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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Third Session

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REPORT OF THE REGIONAL WORKSHOP ON THE DEVELOPMENT OF A GLOBAL INFORMATION SYSTEM OF FARMED TYPES OF AQUATIC GENETIC RESOURCES (INCORPORATING A REVIEW OF STRATEGIC PRIORITIES FOR A GLOBAL PLAN OF ACTION): AFRICA

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Report of the

AFRICAN REGIONAL WORKSHOP ON DEVELOPMENT OF A GLOBAL INFORMATION SYSTEM FOR FARMED TYPES OF AQUATIC GENETIC RESOURCES (INCORPORATING A REVIEW OF STRATEGIC PRIORITIES FOR A GLOBAL PLAN OF ACTION)

Addis Ababa, Ethiopia, 2–4 December 2019

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African Regional Workshop on Development of a Global Information System for Farmed Types of Aquatic Genetic Resources
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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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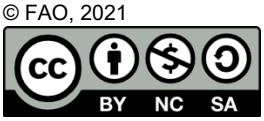


PREPARATION OF THIS DOCUMENT

This report describes the activities and outputs of the FAO workshop on "Development of a global information system for farmed types of aquatic genetic resources (incorporating a review of strategic priorities for a global plan of action)" held from 2-4 December, 2019 in Addis Ababa, Ethiopia.

This document was prepared by Mr Graham Mair and Ms Daniela Lucente of FAO supported by Mr Joachim Carolsfeld and Mr Devin Bartley or the World Fisheries Trust (WFT) and Mr Dan Leskien and Ms Suzanne Redfern from the Commission on Genetic Resources for Food and Agriculture (Commission). The report was reviewed by participants in the workshop and their feedback incorporated prior to its finalization.

ABSTRACT

This workshop was the first of a series of regional meetings to generate feedback on the Registry of Farmed Types of Aquatic Genetic Resources (AqGR), being developed by FAO in response to a request from the Commission on Genetic Resources for Food and Agriculture (Commission). The workshop was supported by a grant from the Government of Germany and also included an activity seeking feedback on an outline of a Global Plan of Action for AqGR, also requested by the Commission.

The workshop was attended principally by national focal points (NFPs) on AqGR from African Member Countries and also by representatives of regional aquaculture organisations. The objectives of the workshop were to: promote standardized use of nomenclature and terminology in the descriptions and categorization of AqGR, especially below the level of species (i.e. farmed types); to identify the priority regional stakeholders in an information system, specifically a Registry of Farmed Types of AqGR; to evaluate the key elements of the prototype Registry using regionally relevant species and their farmed types; review, for each of the four Priority Areas of the Global Plan of Action (GPA), the Strategic Priorities (SPs) and identifying possible activities under each SP; and identify potential indicators for the effective monitoring of AqGR within a future GPA. These objectives were met.

Participants identified government resources managers, policy makers, conservation groups, breeders and academia as the principal stakeholders in the information system. Participants made some recommendations on the information sought for the Registry and its further development. Through a series of working group sessions partipants also identified regionally relevant long-term goals for the four Priority Areas of the GPA and developed a revised list of regionally relevant strategic priorities of the GPA and specific actions that can be taken under the above-mentioned strategic priorities and some potential indicators that can be derived from the Registry to monitor progress against the GPA.

CONTENTS

ABBREVIATIONS AND ACRONYMS

AqGR	Aquatic genetic resources for food and agriculture
COFI	Committee on Fisheries (FAO)
Commission	Commission on Genetic Resources for Food and Agriculture
FAO	Food and Agriculture Organization of the United Nations
ITWG-AqGR	Intergovernmental Technical Working Group on Aquatic Genetic Resources
NFP	National focal point
PA	Priority Areas (within the GPA)
Registry	Registry of Farmed Types of Aquatic Genetic Resources
SoW-AqGR	*The State of the World's Aquatic Genetic Resources for Food and Agriculture*
SP	Strategic Priorities (within the GPA)

INTRODUCTION

1. From 2 to 4 December 2019, FAO held the first of a series of regional workshops on the *"Development of a global information system for farmed types of aquatic genetic resources (incorporating a review of strategic priorities for a global plan of action)"*. This first workshop, organized for African Member Countries, took place in Addis Ababa, Ethiopia, and was attended by 18 National Focal Points (NFPs) on aquatic genetic resources (AqGR) and five representatives of regional or international organizations. Specific goals of the workshop were to:

- promote standardized use of nomenclature and terminology in the descriptions and categorization of AqGR, especially below the level of species (i.e. farmed types);
- identify the priority regional stakeholders in an information system, specifically a Registry of Farmed Types of AqGR;
- evaluate the key elements of the prototype Registry using regionally relevant species and their farmed types; and
- review, for each of the four Priority Areas of the Global Plan of Action (GPA), the Strategic Priorities (SPs) and identifying possible activities under each SP; and
- identify potential indicators for the effective monitoring of AqGR within a future GPA.

2. The workshop programme was successfully implemented and the following projected outputs were achieved:

- identification of the key stakeholders in an information system for farmed types of AqGR in the region;
- an evaluation of an initial Registry that is being developed by FAO to collect information on farmed types, including through training sessions;
- recommendations on the further development of the Registry;
- regionally relevant long-term goals for the four Priority Areas of the GPA;
- a revised list of regionally relevant strategic priorities of the GPA;
- specific actions that can be taken under the above-mentioned strategic priorities; and
- potential indicators that can be derived from the Registry to monitor progress against the GPA.

A Registry of farmed types as a key component of a Global Information System on Aquatic Genetic Resources

3. One of the major priorities identified in *The State of the World Report on Aquatic Genetic Resources for Food and Agriculture* (SoW-AqGR) (FAO, 2019) was to "Establish and strengthen national and global characterization, monitoring and information system for AqGR". This priority includes:

a. promotion of a globally standardized use of terminology, nomenclature and descriptions of AqGR;
b. improved and harmonized reporting procedures and expanded existing species-based information systems to cover unreported AqGR including ornamental species and micro-organisms; and
c. the development, promotion and commercialization/institutionalization of 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).

