunction with the 11th session of COFI:AQ in 2021 in Mexico. Intersessional meetings, either face-to-face or through video conference might be organized on an as-needed basis.

34. The Working Group thanked FAO for the opportunity to contribute to the development and promotion of AqGR. The FAO secretariat thanked the Working Group and resource persons for contributing their valuable time to assist FAO in the sustainable development and management of AqGR.

35. The meeting was adjourned on 21 August 2019 at 17.30 hours.

References:

FAO. 2015. First session of the COFI Advisory Working Group on Aquatic Genetic Resources and Technologies, Brasilia, 1-2 October 2015. FAO Fisheries and Aquaculture Report. R1139. 10p (also available at www.fao.org/3/a-i5553e.pdf)

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FAO. 2019a. Preparation of the State of the World's Aquatic Genetic Resources for Food and Agriculture. Working paper of the 17th regular session of the Commission on Genetic Resources for Food and Agriculture. 6p. (also available at www.fao.org/3/my593en/my593en.pdf)

FAO. 2019b. Options for follow-up to the *State of the World's Aquatic Genetic Resources for Food and Agriculture*. Working paper of the 17th regular session of the Commission on Genetic Resources for Food and Agriculture. 7p. (also available at www.fao.org/3/my596en/my596en.pdf)

U.N. (Economic and Social Council), 2016. Report of the Inter-agency and Expert Group on Sustainable Development Goal Indicators. 49p

Annex 1: Meeting Agenda

Day 1 – August 20, Tuesday		
08.30 – 09.00	Registration	
09.00 – 09.20	Welcome	ADG/Director of FIA CGRFA Secretary FIAA Branch Head
09.20 – 09.30	Introduction by the members	Working Group Members
09.30 – 09.40	Introduction and objectives of the meeting	Secretariat (FAO)
09.40 – 09.50	Election of officers (Chair, Vice-Chair and Rapporteur)	Secretariat (FAO)
09.50 – 10.30	Working session 1: Preparation of <i>The First State of the World's Aquatic Genetic Resources for Food and Agriculture – discussion of pros and cons of the process</i> <u>Background documents:</u> <ul style="list-style-type: none"> • CGRFA-17/19/8.2 Rev.1 <i>Preparation of The State of the World's Aquatic Genetic Resources for Food and Agriculture</i> • The report on <i>The State of the World's Aquatic Genetic Resources for Food and Agriculture</i> • <i>The State of the World's Aquatic Genetic Resources for Food and Agriculture - in brief</i> • Draft glossary 	Graham Mair (FAO)
10.20 – 11.00	Health break (DSA distribution)	
11:00 – 11:20	Summarize conclusions from Session 1 for the report and advice for statement to COFI Sub-Committee on Aquaculture	Rapporteur Daniela Lucente (FAO)
11.20 – 12.30	Working session 2: Preparation of a GPA on AqGR. Presentation and initiate group discussion. <u>Background documents:</u> <ul style="list-style-type: none"> • CGRFA-17/19/8.3 Options for Follow-up to <i>The State of the World's Aquatic Genetic Resources for Food and Agriculture</i> • GPAs for other sectors 	Graham Mair (FAO)
12.30 – 13.30	Lunch	
13:30 – 15:30	Working session 2: Preparation of a GAP on AqGR. Group discussion continued....	Graham Mair (FAO)
15.30 – 16.00	Health break	
16.00 – 17:00	Working session 2: Preparation of a GPA on AqGR. Group reporting back and discussion in plenary. Discussion concludes.	FAO
17.00	Close for the day	

