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STATUS OF PREPARATION OF THE STATE OF THE WORLD'S AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Executive Summary

This document describes the work done to finalize the report on The State of the World's Aquatic Genetic Resources for Food and Agriculture and complements the information provided in the working document Aquatic genetic resources for aquaculture development (COFI:AQ/IX/2017/6/Rev.1).

I. INTRODUCTION

1. Both, the COFI Sub-Committee on Aquaculture (COFI:AQ) and the COFI Advisory Working Group on Aquatic Genetic Resources and Technologies (COFI WG AqGRT) considered, at their last sessions, the preparation of the report on The State of the World's Aquatic Genetic Resources for Food and Agriculture (SoW AqGR). The SoW AqGR was initiated by the FAO Commission on Genetic Resources for Food and Agriculture (Commission) which, in 2007, decided to include the preparation of this report into its Multi-Year Programme of Work.

2. This document describes the work done and the work that still needs to be done to finalize the SoW AqGR.

II. BACKGROUND

3. The COFI:AQ, at its last session, in considering efforts towards improving aquaculture data, information and statistics “*noted the advantage of using different mechanisms and strategies of data collection and encouraged Members to share experiences and best practices. The Sub-Committee further noted the need to integrate the data collected from the first State of the World Report on Aquatic Genetic Resources into FAO’s fisheries and aquaculture information systems.*”¹ The COFI WG AqGRT, at its first session, “*commended the efforts to produce the first SoW AqGR and agreed to assist as appropriate.*” More specifically, the Working Group agreed to: review the terms of reference of the four Thematic Background Studies supporting the SoW AqGR; provide technical assistance to National Focal Points regarding the preparation of country reports, if needed; provide technical assistance on data analysis, as requested; and review the final draft of the SoW AqGR.²

4. The decision to request FAO to prepare the SoW AqGR was taken by the Commission in 2007. At its Eleventh Regular Session, the Commission agreed that improving the collection and sharing of information on aquatic genetic resources (AqGR) is of high priority and included the preparation of the SoW AqGR into its Multi-Year Programme of Work.³ At its Thirteenth and Fourteenth Regular Sessions, the Commission considered the scope of the SoW AqGR and decided, at the latter session, “*that the scope of the report would be farmed aquatic species and their wild relatives within national jurisdiction. Countries were also invited to provide a species list of nationally important aquatic genetic resources of capture fisheries within national jurisdiction.*”⁴

5. At its Fourteenth Regular Session, the Commission also agreed on the structure of the SoW AqGR⁵ and requested FAO to adjust the draft *Guidelines for the Preparation of Country Reports for The State of the World’s Aquatic Genetic Resources for Food and Agriculture* (Guidelines) and to reduce the number of proposed thematic studies by prioritizing them in line with the agreed scope and focusing on the core issue of genetic diversity.⁶ The Commission called on countries to participate in the process by preparing country reports on AqGR and to strengthen related information systems.⁷

6. At its Fifteenth Regular Session, the Commission endorsed a revised timeline for the preparation of the SoW AqGR, an indicative list of Thematic Background Studies and cost estimates.⁸ The Commission invited countries to prepare country reports for the SoW AqGR with the involvement of all relevant stakeholders.⁹ It established its Ad Hoc Intergovernmental Technical Working Group on Aquatic Genetic Resources for Food and Agriculture (CGRFA ITWG AqGR) with the task to guide the preparation and review of the SoW AqGR.¹⁰ The Commission also invited the COFI WG AqGRT to contribute to the preparation of the SoW AqGR and requested information about the contributions of the COFI WG AqGRT to the preparation of the SoW AqGR.¹¹

7. The CGRFA ITWG AqGR, at its First Session, held from 20 to 22 June 2016, reviewed the *Draft Report on the State of the World’s Aquatic Genetic Resources for Food and Agriculture*¹², noted that it was a preliminary analysis based on a limited set of country reports, that a higher number of

¹ FIRA/R1131 (Tri), paragraph 86.

² FIRA/R1139 (En), paragraph 13.

³ CGRFA-11/07/Report, paragraphs 60-61.

⁴ CGRFA-14/13/Report, paragraph 76.