4. Good examples of incorporating genetic diversity into national and global reporting and monitoring exist but primarily in terrestrial agriculture (e.g. livestock and crop sectors) where

nomenclature for breeds (livestock) and varieties (plants) has been standardized and used for centuries (See, for example, the Domestic Animal Diversity Information System (DAD-IS) http://www.fao.org/dad-is/en/). It is now time also for the aquaculture sector to develop a global information system to collect data on AqGR below the level of the species (farmed types) using a standard and clearly defined terminology to report this information. The FAO Intergovernmental Technical Working Group on Aquatic Genetic Resources (ITWG-AqGR), a subsidiary body of the Commission on Genetic Resources for Food and Agriculture (Commission), recognized this need and recommended the development of such a system.

5. The Government of Germany is supporting a project (GCP/GLO/970/GER) on the development of a Registry of Farmed Types of Aquatic Genetic Resources (Registry). The outputs of this project will be:

- a functional prototype Registry populated with farmed types for a number of selected species;
- a website interface for the Registry for data entry and query;
- a series of regional workshops to build capacity and awareness and to validate the Registry; and
- a proposal for further development, institutionalization/commercialization and expansion of the Registry.

6. Some progress has been made on these outputs. Following on from an initial expert consultation a prototype Registry has been constructed based on an online questionnaire using the Survey Solutions Platform. This workshop is designed to secure feedback on this prototype.

A GLOBAL PLAN OF ACTION ON AQUATIC GENETIC RESOURCES

7. The Commission, at its Seventeenth Regular Session in February 2019, in response to the SoW-AqGR, requested that FAO prepare a GPA on Aquatic Genetic Resources for Food and Agriculture in consultation with the regions and in collaboration with the FAO Committee on Fisheries (COFI) and its relevant subsidiary bodies. The Commission requested FAO to seek inputs to the proposed objectives, principles, overall structure and follow–up strategic priorities of the GPA, as presented to the Commission.[1] A draft GPA, reflecting all comments and inputs received, will be presented to the next sessions of the Commission's ITWG-AqGR in September 2020 and the Commission in March 2021, for their consideration. The FAO Conference is expected to consider the GPA for adoption in June/July 2021. A timeline for the development of a GPA is outlined in Annex 1.

8. Clearly, a functional and well-populated information system for AqGR will be an essential component of an effective GPA.

WORKSHOP OBJECTIVES

9. This workshop was held to gather regional perspectives on the prototype information system and to seek regionally relevant feedback on the priorities of the outline GPA. The specific objectives in relation to the Prototype Registry included:

- promote standardised use of nomenclature and terminology in the descriptions and categorisation of AqGR, especially below the level of species (i.e. farmed types and stocks);

[1] See CGRFA Provisional Agenda: Options for follow-up to the *State of the World's Aquatic Genetic Resources for Food and Agriculture* http://www.fao.org/3/my596en/my596en.pdf .

- identify the priority stakeholders in an information system (specifically a Registry of Farmed Types of AqGR) in the region;
- trial and evaluation of key elements of the prototype Registry using regionally relevant species and farmed types; and
- identify potential indicators for the effective monitoring of AqGR within a future Global Plan of Action.

10. Workshop participants were provided with an outline of the GPA. The review of the outline addressed the following questions:

- What should be the long-term goals for the region for each Priority Area?
- Is the list of Strategic Priorities within each Priority Area appropriate and inclusive for the region?
- Can you identify goals and specific actions that could be taken in the region within the Strategic Priorities?
- What indicators can we use to monitor progress on the key elements of the Global Plan of Action and how can these be integrated into the Registry or the broader information system on AqGR?
- Do you have recommendations on implementation and financing of the GPA or any of its elements?

WORKSHOP STRUCTURE AND FORMAT

11. The workshop ran over two and a half days: the first day and a half day focused on the Registry and the remaining time on the review of the GPA. The agenda for the meeting is provided in Annex 2.

12. Sessions 1 and 2 welcomed participants and provided introductions to the workshop and a series of background presentations relating to AqGR, the rationale for an information system on AqGR and a detailed presentation on what are farmed types of AqGR. Session 2 also included a regional presentation on AqGR in Lake Tanganyika. All presentations are being shared with participants via an online Dropbox folder.

REPORTS ON WORKSHOP SESSIONS

Review of stakeholders in the information system on Aquatic Genetic Resources

13. The first session requested regional participants to prioritize the potential stakeholders in the information system relative to the benefits that they are likely to gain from the information expected to be entered into the system and its possible applications. The relative rankings of the stakeholders and the types of information that these stakeholders can provide into and extract from the Registry is summarised in Annex 3.

Data entry to the prototype registry of farmed types

14. Practical demonstrations and training sessions were also held to train participants on how to compile the questionnaire on farmed types developed on Survey Solutions (Agenda Sessions 3 and 4). In this regard, all participants were provided with personal login details. Participants worked through the first level data entry for species being farmed in their countries and then were invited to enter information on farmed types for these species. Participants made variable progress in entering information on the farmed types in their countries. Some of them were able to enter all the farmed types in their system while others had some issues with logging on and using the system and were only able to enter limited information. Some useful feedback was provided through the sessions and in the

subsequent plenary discussions and a series of recommendations on changes to the information requests were made (see Annex 4).

Review of outline Global Plan of Action for Aquatic Genetic Resources

15. The second set of working group sessions (Session 5) focused on reviewing the PAs within the GPA for AqGR as follows:

a) establish and strengthen national and global characterization, monitoring and information system for AqGR;
b) accelerate appropriate development of AqGR for aquaculture;
c) promote sustainable use and conservation of AqGR; and
d) policies, institutions and capacity building.