Day 2 – August 21, Wednesday		
09.00 – 09.30	Working session 2: Summarize conclusions for the report and advice for statement to COFI Sub-Committee on Aquaculture	Rapporteur, Daniela Lucente (FAO)
09.30 – 10.30	Working session 3: The development of a global information system on aquatic genetic research including a registry of farmed types <u>Background documents:</u> The draft report on the Expert Workshop on the <i>Development of a Global Information System for Farmed Types of Aquatic Genetic Resources</i>	Daniela Lucente (FAO)
10.30 – 11.00	Health break	
11.00 – 12.30	Working session 3: The development of a global information system on aquatic genetic research including a registry of farmed types. Discussion concluded.	
12.30 – 13.30	Lunch	
13.30 – 14.00	Working session 3: Summarize conclusions for the report and advice for statement to COFI Sub-Committee on Aquaculture	Rapporteur, Graham Mair (FAO)
14:00 – 15:30	Working session 4: Strategic approach to work on AqGR at FAO <u>Background documents:</u> Strategic plan for FAO work on AqGR (to follow)	Graham Mair (FAO)
15.30 – 16.00	Health break	
16.00 – 16.15	Working session 4: Summarize conclusions for the report and advice for statement to COFI Sub-Committee on Aquaculture	Rapporteur Daniela Lucente (FAO)
16.15 – 17.00	Review of ToR and workplan and arrangements for next Session	Graham Mair (FAO)
17.00 – 17.15	Closing remarks	FAO
17.15	Adjourn	

Annex 2: List of participants

MEMBERS

CHILE	Sra Marcela Astorga Profesora Instituto de Acuicultura Universidad Austral de Chile Puerto Montt
GERMANY	Mr Clemens Fieseler Senior Officer for Aquatic Genetic Resources Information and Coordination Centre for Biological Diversity (IBV) Federal Office for Agriculture and Food (BLE) Bonn
HUNGARY	Mr István Lehoczky Senior Research Fellow Centre for Animal Gene Conservation Ministry of Agriculture Gödöllő
ISLAMIC REPUBLIC OF IRAN	Mr Mohammad Pourkazemi Professor in Fisheries & Aquaculture Genetics Iranian Fisheries Science Research Institute (IFSRI) Tehran
MALAWI	Mr Daniel Jamu Deputy Chief of Party Programming USAID/Malawi Fisheries Integration of Society and Habitats (FISH) Project Lilongwe
NORWAY	Ms Ingrid Olesen (CHAIR) Professor, Research Director Genetics and Breeding Norwegian Institute of Food Fisheries and Aquaculture Research
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WORLDFISH

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 Genetics Team Leader and Genetics Flagship
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 WorldFish Center and Consortium of
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Mr Graham Mair
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Ms Daniela Lucente
 Project Coordinator (AqGR Information
 Systems)
 Aquaculture Branch
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Mr Gao Lei
 Intern (Genetic Resources)
 Aquaculture Branch
 Fisheries and Aquaculture Department

Mr Oluwafemi Ajayi
 Consultant (nutrition sensitive aquaculture)
 Aquaculture Branch
 Fisheries and Aquaculture Department

Annex 3: Terms of Reference of the Advisory Working Group

1. FAO will establish the Advisory Working Group on AqGR and Technologies to advise FAO on matters concerning aquatic genetic resources and technologies, and to enhance international cooperation on aquatic genetic resource management.
2. The Advisory Working Group shall be established according to FAO's rules.
3. The Advisory Working Group shall consist of no more than ten recognized experts in genetic resource use and conservation in fisheries and aquaculture.
4. Advisory Working Group members shall be appointed by the Director-General for a period of two years but may be renewable. In appointing experts, in addition to scientific and technical excellence, FAO will consider diversity and complementarity of scientific backgrounds and observe, as appropriate, the principle of equitable geographical representation and gender representation. Experts will be invited to participate in the Advisory Working Group in their personal capacity, as experts, and shall not represent the position of the government of which s/he is an official, or of the organization with which s/he is associated.
5. The working language of the Advisory Working Group will be English.
6. The scope of the Advisory Working Group shall include the conservation, sustainable use and development of all aquatic genetic resources relevant for fisheries and aquaculture.
7. Specific tasks of the Advisory Working Group shall be assigned by FAO with due consideration of the advice from COFI.
8. The membership of the Advisory Working Group may be changed by FAO depending on the specific advice being requested by FAO and/or COFI.
9. The Secretariat of the Advisory Working Group will be based in the Fisheries and Aquaculture Department of FAO headquarters, Rome, Italy.
10. The plan of work of the Advisory Working Group will be prepared and approved by the Advisory Working Group in consultation with the secretariat, taking into account tasks assigned to it in accordance with paragraph 7 above and available financial resources.
11. The Advisory Working Group shall prepare a report to the FAO secretariat providing information on its activities and recommendations.
12. The Advisory Working Group may propose amendments to these ToRs which shall be transmitted to COFI for consideration.