⁵ CGRFA-14/13/Report, *Appendix H*.

⁶ CGRFA-14/13/Report, paragraph 79.

⁷ CGRFA-14/13/Report, paragraph 78.

⁸ CGRFA-15/15/Report, paragraph 60.

⁹ CGRFA-15/15/Report, paragraph 61.

¹⁰ CGRFA-15/15/Report, paragraph 63.

¹¹ CGRFA-15/15/Report, paragraph 65.

¹² CGRFA-16/17/Inf.13.

country reports was needed to finalize the SoW AqGR and made detailed comments and recommendations with regard to the finalization of the SoW AqGR.¹³

8. The Commission, at its Sixteenth Regular Session in 2017, considered the document *Preparation of The State of the World's Aquatic Genetic Resources for Food and Agriculture*¹⁴ and took note of relevant information documents¹⁵ and Thematic Background Studies.¹⁶ It welcomed the recommendations of the CGRFA ITWG AqGR¹⁷ and requested FAO to prepare a Revised Draft SoW AqGR, taking into account the information contained in the country reports received by 30 June 2017, the Thematic Background Studies, information provided by international organizations, and the comments and recommendations provided by the Commission and the CGRFA ITWG AqGR. It invited countries to comment on the Revised Draft SoW AqGR, when it becomes available, and further requested COFI and its subsidiary bodies, as appropriate, to review the Revised Draft SoW AqGR and provide inputs.

III. STATUS OF PREPARATION OF THE REPORT ON THE STATE OF THE WORLD'S AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE

National Focal Points

9. By CSL C/FI-38 of 19 April 2012, the Director-General of the Organization invited countries to nominate, by 3 September 2012, National Focal Points for the preparation of country reports for the SoW AqGR. As of 15 May 2017, 82 National Focal Points had been officially designated.

Country reports

10. In endorsing the revised timeline for the preparation of the SoW AqGR, the Commission, at its Fifteenth Regular Session, agreed that country reports should be submitted by the end of 2015 at the latest.¹⁸ Only a limited number of country reports was received by that deadline. As of 15 April 2016, 47 officially endorsed country reports had been received by FAO¹⁹ and provided the basis of the draft SOW AqGR, as presented to the CGRFA ITWG AqGR and the Commission. At its Sixteenth Regular Session, the Commission invited countries that had not yet done so to submit their country reports by 30 June 2017 and encouraged countries that had already submitted a country report to submit a revised version, as appropriate, by the same deadline. As of June 2017, 92 officially endorsed country reports have been received as listed in Appendix I that are currently being analyzed. These countries account for 96 percent (97 million tonnes, including algae) of global aquaculture production (101 million tonnes, including algae).

Thematic Background Studies and other sources of information

11. The Commission, at its Fifteenth Regular Session, endorsed an indicative list of Thematic Background Studies to address specific aspects of the SoW AqGR.²⁰ The approved Thematic Background Studies have been reviewed and edited and are available as Session Background

¹³ CGRFA-16/17/10.

¹⁴ CGRFA-16/17/11.

¹⁵ CGRFA-16/17/Inf.13; CGRFA-16/17/Inf.14.

¹⁶ www.fao.org/fishery/AquaticGeneticResources/en

¹⁷ CGRFA-16/17/10.

¹⁸ CGRFA-15/15/17, *Appendix II*.

¹⁹ CGRFA-16/17/Inf.13.

²⁰ CGRFA-15/15/Report, paragraph 60.

Documents.²¹ Selected material from these studies is being incorporated into relevant sections of the SoW AqGR. These studies, along with the country reports, include information on the use of AqGR and on the numbers of aquatic species for food and agriculture that often has not previously been reported to FAO (Table 1).

12. Relevant data from international organizations as well as relevant literature are reflected throughout the Draft SoW AqGR to complement information from country reports. FAO developed a simple survey form (*Appendix II*) soliciting information on AqGR from International Organizations and distributed it to relevant organizations around the world. At present four organizations have responded, the Network of Aquaculture Centres in Asia and the Pacific, the Lake Victoria Fisheries Organization, the South Pacific Community and the Mekong River Commission; this information is being synthesized for the SoW AqGR.