16. The participants were divided into four groups. The Secretariat provided note-takers to record the outcomes from each one-hour group deliberation on each Priority Area (PA). The four groups rotated around the four PA, spending approximately one hour discussing each PA. The information on each PA developed and evolved overs each session and after four sessions all PAs had defined long-term goals, revised strategic priorities and proposed regional actions against each Strategic Priority. In some cases, guiding principles were defined and goals and indicators developed within PAs.

17. Annex 5 summarises the resulting outputs from these group discussions for the four Priority Areas. These outputs reflect the priorities in the region for a Global Plan of Action for AqGR.

SUMMARY AND NEXT ACTIONS

18. Overall, the workshop was successful in achieving its outputs, which can be summarized as follows:

- identification of the key stakeholders in an information system for farmed types of AqGR in the region;
- an evaluation of an initial Registry that is being developed by FAO to collect information on farmed types, including through training sessions;
- recommendations on the further development of the Registry;
- regionally relevant long-term goals for the four Priority Areas of the GPA;
- a revised list of regionally relevant Strategic Priorities of the GPA;
- specific actions that can be taken under the above-mentioned strategic priorities; and
- potential indicators that can be derived from the Registry to monitor progress against the GPA.

19. Participants gained a comprehensive understanding of farmed types and the Registry designed to collect information on these farmed types. For most African NFPs attending this meeting, the scale of the task to enter information on their national farmed types seemed achievable and practical. Some changes and additions to information sought were identified. Participants were invited to continue to access the system over the succeeding month and provide any further feedback to the Secretariat by email. Participants also reviewed the outlined GPA presented by FAO and identified long-term goals, actions and indicators for each PA of the GPA.

20. Input from this and other regional workshops, together with trial data entry on key species, will be accumulated and the Registry structure and system will evolve. By mid-2020 it is intended to transition the system from the Survey Solutions platform to a more user friendly and familiar web-based interface for data entry and query. At this point, the system will be reintroduced to NFPs for further

data entry. The information collected during this workshop will be retained; it will not be used as final data but may be cross-referenced in later data entry.

21. Very useful and regionally relevant information and priorities for the GPA were identified during this workshop together with a number of useful indicators identified that can be estimated from the Registry and utilized for monitoring the progresses in implementing the GPA in future.

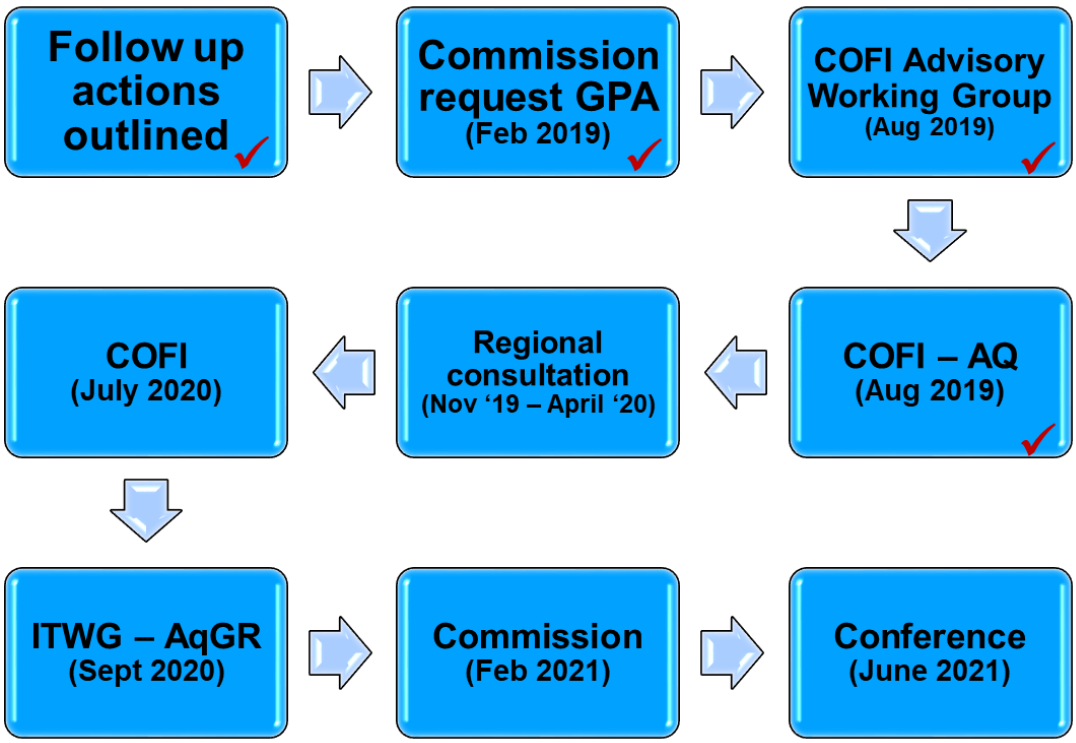
22. The input from this regional workshop will be combined with input from the COFI Advisory Working Group on AqGR and Technologies and other regional workshops, in the drafting of a full draft GPA that will be presented to the ITWG-AqGR and to the Eighteenth Session of the Commission, as outlined in Annex 1.

23. Overall, the workshop should be considered successful in meeting its objectives and all participants and supporting staff are gratefully acknowledged for their support and active participation.

REFERENCES

FAO. 2019. *The State of the World's Aquatic Genetic Resources for Food and Agriculture.* FAO Commission on Genetic Resources for Food and Agriculture assessments. Rome.