Annex 4: Documents made available to the Working Group

1. CGRFA-17/19/8.2 Rev.1 *Preparation of The State of the World's Aquatic Genetic Resources for Food and Agriculture*³;
2. Final report on SoWAqGR⁴;
3. *In Brief* summary of the report on the SoWAqGR⁵;
4. Draft glossary on AqGR for Food and Agriculture
5. Draft report on the Expert Workshop on the *Development of a Global Information System for Farmed Types of Aquatic Genetic Resources*;
6. Options for Follow-up to *The State of the World's Aquatic Genetic Resources for Food and Agriculture* (CGRFA-17/19/8.3)⁶;
7. GPA developed for other sectors:
 - a. *First GPA for Plant Genetic Resources for Food and Agriculture*⁷;
 - b. *Second GPA for Plant Genetic Resources for Food and Agriculture*⁸;
 - c. *GPA for the Conservation, Sustainable Use and Development of Forest Genetic Resources*;⁹ and
 - d. *GPA for Animal Genetic Resources*¹⁰.
8. Report on the first Session of the COFI Advisory Working Group on Aquatic Genetic Resources and Technologies. Brasilia, Brazil, 1-2 October 2015¹¹;
9. Report on the Second Session of the COFI Working Group on Aquatic Genetic Resources and Technologies. Rome, Italy, 19–20 October 2017¹².
10. Draft strategic plan for the activities of FAO on AqGR

³ <http://www.fao.org/3/my593en/my593en.pdf>

⁴ <http://www.fao.org/3/CA5256EN/CA5256EN.pdf>

⁵ <http://www.fao.org/3/CA5345EN/CA5345EN.pdf>

⁶ <http://www.fao.org/3/my596en/my596en.pdf>

⁷ <http://www.fao.org/3/a-aj631e.pdf>

⁸ <http://www.fao.org/3/i2624e/i2624e00.htm>

⁹ <http://www.fao.org/3/a-i3849e.pdf>

¹⁰ <http://www.fao.org/3/a-a1404e.pdf>

¹¹ <http://www.fao.org/3/a-i5553e.pdf>

¹² <http://www.fao.org/3/i8771en/I8771EN.pdf>

Annex 5: Summary of recommendations on the GPA priorities

<p>Priority area 1: National, regional and global characterization, monitoring and information systems for AqGR</p>
<p><u>Long-term goal:</u></p> <p>Improved and accessible knowledge of the characteristics of aquatic genetic resources for food and agriculture, including at the level below species, for the purpose of assessing status, trends and opportunities and risks associated with the resources, to support evidence-based decision making for their effective conservation, sustainable use and development.</p>
<p>Strategic priority 1.1: Promote the globally standardized use of terminology, nomenclature and descriptions of AqGR</p> <ul style="list-style-type: none"> • countries adopt standardized nomenclature for describing and characterizing AqGR.
<p>Strategic priority 1.2: Develop, promote and commercialize/institutionalize national, regional and global standardized information systems for the collection, validation, monitoring and reporting on AqGR below the level of species (i.e., farmed types and stocks)</p> <ul style="list-style-type: none"> • develop national registries of farmed types used in aquaculture; • adapt existing national collection/information systems to expand information to farmed types and promote integration with a global registry; and • develop/adopt and monitor indicators for progress on characterization of national and regional AqGR.
<p>Strategic priority 1.3: Improve and harmonize reporting procedures including expanding existing species-based information systems on production data to cover unreported AqGR</p> <ul style="list-style-type: none"> • link national focal points for production data collection and AqGR data collection and assess harmonization through developing/adopting reporting templates and protocols.
<p>Strategic priority 1.2 potentially has the most significant impact on the long-term goal, while Strategic priority 1.1 is the most urgent as a precursor to the other priorities.</p>

<p>Priority area 2: Appropriate development of AqGR for aquaculture</p>
<p><u>Long-term goal:</u></p> <p>Increase the proportion of aquaculture production derived from established breeding programmes and improve the biosecure availability of improved AqGR to industry to be delivered primarily through increased use of selectively bred AqGR with demonstrated increases in productivity. Also, to improve long-term genetic management of aquaculture farmed types. Increased uptake and dissemination of the products of genetic improvement will deliver more efficient and sustainable aquaculture production of more resilient farmed types.</p>
<p>Strategic priority 2.1: Raise awareness and improve understanding of the properties, roles, risks and benefits of genetic technologies and their application to AqGR including traditional selective breeding and emerging technologies.</p> <ul style="list-style-type: none"> • promote increased awareness and acceptance of appropriate applications of genetic improvement in aquaculture; • disseminate the SoWAqGR and its key messages and country reports on AqGR to raise awareness;