Review of the Draft SoW AqGR by the CGRFA ITWG AqGR

13. The CGRFA ITWG AqGR, at its first session, recommended that the Commission request FAO to continue its work towards the finalization of the SoW AqGR, for consideration by the Working Group at its Second Session and by the Commission at its Seventeenth Session. It further recommended that FAO, in revising the Draft SoW AqGR:

- Identify individual countries in the analysis in addition to the summaries by region or sub-region, as appropriate;
- Include specific country examples and case studies to illustrate issues, where relevant;
- Provide an analysis by developing versus developed countries, as appropriate;
- Include some examples of new species and farmed types identified from country reports that have not been previously been reported to FAO;
- Revise the references to all countries to ensure they accurately reflect the information provided in national reports, in particular in the last part of sub-chapter 7.2 of chapter 7;
- Revise the conclusions of sub-chapter 7.4 of chapter 7 that cannot be inferred from the information contained in the SoW AqGR, in particular on access and benefit sharing regimes;
- Streamline the quotation in the last paragraph of sub-chapter 6.5 of chapter 6;
- Use additional information (e.g. from the scientific literature, international, regional and national organizations and networks, and advanced scientific institutions) to complement country reports and contribute to a more comprehensive assessment;
- Harmonize definitions throughout the SoW AqGR and provide a full glossary of key terms;
- Clearly identify all sources of information, including in tables and figures;
- Provide an in-depth analysis of findings, including inter alia on climate change, habitat change and invasive species as drivers impacting AqGR;
- Distinguish between policies and strategies and include soft law instruments, such as codes of conduct and voluntary guidelines;
- Clarify some of the concepts referred to in the chapters (e.g. in situ conservation and access and benefit sharing regimes);
- Acknowledge the challenges of collaboration for the management of AqGR, especially for the transboundary conservation of migratory species;
- Include some specific examples of successful AqGR ex situ and in situ conservation programmes and strategies, and stress the complementarity of the two conservation approaches;

²¹ SBD.3 Thematic Background Study No 1: Incorporating genetic diversity and indicators into statistics and monitoring of farmed aquatic species and their wild relatives.

SBD.4 Thematic Background Study No 2: Genetic resources for microorganisms of current and potential use in aquaculture.

SBD.5 Thematic Background Study No 3: Genome-based Biotechnologies in Aquaculture.

SBD.6 Thematic Background Study No 4: Genetic resources for farmed seaweeds.

SBD.7 Thematic Background Study No. 5: Genetic resources for farmed freshwater macrophytes: a review.

- Acknowledge the value of aquatic protected areas in conserving AqGR and there must be a balance between conservation and development taking into consideration conditions in different areas;
- Demonstrate the close linkages between aquaculture and capture fisheries systems that depend on wild AqGR;
- Ensure that information provided complement the information contained in The State of World Fisheries and Aquaculture (SOFIA);
- Include an analysis of how effective the various networks contribute to the sustainable use and conservation of AqGR; and
- Highlight key findings and gaps that will require a policy response to improve the sustainable use and conservation of AqGR.

14. Following the advice of the Ad Hoc Intergovernmental Technical Working Group on Aquatic Genetic Resources,²² illustrative examples of the sustainable use of AqGR from the country reports are being incorporated into the SoW AqGR.

Preparation of the Revised Draft SoW AqGR

15. The draft SoW AqGR, as presented to the CGRFA ITWG AqGR²³ and the Commission²⁴, is currently being revised in accordance with advice from the CGRFA ITWG AqGR.²⁵ Review and refinement of the database wherein information from the country reports are stored and the query systems extracting those data are underway. However, due to technical problems the Revised Draft SoW AqGR could not be produced in time for the COFI:AQ and the COFI WG AqGRT to review it. Therefore members of both bodies will be given the opportunity to comment on the revised draft SoW AqGR at a later stage. FAO is currently revising the data structure and data management system to solve these technical issues and to improve the analysis and synthesis of the country reports.

16. Following the advice of the CGRFA ITWG AqGR²⁶ illustrative examples of the sustainable use of AqGR from the country reports are being incorporated into the SoW AqGR.