Annex 1: Timeline for development and approval of a Global Plan of Action for Aquatic Genetic Resources



Annex 2: Agenda for African Regional Workshop

DAY 0 : Sunday 1 December		**Target outputs**
Time	**Activity**	
18.30–19.00	Registration	
19.00–20.00	Dinner (Hotel)	
DAY 1: MONDAY 2 DECEMBER 2019		
Time	**Activity**	
09.00–10.30	***Session 1 – Welcome and setting the scene*** Welcome addresses (tbc): • FAOSFE sub regional coordinator – ADG, FIA • Senior regional representatives (TBC) • Graham Mair – Aquaculture Branch, FAO HQ, Rome • Introduction to the objectives of the workshop (**G. Mair, FAO**) • Adoption of the Agenda • Introduction by the participants and the secretariat ***Group Photo***	
10.30–11.00	Health break and DSA disbursement	
11.00–12.30	***Session 2 – Background presentations*** • *The State of the World's Aquatic Genetic Resources for Food and Agriculture* – principal findings (**G. Mair, FAO**) • Aquatic Genetic Resources in the African region (EAC & LTA) • The rationale for an information system for Aquatic Genetic Resources (**D. Lucente, FAO**) • Plenary discussion on the role of information systems	Clear understanding of the key needs and challenges on AqGR, the need for an information system.
12.30–13.30	**Lunch**	
13.30–15.15	***Session 3 – The Registry of Farmed Types*** • Presentation and discussion of the objectives, context, process and deliverables of the regional workshop (**G. Mair, FAO and J. Carolsfeld - facilitator**) ***The stakeholders – their needs and roles*** • Potential users/contributors to the information system (**D. Lucente, FAO**) • Short group exercise on ranking priority stakeholders **(All)** ***Farmed types – what are they are why do they matter?*** • Introduction of Farmed Types of Aquatic Genetic Resources (**G. Mair, FAO)** • Plenary discussion exemplifying regional farmed types **(All)**	Understanding of workshop objectives. Updated regional prioritisation of stakeholders (to be presented on Day 2) Clear understanding of farmed types
15.15–15.45	Coffee break	
15.45–17.00	***Session 4 – Registry evaluation and data entry*** • Introduction and session objectives (**J. Carolsfeld - facilitator**) • Group work on species information entry	Identified strengths and weaknesses of prototype species and data entry plan.

DAY 2: TUESDAY 3 DECEMBER 2019		
Time	Activity	Target outputs
9.00–10.30	***Report back*** • Plenary discussion on species information entry ***Session 4 – Registry evaluation and data entry (continued)*** • Introduction and session objectives (**J. Carolsfeld - facilitator**) • Group work on farmed type information entry	Identified strengths and weaknesses of prototype farmed type data entry plan
10.30–11.00	*Health Break*	
11.00–12.30	***Session 4 – Registry evaluation and data entry (continued)*** • Group work on farmed type information entry ***Report back*** • Plenary discussion on farmed type information entry • Recommendations	Identified strengths and weaknesses of prototype farmed type data entry plan
12.30–13.30	*Lunch*	
13.30–15.30	***Session 5 : Preparation of a Global Plan of Action on AqGR*** • The Commission on Genetic Resources for Food and Agriculture and its global plans of action(**D. Leskien, CGRFA-FAO**) • The outline of a GPA on AqGR (**G. Mair, FAO**) • Session objectives and structure (**J. Carolsfeld - facilitator**) **Group work session 1** • Group work on Priority Areas, Strategic Priorities and actions <u>Background documents:</u> • CGRFA-17/19/8.3 Options for Follow-up to *The State of the World's Aquatic Genetic Resources for Food and Agriculture* • Global Plans of Actions for other sectors (animal, plant and forest genetic resources)	Agreed regional strategic priorities with goals and indicators within each Priority Area
15.30–16.00	*Health break*	
16.00–17.00	***Session 5 : Preparation of a Global Plan of Action on AqGR (continued)*** **Group work session 2** • Group work on Priority Areas, Strategic Priorities and actions	Suggested national and regional strategic priorities, with associated outputs and indicators

DAY 3: WEDNESDAY 4 DECEMBER 2019		
Time	Activity	Target outputs
09.00–10.00	***Session 5 : Preparation of a Global Plan of Action on AqGR (continued)*** **Group work session 3** Group work on Priority Areas, Strategic Priorities and actions	Suggested national and regional actions within strategic priorities.
10.00–10.30	*Health Break*	
10.30–13.00	***Session 5 : Preparation of a Global Plan of Action on AqGR (continued)*** **Group work session 4** • Group work on Priority Areas, Strategic Priorities and actions **Final Plenary** • Reporting back on Group work by Priority Area • Plenary discussion on the role of the AqGR Information System in the Implementation of the Global Plan of Action ***Workshop summary and recommendations (G. Mair and Facilitator)***	Overview of workshop outputs and key recommendations
13.00	***Workshop Close***	

Annex 3: Summary of the findings of the exercise to prioritise stakeholders

Stakeholder Evaluation

The workshop attendees were asked to work individually and identify those stakeholders working in the conservation, sustainable use and development of AqGR and that will most benefit from having access to an information system on farmed types of AqGR. They were also asked to list the identified stakeholders in order of priority (from 1 to 10 – lowest to highest). The stakeholders identified included: government resource managers; policy makers and regulators; breeders and developers; conservation groups; academia and researchers; private industry aquaculture; intergovernmental organizations; hatcheries and seed dealers; donors; indigenous communities; non-governmental organizations; fisheries and aquaculture associations; IPR lawyers; fishers and collectors; marketers and processors; and the general public.

The analyzed results from this exercise are showed in Figure 1.