- enhance engagement of national focal points with FAO and with other national focal points, including with those of countries that did not submit country reports;
- encourage further countries to nominate national focal points;
- countries to promote engagement among the wide group of stakeholders in AqGR;
- support and promote cost-benefit analysis for breeding programmes;
- support and promote national, regional and international networking on AqGR following guidelines for effective networking; and
- disseminate and communicate key definitions, concepts and standardized nomenclature of AqGr and relevant technologies for genetic improvement.

Strategic priority 2.2: Promote greater adoption of well-managed, long-term, selective breeding programmes as a core genetic improvement technology for all major aquaculture species.

- promote national, regional and international networking and collaboration on AqGR through the development of guidelines for effective networking;
- encourage a favourable development of breeding programmes supported by government incentive mechanisms (e.g. tax incentives, R&D credits, cheaper loans etc.);
- develop plans for long term (=> 3 generations) support of national breeding programmes;
- develop, support and promote appropriate and effective business models for genetic improvement programmes; and
- promote and support public-private cooperation in the breeding sector.

Strategic priority 2.3: Establish national strategies to develop breeding programmes for priority species to unlock the full potential of AqGR. Such strategies need to set an appropriate balance between the development of aquaculture of new species (both native and non-native), and development of farmed types of existing cultured species.

- countries identify priority species for development;
- define breeding goals for priority species appropriate for local production systems; and
- develop and utilise guidelines or frameworks as decision support tools for the appropriate application of genetic improvement.

Strategic priority 2.4: Conduct appropriate training and capacity building in genetic improvement, particularly in quantitative genetics.

- identify priority training requirements;
- develop training programmes at all relevant levels (e.g. hatchery operation, BSc and post-graduate) and using relevant action learning and up-to-date media (e.g. hands-on professional training, study tours, digital media and web based courses);
- support implementation of training programmes, especially within developing countries; and
- raise awareness of new technologies and their appropriate application.

The ranking of strategic priorities in term of potential impact on the long-term goals as strategic priorities is 2.2 > 2.3 > 2.4 > 2.1. Strategic priority 2.1 is the most urgent, as it is a precursor to successful implementation of the other priorities.

Priority area 3: Sustainable use and conservation of AqGR

Long-term goal:

Well managed, healthy and resilient farmed AqGR and wild relatives as a key contribution to food security, poverty alleviation and environmental sustainability.

Strategic priority 3.1: Develop risk-based policies and controls on introductions and transfers of AqGR and implement monitoring systems to understand the scale and impacts of native and non-native species, including the impact of escapes from aquaculture, and reduce their negative impacts on both farmed and wild relative AqGR.

- develop and promote adoption of best practices and guidelines.

Strategic priority 3.2: Identify wild relative AqGR most at risk, focusing on those most critical to aquaculture development and to wild catch fisheries, to ensure that they are managed sustainably and that appropriate conservation measures, both in situ and ex situ, are implemented where necessary.

- develop list of threatened species as priorities for conservation.

Strategic priority 3.3: Monitor and anticipate the current and future impacts of environmental change on AqGR and respond accordingly, for example through conservation of threatened resources and the development of climate change adapted farmed types for aquaculture.

- develop and apply climate change risk modelling;
- identify drivers and causes of threats to national and regional AqGR;
- develop inventories and distribution maps of species and farmed types (registry) including worldwide data sharing including modeling of potential changes in species distribution; and
- develop and promote adoption of best practices and guidelines.

Strategic priority 3.4: Promote in situ conservation, including habitat protection and aquatic protected areas, as the primary measure to protect threatened wild relatives AqGR.

- develop and promote adoption of best practices and guidelines; and
- habitat restoration as part of the conservation process.

Strategic priority 3.5: Actively incorporate conservation of AqGR in the development of fisheries management plans, particularly for threatened species.

- develop and promote adoption of best practices and guidelines.

Strategic priority 3.6: Develop and promote guidelines and best practices for both in vivo and in vitro ex situ conservation.