17. Selected material from the Thematic Background Studies is being incorporated into relevant sections of the SoW AqGR. These studies, along with the country reports, include information on the use of AqGR and on the numbers of aquatic species for food and agriculture that often has not previously been reported to FAO (Table 1).

Preliminary findings

18. Table 1 reveals not only that more AqGR are being used than previously reported, but that reporting systems within most countries should be harmonized so that officially transmitted information to organizations such as FAO is consistent. The reasons for some of the different numbers being reported to FAO include the facts that many countries reported micro-organisms, ornamental species, plant species and species used in research in their country reports; this type of information is not routinely reported to FAO. The data in Table 1 are preliminary and indicative estimates that are likely to change following completion of the analysis of country reports.

²² CGRFA-16/17/10 – www.fao.org/3/a-mr406e.pdf

²³ CGRFA/AqGR-1/16/Inf.2.

²⁴ CGRFA-16/17/Inf.13.

²⁵ COFI:AQ/IX/2017/Inf.9.

²⁶ www.fao.org/3/a-mr406e.pdf

Table 1. Preliminary summary of species and farmed types arising from the country reports on aquatic genetic resources		
Item	Count	Examples
Number of reports recording more species cultured than listed by FAO in FishstatJ	44	<i>n.a.</i>
Number of reports recording the same number of species as recorded in FishstatJ	4	<i>n.a.</i>
Number of reports of cultured species that have not previously been reported to FAO (i.e. in FishstatJ)	253 (records) 207 (species)	<p>Fish <i>Clarias jaensis</i> (Cameroon) <i>Claria magur</i> (India)</p> <p>Molluscs <i>Haliotis discus hannai</i> (China/Korea – Abalone)</p> <p>Crustaceans <i>Cherax canii</i> (Australian – freshwater crayfish)</p> <p>Plants <i>Cymodocea rotundata</i> (Kenya – sea grass) <i>Cymodocean serrulata</i> (Kenya – sea grass) <i>Eucheuma spinosum</i> (Philippines – red algae)</p> <p>Microalgae <i>Isochrysis galbana</i> (Argentina, Belgium, Egypt, Kiribati, Morocco, Netherlands, Panama, Tonga)</p> <p>Other <i>Heliocidaris erythrogramma</i> (Australia – sea urchin) <i>Xenia sp.</i> (Madagascar – coral)</p>
Number of farmed types ²⁷ (i.e. some type of genetic differentiation/intervention) reported as species units in country reports (these have never been previously reported to FAO)	82	<i>Eight distinct selected tilapia strains in the Philippines, 60 new hybrids or crossbreds</i>
Number of farmed types reported as significant in country reports	532	<i>n.a.</i>
Number of farmed types reported in Total from country reports	1 085	<i>n.a.</i>

19. At present, the FAO fishery and aquaculture glossaries²⁸ have about 66 terms that relate to AqGR. As requested by the CGRFA ITWG AqGR, a glossary of key terms and concepts is being prepared by the COFI WG AqGRT.

20. The Draft SoW AqGR and the Thematic Background Studies have been reviewed in detail to identify issues of harmonization of terms and concepts that need to be addressed and to identify terms that need to be added to the glossary. It is proposed to add a further 231 terms to the glossary. This

²⁷ A “Farmed Type” is defined as a farmed aquatic organisms that could be a species, hybrid, triploid, monosex group, other genetically altered form, variety or strain. The farmed types listed in this table refer to those species in which some form of genetic differentiation (i.e. strain) or intervention (e.g. selection, polyploidy, monosex, or hybrid) has been applied and thus excludes wild types that are being farmed. The number of wild types being farmed = 806, representing 43 percent of all types farmed. Therefore, the wild-type is the largest group of organisms being farmed, but it is not larger than all other farmed types combined.

²⁸ www.fao.org/fishery/glossary/en

glossary will be a key source of information for the SoW AqGR and will be incorporated, as appropriate, into the FAO biotechnology, aquaculture and fisheries glossaries.²⁹

21. The Commission, at its last session, requested that a second session of the CGRFA ITWG AqGR be convened and requested it to review the Revised Draft SoW AqGR. Funding for this second session is expected to be available as of 2018. The second session of the CGRFA ITWG AqGR is currently scheduled to be held in Rome from 23 to 25 April 2018.