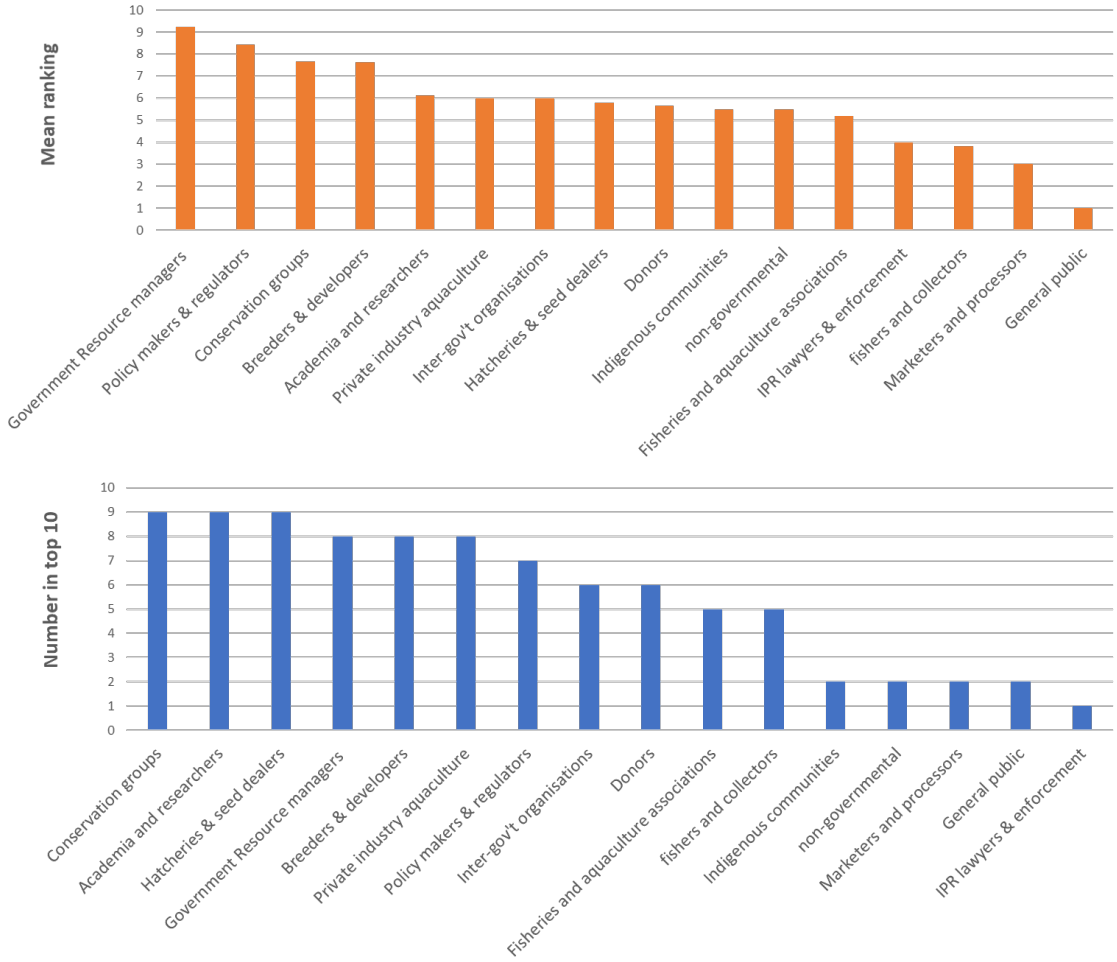


Figure 1. Priority stakeholders of an information system of famed types of aquatic genetic resources
Source: Online survey conducted with workshop participants, 2020.

Participants were also requested to illustrate practical examples of purposes for which the identified stakeholders might use the information system and/or provide information to be recorded in the system.

In the case of stakeholders like government resource managers, intergovernmental organizations, policy makers and conservation groups, participants indicated that the information system can provide the necessary information to promote their policy and management development.

With regard to the producers, such as private industry aquaculture but also hatcheries and seed dealers, an information system on farmed types can provide data on performance characteristics of a given farmed type, its production value and suitable areas for its farming. It can also provide data for informed investment decisions and contribute to improve producers' understanding of the available resources. Additionally, an information system would be useful in the breeding sector and related academic research by suppling information and references to relevant literature, especially for what regards genetic characterization and characteristics as well as on dynamics and trends of cultured species and their farmed types.

On the other hand, stakeholders can also contribute to populate the information system through the submission of crucial information of farmed species and their farmed types, such as information on: production trends and statistics performance characteristics, breeding history, production methods, market requirements, economic benefit, biosecurity and risk assessment related to the introduction of a farmed type.

Annex 4: Summary of recommendations on the information being sought on species and farmed types for the registry

Following on from working sessions in which participants attempted to enter information on species and farmed types cultured in their countries into the prototype Registry, the following changes to the prototype Registry were recommended by participants:

Level on entry of baseline information on cultured species.

- For a user not familiar with the questionnaire it is not immediately obvious where to insert information after compiling the initial section on the scientific names of the species farmed in a country.
- Add question to quantify, possibly in percentage terms, the contribution from culture systems to national aquaculture production in order to differentiation major and minor production systems used for each species.
- Expand the options for uses including "recreational fishery" among the possible destination uses of species and potentially also their associated farmed types.
- Expand the number of characters allowed in the open field questions to facilitate more detailed answers.
- Add an open field to indicate those cases in which the information on production value is provided from a non-official source (e.g. a farm) and, if possible, to report the source of the information.
- Add the field "Other species" at the end of each list of species categories to give the opportunity to report on those species that are missing from the lists specific to their species list category (e.g. marine finfish species) as opposed to having a separate category of other species.
- Add a question on the risk status posed by species (particularly relevant to introduced species but may also apply to native species?) in addition to the question on the threat status.

Participants also made the following observations in relation to the provision of information on farmed types:

- Sometimes a farmed type is produced by more farms and not just from a single one. In these cases can be consequently more difficult to estimate the total production value for that farmed type. An open field should be added here to explain how the estimate of production for a farmed type is calculated.
- In some cases, it might be difficult to recruit information on exchanges of farmed types that happened before the introduction of the Access and Benefit Sharing (ABS) measures as well as on the results of possible genetic improvement programmes that targeted those farmed types. Consider expanding the information note in relation to exchange of farmed types including reference to ABS or MTAs.
- At this stage of designing the information system, it is worthwhile to consider collecting information also on where the introduction of genetically improved aquaculture species has been successful and to keep in mind that in next years the way the AqGR are exchanged between countries might change.
- The comment above on the risks associated with species can be asked in relation to farmed types also.