- develop and promote adoption of best practices and guidelines.

Strategic priority 3.7: Monitor the use and exchange of AqGR for non-food use, such as ornamental species, alongside that of food fish, and identify related risks and needs.

- develop and promote adoption of best practices and guidelines.

Strategic priority 3.8: Promote effective genetic management within aquaculture seed supply systems to minimize genetic deterioration of farmed types and support their sustainable use

- ongoing monitoring of genetic “health” of cultured AqGR; and
 - standardised methodologies, for example for genetic characterisation using same markers (e.g., use same SNP panels)
 - standardisation of indicators for genetic health, e.g., statistical methods
- develop and promote adoption of best practices and guidelines.

Strategic priority 3.9: Promote monitoring of genetic status of fishery stocks of wild relatives, especially those that are under threat, in support of their sustainable use.

- ongoing monitoring of genetic “health” of wild relative AqGR; and

- standardised methodologies, for example for genetic characterisation using same markers (e.g., use same SNP panels)
- standardisation of indicators for genetic health, e.g. statistical methods
- develop and promote adoption of best practices and guidelines.

Strategic priority 3.10: Raise awareness of the conservation and sustainable use of AqGR among stakeholders including through community engagement and utilization of local knowledge

- engage stakeholders.

Strategic priority 3.3 and 3.8 are potentially the most impactful in the delivery of the long-term goal, while Strategic priority 3.2 was considered the most urgent.

The Working Group recommended consideration of the following issues in the further development of priority area 3 within the GPA:

- actions should effectively utilise existing networks, including international networks in fisheries and aquaculture;
- biosecurity should be an important component of both conservation and sustainable use programmes;
- there is a need to develop/improve modeling and prediction of likely impacts of climate change on species distribution and food security;
- overall risk modelling should be considered within the strategic priorities;
- need to consider the relative effectiveness and cost of maintaining breeding populations for conservation;
- international cooperation may be needed for sustainable conservation and use of transboundary wild relatives;
- look to identify existing projects that can be used as model case studies to illustrate practicalities, demonstrate benefits, risk, resources requirements, costs etc.; and
- consider the role of strategic research programmes to identify and address biological knowledge gaps.

Priority Area 4: Policies, institutions and capacity building for AqGR management

Long-term goal:

Established cross-cutting policies and legal frameworks, and strong institutional and human capacities to achieve successful medium- and long-term planning for the development and implementation of national programmes for the long-term conservation, sustainable use and development of aquatic genetic resources for food and agriculture.

Strategic priority 4.1: Support members to develop, monitor and enforce policies and good governance that adequately considers issues affecting conservation, sustainable use and development of AqGR, harmonized across sectors of government.

- provide support for reviews of national legislation governing native and non-native AqGR including responsible use, genetic improvement and exchange based on appropriate assessments of risks and access and benefit-sharing specific to properties of AqGR; and
- promote raising of awareness among member countries of the role that international agreements and instruments can play in the conservation, sustainable use and development of AqGR, and improve their effective implementation for positive impact.

Strategic priority 4.2: Improve national human resource capacity for conservation sustainable use and development of aquatic genetic resources

- strengthen national human resource capacity for characterization, inventory, and monitoring of trends and associated risks, for conservation, sustainable use and development of AqGR including economic valuation, characterization, and genetic improvement (including selective breeding with a focus on building industrially applicable quantitative genetic skills);
- develop national strategies for in situ and ex situ conservation of AqGR and their sustainable use;
- promote development of understanding of the roles of key stakeholders in AqGR, including indigenous communities and women, and their roles in the conservation, sustainable use and development of AqGR; and
- strengthen efforts to mobilize resources, including financial resources for the conservation, sustainable use and development of AqGR.

Strategic priority 4.3: Strengthen and, where necessary, establish, institutions promoting conservation, sustainable use and development of AqGR

- establish or strengthen national institutions, including national focal points, for planning and implementing AqGR measures, for aquaculture and fishery sector development;
- establish or strengthen national institutions for education and research on AqGR and promote intersectoral collaboration on their conservation, sustainable use and development;
- encourage the establishment of network activities and support the development and reinforcement of international networking and information sharing on AqGR; and
- support improved national and regional communication on AqGR and raise awareness of the importance of AqGR among stakeholders from consumers to policy-makers.