22. In light of the delay in producing a Revised Draft SoW AqGR and the plan to convene a second session of the CGRFA ITWG AqGR, a revised³⁰ budget estimate for the completion of the SoW AqGR is presented in *Appendix III*.

²⁹ www.fao.org/fishery/glossary/en; www.fao.org/docrep/004/Y2775E/y2775e07.htm

³⁰ Revised from Annex III in CGRFA-15/15/17; www.fao.org/3/a-mm170e.pdf

APPENDIX I

**LIST OF COUNTRY REPORTS SUBMITTED FOR THE FIRST STATE OF THE WORLD'S
AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE³¹**

CONTINENT					
Africa	Latin America and the Caribbean	Asia	Europe	North America	Oceania
Algeria	Argentina	Armenia	Belgium	Canada	Australia
Benin	Belize	Bangladesh	Bulgaria	United States of America	Fiji, Republic of
Burkina Faso	Brazil	Bhutan	Croatia		Kiribati
Burundi	Chile	Cambodia	Czech Republic		Palau
Cabo Verde	Colombia	P.R. China	Denmark		Samoa
Cameroon	Costa Rica	Cyprus	Estonia		Tonga
Chad	Cuba	Georgia	Finland		Vanuatu
Congo, Dem. Rep. of the	Dominican Republic	India	Germany		
Djibouti	Ecuador	Indonesia	Hungary		
Egypt	El Salvador	Iran (Islamic Rep. of)	Latvia		
Ghana	Guatemala	Iraq	Netherlands		
Kenya	Honduras	Japan	Norway		
Madagascar	Mexico	Kazakhstan	Poland		
Malawi	Nicaragua	Korea, Republic of	Romania		
Morocco	Panama	Lao People's	Slovenia		
Mozambique	Paraguay	Dem. Rep.	Sweden		
Niger	Peru	Malaysia	Ukraine		
Nigeria	Venezuela	Philippines			
Senegal		Sri Lanka			
Sierra Leone		Thailand			
South Africa		Turkey			
Sudan		Viet Nam			
Tanzania,					
United Rep. of					
Togo					
Tunisia					
Uganda					
Zambia					

³¹ As of June 2017, 92 country reports have been received.

APPENDIX II**REQUEST FOR INFORMATION FROM INTERNATIONAL ORGANISATIONS WORKING
ON AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE**

- 1) Name of International Organization (please include address and website)
- 2) Name of those completing this form
- 3) Geographical coverage and list of member countries or organizations
- 4) Technical or thematic area of work (e.g. aquaculture, inland fisheries, fishery management, biodiversity etc. May include more than one area)
- 5) Main species of interest (may be individual species such as Nile tilapia or groups of species such as cyprinids or brackish water species)
- 6) Main issues of interest (e.g. capacity building for breed improvement, in situ conservation, improving information on AqGR)
- 7) Key accomplishments (e.g. successful project implementation, scientific publications, education or extension courses established, breeding programmes established etc.
- 8) Any other information relevant to the conservation and use of AqGR

APPENDIX III

**COST ESTIMATE FOR THE FINALIZATION OF THE STATE OF THE WORLD'S
AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE**

Item	Cost (US\$)	Calculation	Purpose and notes	YEAR
Staff costs	221 000	One P4 staff appointment for 12 months	Implementation and coordination tasks	2017/2018
Translation, editing, layout, printing and distribution	180 800	Translation, editing, layout, printing and distribution	To translate into all UN official languages the SoW AqGR and to edit, layout, print and distribute it	2017/2018
Database review and management	12 000	Information technologists for 80 days	To address technical issues associated with the extraction and analysis of information from country reports	2017/2018
Second Session of the Ad Hoc Intergovernmental Technical Working Group on Aquatic Genetic Resources	115 000	Standard costs based on previous sessions and Director General's Report ³²	Translation, interpretation and facilitation by FAO technical staff	2018
Total	528 800			

³² www.fao.org/3/a-mm171e.pdf