Annex 5: Long-term goals, revised strategic priorities, actions and indicators developed by participants in the African Regional Workshop discussions on the outline Global Plan of Action for Aquatic Genetic Resources

Working Group Sessions
The discussion focused, *inter alia*, on the following questions:

- What should be the long-term goals for the region for each Priority Area?
- Is the list of strategic priorities within each Priority Area appropriate and inclusive for the region?
- Can you identify goals and Specific Actions that could be taken in the region within the Strategic Priorities?
- What indicators can we use to monitor progress on the key elements of the Global Plan of Action and how can these be integrated into the Registry or the broader information system on AqGR?
- Do you have recommendations on implementation and financing of the GPA or any of its elements?

The following tables summarize the outputs under each of the priority areas in the outline GPA.

Priority Area 1: ESTABLISH AND STRENGTHEN NATIONAL AND GLOBAL CHARACTERIZATION, MONITORING AND INFORMATION SYSTEM FOR AQGR

Long-term goal: Effective generation and management of knowledge and information on AqGR. (Alternative long term goal: to improve the knowledge that we have on AqGR through the evaluation of their general assessment, identification of their threats, improvement of the genetic characterization and the development and/or updating of information systems.)

Strategic Priority 1.1: Promote the globally standardized use of terminology, nomenclature and descriptions of AqGR.

Actions

1. FAO in consultation with Member Countries to develop and disseminate a glossary of AqGR terminology and guidelines on the use of standardized terminology in relation to the FAO Registry of Farmed Types.
2. Establish national catalogues of standardized description of aquatic genetic resources, including characterization of AqGR beneath the species level through the use of phenotypic and genetic markers.

Strategic Priority 1.2: Establish and institutionalize a standardized national, regional and global AqGR information systems.

Actions

1. Develop (an integrated) national, regional and global AqGR information systems.[2]
2. Strengthen monitoring systems at national and regional level for AqGR.
3. Establish technical working groups of AqGR to operationalize the information systems.

Strategic Priority 1.3: Improve and harmonize reporting procedures and expand existing species-based information systems to cover unreported AqGR including farmed types, ornamental species and micro-organisms.

Actions

1. Develop standardized reporting procedures and guidelines for data collection (including for example tools and templates).
2. Build capacity of the national and regional institutions on reporting procedures and systems.
3. Collect AqGR data and periodic updating of national and regional information systems.
4. Produce and disseminate national, regional and global reports on the status of AqGR through established communication strategies.

[2] The discussion on this point referenced the integration of separate national information systems on AqGR (where they exist or might be developed) with the global system and concern was expressed about the utility and resource requirements for such a level of integration. Such concerns would not apply where the global system was also used by countries as a system for recording national level information.

Priority Area 2: ACCELERATE APPROPRIATE DEVELOPMENT OF AQGR FOR AQUACULTURE

Long-term goal: Increased market driven adoption of genetically improved farmed types contributing to an increased proportion of aquaculture fish in the diets of the population in the region.

Potential High Level Indicators of progress on the long-term goal:

- numbers of regional and national well managed and documented breeding programmes;
- increase proportion of countries reporting that GI is impacting aquaculture production;
- increase proportion of genetically improved farmed types reported by countries;
- increased productivity in developed farmed types of AqGR (how do we measure?);
- increased production of genetically improved farmed types; and
- increased proportion of genetically improved farmed types (market share) in the regional markets (difficult to monitor).

Strategic Priority 2.1: Raise awareness and improve understanding of the properties, roles and risks of genetic technologies and their application to AqGR including traditional selective breeding and emerging technologies.

Actions

1. FAO to develop and distribute guidelines on appropriate application of genetic improvement technologies including their risks and benefits to be used as a decision support tool in the development of GI strategies at national and regional levels (indicator = the guideline developed and distributed).
2. FAO to develop and disseminate risk assessment and mitigation tools (indicator = the tools developed and distributed).
3. FAO to develop guidelines on benchmarking of performance characteristics of available AqGR;
4. Conduct national and/or regional stakeholder consultations on appropriate genetic improvement strategies for key species (indicator = number of consultations held).
5. Develop and implement media communication strategies on benefits and risks for producers and consumers (sensitisation) (indicator = mechanism to assess producer and consumer understanding? e.g. number of media items).
6. Review genetic improvement strategies and related communication within terrestrial agriculture (indicator = number of cross sectoral consultation held).

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.

Strategic Goal 1: Greater engagement of private sector in breeding programmes including through public–private partnerships (PPPs) (indicator = the number of private and PPP breeding programmes).

Strategic Goal 2: Stimulate market drivers for genetic improvement particularly among growers (indictor = of the number of farmers utilising genetically improved farmed types?).

Strategic Goal 3: Develop cooperative regional breeding programmes for key species and farmed types for shared transboundary species (indicator = number of regional breeding programmes).

Actions

1. Develop a regionally applicable training and education package for producers on the benefits of genetic improvement and the risk of mis-management of genetic resources for national and regional delivery) (indicator = available training package and number of training courses) (note: link with promotion of Registry information).
2. Develop and promote value propositions of genetic improvement in relation to food security, economic development, livelihoods (indicator = value propositions developed, available and utilised by trainers, extension agents, resource managers (note: NFPs should own the value proposition – workshop to develop value proposition?).
3. Conduct national and/or regional benchmarking of performance characteristics of available native and non-native AqGR utilising FAO guidelines) (indicator = number of farmed types activities).
4. Review, develop/adapt and promote supportive national and regional policies or frameworks to consider AqGR below the level of species and enabling appropriate application of genetic improvement utilising FAO guidelines and decision support tools and incorporating risk assessments using FAO developed tools.
5. Review the role of public agencies in genetic improvement and uptake of R&D genetic improvement outputs.
6. Develop models and case of PPP to promote implementation and uptake of genetic improvement.