Strategic priority 4.4: Support members to develop and implement national strategies for the conservation, sustainable use and development of AqGR

- facilitate countries' efforts to develop national strategies based on the framework; and
- facilitate countries efforts to implement and monitor impact of national strategies.

Strategic priority likely to deliver the greatest positive impact towards the long-term goal:

Strategic priority 4.4 has the most potential impact on the long-term goal, but the capacity to implement this strategic priority depends upon capacity related to the strategic priorities 4.1, 4.2 and 4.3. The urgency of action should be addressed on a case-by-case basis depending on the needs of countries.

Annex 6: Review and prioritization of FAO tasks for inclusion into its strategic plan of action

The following tables list the strategic actions that FAO can undertake in response to the various requests and recommendations lists in draft strategic plan. These are organised by the four priority areas proposed for the GPA. The prioritisation of the activities listed below were discussed and agreed upon by the members of the Working Group.

Colour coding:

Complete	On-going	No activity
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Priority Area 1: Establish and strengthen national and global characterization, monitoring and information system for AqGR

Activity	Status	Requires extra budgetary funding?	Priority
Finalise and publish the SoWAqGR report and its In Brief summary	Complete	Funded	High
Communicate the key findings of the SoWAqGR widely	On-going	Preferred	High
Prepare a GPA on AqGR in consultation with COFI, its subsidiary bodies and the regions	On-going	Preferred, but not essential	High
Assess, explore and develop mechanisms to monitor the status and trends of AqGR including, as appropriate, through the establishment of a global information system and a registry of farmed types as well as stocks of wild relatives, subject to the availability of the necessary funds.	On-going	Phase 2 funding required by 2021	High
Develop and promote application of standardised terminology on AqGR including a glossary of terms	Applied through the SoWAqGR	No (Working Group?)	High
Promote consideration of AqGR in discussion and information material on climate-change adaptation and mitigation	On-going	No	Medium/High
Identify the most comprehensive and authoritative guidelines on development and management of AqGR and post a list of the best and most relevant publications on the subject on the FIA AqGR web page.	No action	No (Intern/ Working Group?)	Medium
Consider/review the options for promoting information exchange and networking on AqGR (e.g., global networks vs. regional vs. existing structures)	No action	No (Working Group?)	Medium
The database developed from the country reports be refined and developed to make the entire dataset available and searchable.	No progress ¹³	Yes	Medium
Country data from reports be made available in a more accessible and usable form than the original questionnaire.	Country reports are being prepared for publication	Desirable ¹⁴	Medium
Encourage countries that have not submitted country reports to do so and encourage countries which have not nominated national focal points to do so.	Discuss with representati	No	Medium

¹³ It may be possible to make some of these data accessible through the registry.

¹⁴ Without funding, the country reports can only be published in their original form.

Activity	Status	Requires extra budgetary funding?	Priority
	ves as opportunity arises		
Compile more detailed information to assess the relevance of “digital sequence information” on AqGR for food production and its implications for the subsector in the foreseeable future	No action	Preferred (AWG?)	Medium/Low
Incorporate AqGR information on traceability and marketing; for example, FishPopTrace	No action	Yes	Low
Promote wider application of techniques of genetic characterization; through tools such as gene sequencing, SNPs and microsatellites.	No action	Yes	Low
Promote wider genetic analysis of farmed populations; for example, genetically categorize farmed populations for assessment of genetic variation or traceability	ICAR-NACA workshop. Follow up required ¹⁵	Yes	Low
Promote genetic analysis of wild relative stocks; such as genetic stock identification of Atlantic cod, Pacific salmon and Atlantic salmon	No action	Yes	Low

Priority Area 2: Accelerate appropriate development of AqGR for aquaculture

Activity	Status	Requires EB funding?	Priority
Promote the important role that traditional technologies, especially selective breeding, and other technologies, such as hybridization and genotyping through polymorphic DNA markers, may play in increasing aquaculture production and recommend that these technologies be promoted widely, including capacity building	Through SoWAqGR ¹⁶	Preferred	High
Develop voluntary guidelines and/or decision support tool for broodstock management and genetic improvement	No action	Yes/(TCPs)	High
Promote the development of national/regional (as appropriate) programmes of genetic improvement, especially selective breeding	TCPs in Iran and Myanmar	Yes, incl. TCPs	High
Explore (through case studies) examples of enabling policies related to genetic improvement and their impact	No action	Yes	High
Support quality impact studies, with specific relevance to the socio-economic effects, of genetic improvement programmes	No action	Yes (with WF) - TCPs	Medium

¹⁵ ICAR-NACA held an expert workshop on “Genetically Responsible Aquaculture: Sustainability of Genetically Fit Broodstock and Seed of Certified origin in Asian Aquaculture” in February 2019

¹⁶ This messaging was a major focus on the launch of the SoWAqGR report.