Strategic Priority 2.3: Establish national and/or regional species and farmed type development strategies and programmes to unlock the full potential of AqGR.[3]

Goal/principle 1: 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.

Goal/principle 2: Such strategies need to set an appropriate balance between conservation goals and economic development/food security goals.

Goal/principle 3: Ensure that genetic improvement is applied to species/farmed types and sectors that are sustainable for the longer term and likely to expand.

Goal/principle 4: Strategies and policies should adequately consider the risks and benefits of non-native species and farmed types (especially IAS). (Indicator = number of national/regional strategies and policies that consider risks and benefits of non-native species/farmed types).

Indicators of progress on these goals:

- number of national and regional strategies;
- number of national and regional breeding programmes;
- number of species genetically improved;
- number of farmed types developed;
- relative production of native and non-native species; and
- ratio of number of *ex situ* and *in situ* conservation programs and economic value of aquaculture.

[3] Regional was added to national here to reflect regional and transboundary resources and levels of investment required.

Actions

1. Foresight and market analysis in govt. planning including private sector engagement (indicators = number of foresight analyses).
2. Develop and implement strategies and policies for implementing national and regional breeding programmes (indicator = number of national/regional strategies).
3. Design and implement national and regional breeding programmes for development of improved farmed types of native and non-native species.
4. Monitor and evaluate impact of policy reviews/changes (reference action in SP2) and implementation of breeding strategies and programmes including uptake by producers and impact on market growth for improved farmed types.
5. Monitor impact of non-native species and introduced farmed types with reference to risk assessments carried out (MOVE TO SP3?).

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

Actions

1. Establish national and regional networks or partnerships (or reinforce existing networks) of actors to develop cooperative actions in genetic improvement and quantitative genetics.
2. Create regional technical platforms (e.g. WAAP and Nigerian projects CIRDES) accessible by researchers and policymakers?
3. Call upon donors to support these technical platforms.

Priority Area 3: PROMOTE SUSTAINABLE USE AND CONSERVATION OF AQGR

Long-term goal: Establish sustainable access, use, and conservation of Biodiversity in the African region through the promotion of good management practices and policies.

Strategic Priority 3.1: Build an understanding of current status of aquatic genetic resources in Africa, both regionally and nationally, recognizing that other priorities are not held on hold while full understanding is pursued. Farm and wild types may require different approaches.

Actions

1. Create inventories of aquatic genetic resources – both farm and wild types.
2. Characterise AqGR – both in terms of performance and distinguishing characteristics and in terms of risk status and levels of exploitation.
3. Map distribution and abundance of AqGR, including in support of identifying sensitive areas that require protection – particularly from invasive and non-native species and farm types.
4. Assess potential benefits and risk status of AqGR in the region.
5. Emphasize public education on the AqGR to build support for their protection.

Strategic Priority 3.2: Develop and implement management plans and policies for appropriate use and protection of AqGR, including in protected areas and in fisheries.

Actions

1. Create effective and appropriate policies and strategies, with implementation guidelines.
2. Develop implementation plans at regional and national levels, adaptively incorporating best practices from global and local experience, as well as local community inputs, interests, and rights – including special consideration of women and youth.
3. Monitor and evaluate baselines and progress of all aspects, including developing evaluation tools to assess impacts and cost/benefit analyses as needed (building on existing tools where available), and including non-food uses of AqGR (e.g. ornamental trade).
4. Communicate progress, focussed on reporting back to the public and building support and funding. Includes networking and public communication. Action at regional levels would be advantageous.

Strategic Priority 3.3: Develop understanding and mitigative tools to face impacts of climate change.

Actions

1. Research to understand the holistic interactive impact of climate change – including, for example, interactions of changes in local environmental conditions, impacts by other human activities (e.g. Agriculture, deforestation, urbanization, etc.) invasion by exotic species, and social responses.
2. Emphasize education for public understanding of impacts.
3. Restore and mitigate to minimize, avoid, and/or reverse impacts.
4. Research the development and application of genetic tools for improved aquaculture performance in changing environment – e.g. selective breeding for growth, resistance to disease and high temperature, reproductive timing, etc.
5. Research farming approaches which better accommodate changing environments.
6. Develop policies to avoid and/or minimize impacts.
7. Monitor impacts and progress on restoration or mitigation, including participative monitoring with local communities.

Strategic Priority 3.4. Develop understanding and preventive tools to reduce and/or avoid impacts of aquaculture and other human activities on the environment and wild aquatic biodiversity, with particular relevance to AqGR (including, for example, invasive introduced species or farmed types, disease introduction or enhancement, water quality, mangrove erosion, unsustainable and/or inappropriate fisheries (including for supplying aquaculture), erosion of wild stocks with potential use as sources for aquaculture)

Actions

1. Research to understand the potential and real impact of aquaculture on the environment and local biodiversity – particularly impacts on at-risk aquatic genetic resources.
2. Emphasize education for public understanding of impacts.
3. Restore and mitigate to minimize, avoid, and/or reverse impacts.
4. Develop policies to avoid and/or minimize impacts, in particular limiting trade, introduction, and use of farmed types in areas identified as critical for the conservation of at-risk wild biodiversity.
5. Monitor impacts and progress on restoration or mitigation, including participative monitoring with local communities.

Strategic Priority 3.5. Integration of policies and actions on AqGR at different governmental levels, including national and regional levels

Actions

1. Emphasize networking and communication to support development of regional policies that inform national policies.
2. Develop policies that protect regions from international and/or global exploitation of AqGR that is not considered locally appropriate.