Priority Area 3: Promote sustainable use and conservation of AqGR

Activity	Status	Requires EB funding?	Priority
Identify conservation activities to conserve at-risk genetic resources (e.g., IUCN red list)	Species list on-going	Preferred (intern?)	High
Support countries to carry out <i>in situ</i> and <i>ex situ</i> conservation programmes, upon request, and subject to the availability of financial resources, through technology transfer and capacity development. Priority will be allocated to important aquaculture species/farmed types.	No action	Yes	Medium/High
Develop guidelines and/or framework for gene banking for AqGR including public awareness, publications	No action	Yes/AWG input	Medium
Promote integrated <i>In situ</i> and <i>ex situ</i> conservation strategies for both aquaculture and fisheries, highlighting the complementarity of the two approaches, including gene banking.	Noted in SoWAqGR, no activity	Yes	Medium
Develop guidelines and/or framework for genetic management of AqGR in stock enhancement (possibility to adapt from existing)	No action	Yes	Medium

Priority Area 4: Policies, institutions and capacity building.

Activity	Status	Requires EB funding?	Priority
Regional consultation to identify follow-up activities and refine strategic priorities	Will be included in registry consultations	No	High
Pilot test implementation of the Framework of Essential Criteria in a selected country/region and further promote its use	On-going with SADC	Preferred	High
Organize regional capacity building workshops and strengthen national institutions and human capacity in the conservation and use of AqGR	Activity under registry project	Some funding under registry project. More desirable	High
Support countries, upon request, in the development of awareness raising, capacity building and policy implementation activities addressing AqGR	No requests pending	TCPs	High
Consider existing use and exchange practices on Access and Benefit-Sharing typical of the AqGR sector	Worldfish have done a review. No action by FAO. ¹⁷	Yes	High
Identify examples of effective policy on AqGR with effective implementation (case studies)	No action	Yes	High
Develop voluntary guidelines and/or framework for international, regional and national networks on AqGR	No action	Yes	High

¹⁷ The SADC region through a collaborative platform on aquaculture genetics is requesting FAO's support on ABS.

Support training (e.g., online training course, workshops) and capacity building in all components (information, infrastructure, breeding programmes, governance, and enabling private sector) – partners with Nofima/WorldFish	Training planned for SADC	Yes	High
Review relevant policies and national programmes and priorities with a view to create an enabling environment and mobilize the necessary human and financial resources for the sustainable use and exchange of AqGR and associated technologies, such as selective breeding. Include development and promotion of processes to conduct policy analysis	Discussion under SADC platform.	Yes	High
Collect, for consideration by the ITWG at its next session, country experiences with existing access and benefit-sharing frameworks, providing special provisions for AqGR, including those held by indigenous peoples and local communities, and traditional knowledge associated with AqGR. Partner with WorldFish. Commission leading.	No action	Yes	Medium
Advise on appropriate policy on access and benefit sharing protocols and towards regulations on implementing CBD, Nagoya, or other related instruments.	No action (SADC request)	Yes	Medium
Special efforts be made to include women and women's cooperatives in programmes on AqGR management	No specific action ¹⁸	Yes	Medium
Develop/adapt tools to assess risk/benefit related to AqGR, with specific reference to socioeconomic impacts (check repeat? – more detail?)	No action	Yes	Medium
Explicitly consider the use of risk/benefit analysis of native and non-native species introductions when analysing national policy	No action	Yes	Medium

¹⁸ Gender issues and opportunities to be considered in all activities.

Annex 7: Workplan of the Working Group 2019-2021 (note: completed activities highlighted in green are for information only and will be deleted from the updated workplan; new activities included from the Third Session are highlighted in blue)

Colour coding:

Complete

On-going

No activity

Activity	Continuing working activities 2017–2019	Progress update August 2019	New and continuing working activities
1. Shared directory established	Further updates and addition of new material planned	Included in plans for on-going web update	FAO to include page in website upgrade
2. List of relevant links and publications submitted	Continued submission of relevant information planned	Included in plans for on-going web update	FAO to set up portal and e-mail address, members to submit relevant document/guidelines etc.
3. Advice on the analysis of country reports provided	To be finalized. Working Group members to advise on analysis when reviewing the first or second draft of the SoWAqGR	Completed	
4. Definitions on AqGR in FAO glossaries reviewed and improvements proposed	Specific members will prepare an extensively updated glossary which will be circulated to the Working Group prior to being finalized	Some progress, but not complete. A list of terms has been developed and provisional definitions identified for most of them, but requires further input and review.	Specific members will prepare an extensively updated glossary which will be circulated to the Working Group prior to being finalized. For completion by the end of year.
5. Draft SoWAqGR reviewed	Members are welcome to comment on the first draft, but specific feedback is requested on the second draft of the report which will be circulated to the members as soon as it is available. See Annex 1 for list of reviewing tasks for Working Group members	Completed and SoWAqGR report finalised.	
6. Framework refined	Finalized framework to be circulated to group members	Completed and Framework published	

Activity	Continuing working activities 2017–2019	Progress update August 2019	New and continuing working activities
7. Promotion of <i>SoWAqGR</i> enhanced	To be continued. Working Group to provide advice for the inter-sessional period as requested by the second period of the working group activity	Report to be launched at COFI-SCA side event. Subsequent communication strategy under development.	Review communication strategy (end Sept.) and provide further advice. Members to promote through their own networks.
8. Second meeting (October 2017) Work plan to be revised following the second meeting	Updated workplan to be distributed by November 30, including any new tasks requested by the Secretariat	Completed	Updated workplan distributed with meeting report by first week of Sept.
9. Supporting genetic improvement programmes in aquaculture	New activities – details to be advised	No specific activities.	
10. Supporting conservation AqGR in the wild	New activities – details to be advised	No specific activities	
11. Supporting the establishment of an information system to document and monitor and assess the status of AqGR	New activities – details to be advised	Project GCP/GLO/970/GER initiated, progress review during 2019 Session of Working Group	Expert workshop report reviewed. Member to provide feedback as requested by FAO. Possible on-line meeting to discuss.
12. Risk/benefit analysis on the use and introduction of new species and strains (native or non-native)	New activities – details to be advised	No specific activities	
13. Supporting the establishment of network for AqGR	New activities – details to be advised. Consider special session at the next international association for genetics in aquaculture in Chile.	No specific activities	
14. Provide recommendation to COFI: AQ concerning the balance of conservation vs production food security issues.		New	
15. Develop guidelines for gene banking		New	Selected experts to develop
16. Adapt existing guidelines on genetic management in stock enhancement		New	Member to provide existing relevant material. AWG to review and determine whether material can be feasibly adapted.

Activity	Continuing working activities 2017–2019	Progress update August 2019	New and continuing working activities
17. Develop at least one communication article/paper focused on the potential from broader application of genetic improvement		New	Members to communicate on the scope and focus of the article and the medium for publication (end Sept). Then organise a Skype meeting and develop article (end of 2019), publish by mid-2020.
18. Develop GPA prior to submission to ITWG and the Commission		New	FAO to provide draft GPA to AWG July 2020. Feedback within 1 month. FAO to provide further draft GPA by Nov 2020.

Annex 8: Timeline for development and validation of a GPA on AqGR



This report contains the main discussion points and general conclusions and recommendations from the third session of the Working Group convened from 20-21 August 2019 in FAO headquarters, Rome, Italy. The working group considered a range of issues including: a brief review of the process of preparation of the first report on The State of the World's Aquatic Genetic Resources for Food and Agriculture; (SoWAqGR); the preparation of a GPA on AqGR (GPA); the development of a global information system on aquatic genetic resources including a registry of farmed types; the development of a strategic approach to work on AqGR at FAO; and reviewed its terms of reference (ToR) and update its workplan. A series of recommendations were made to FAO and to the Committee on Fisheries' sub-committee on aquaculture.

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