Strategic Priority 3.6. Development of policies for sustainable fisheries, aquaculture, and conservation, including incorporation of local community benefits, costs and collaboration

Actions

1. Uilize best practices for fisheries and aquaculture management, adapted from global and local experience for local applicability.
2. Consider conservation of at-risk and particularly valuable AqGR in fisheries plans.
3. Utilize best practices for *in situ* and *ex situ* conservation, building on global and local experience including evaluation of local appropriateness of conservation and development actions.
4. Include participative processes with community for policing, management, and priority setting.

Strategic Priority 3.7 Adaptive management processes to evaluate and update inventories and purposes, incorporating local communities (including women and youth)

Actions

1. Update actual policies and activities to inform future actions.
2. Involve communities in policing, development, and local priority setting.
3. Watershed-level (or migratory route in oceans) consideration to share resources, benefits and impacts.

Comments on other Strategic Priorities included in the outline:

Strategic Priority 3.1: Develop risk-based policies and controls on introductions and transfers of AqGR and implement monitoring systems to understand the impacts of non-native species and reduce their negative impacts on both farmed and wild relative AqGR.

Not identified as a priority focus by the groups without an understanding of what is available and what is being traded. Incorporated as one of the actions of new Strategic Priority 3.4.

Strategic Priority 3.2: Identify wild relative AqGR most at risk to ensure that they are managed sustainably and appropriate conservation measures are implemented where necessary.

Incorporated into new Strategic Priority 3.1.

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.
Climate change Incorporated in Strategic Priority 3.3 above; new Strategic Priority 3.4 deals with other human induced changes, including environmental impacts of aquaculture – then expanded to other human activities that impact aquaculture or wild AqGR.

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.

Not considered as necessarily a priority approach, depends on the inventory of what happens. However, "best practice conservation measures based on global and local experience" was endorsed as a priority, which would include this approach in many cases.

Strategic Priority 3.5: Identify threatened wild relative AqGR that are critical to aquaculture development and to wild catch fisheries and to prioritize these for* in situ *conservation.

Part of new Strategic Priority 3.1 - discovering what there is and building appropriate conservation and use policies.

Strategic Priority 3.6: Actively incorporate conservation of AqGR in the development of fisheries management plans, particularly for threatened species.

Considered to be included in the concept of management for sustainable and appropriate fisheries.

Strategic Priority 3.7: Aquatic protected areas should be considered in the development of* in situ *conservation of key AqGR.

Same as Strategic Priority 3.4.

Strategic Priority 3.8: Identify the priority threatened and important AqGR as candidates for effective* ex situ *conservation.

Part of the priority setting flowing out of the inventory process; not identified as a specific Strategic Priority

Strategic Priority 3.9: Develop and promote guidelines and best practices for both* in vivo *and* in vitro ex situ *conservation.

Incorporated in actions of new Strategic Priority 3.6.

Strategic Priority 3.10: 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.

Included in new Strategic Priority 3.2.

Indicators:

- Number of countries/farmers adhering to sustainable practices;
- Number of countries contributing to Registry of AqGR, including depth of information contributed;
- Trends in species abundance (if possible) – e.g. catch records;
- Completeness of at-risk species list (as judged by reducing rate of new additions);
- Production levels in quantity and size;
- IUCN indicators with participative community monitoring – scientifically validated participative processes;
- Should include consideration of women and youth;
- Research existing indicators for application, especially if they have been validated and are appropriate (e.g. CBD indicators of biodiversity and FAO indicators on food use of biodiversity);
- Indicators that monitor implementation of action plans – including biological, social and economic aspects;
- Risk assessment tools developed and implemented, including associated indicators;
- Indicators that mitigation measures are effective; and
- Indicators of involvement of the public and of producers.

Recommendations for Implementation and Funding:

- Prioritize working at a regional level. Working at a national level alone can be challenging, while regional actions facilitate action and responsibility at the national level as well as allow for intervention in higher level international forums:
    - Builds coordination and integration;
    - Better way to get funding from associations, banks, European Union;
    - Get into trade balance, fish quotas, and fishery collaboration; and
    - Benefits of cost-sharing vs everyone repeating the same task.
- Implement regional plans of action for support and coordination.
- Keep community benefits in mind.
- "Polluter pays" kind of application to enhance funding: Environmental fund from fishing and development penalties. However, linked to a mitigation action to avoid relying on this as the main source of funding for environmental advances.
- Other plant and animal fields should be referred to as models in developing goals, plans, policies and indicators.

Priority Area 4: POLICIES, INSTITUTIONS AND CAPACITY BUILDING

Long-term goal: Efficient policies, sustainable institutions and relevant capacity in place for the sustainable use and conservation of AqGR.

Strategic Priority 4.1: Support Members and regional organizations 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, and private sector.

Actions

1. Build capacity and provide technical backstopping for appropriate policy development.

Strategic Priority 4.2: Develop or review national and regional strategies for in situ and ex situ conservation of AqGR and their sustainable use.

Actions

1. Draft strategies for the conservation and sustainable utilization of AqGR upon consultation with relevant stakeholders.
   Indicator: Strategies have been adopted and implemented
2. Establish and manage protected areas and genebanks for AqGR.
   Indicator: Protected areas and gene banks have been established

Strategic Priority 4.3: Support national and regional communication on AqGR and raise awareness of the importance of AqGR among stakeholders from consumers to policy-makers.

Actions

1. Draft and implement a communication strategy on AqGR, taking into consideration the various stakeholder groups.
   Indicator: Communication strategy implemented.
2. Develop communication material, taking into consideration the various addressees, and distribution including by local FAO offices.
   Indicator: Number of mentions in articles, press releases, interview etc. on AqGR.
   Indicator: Number of target groups reached.
3. Establish or strengthen information sharing and networking on AqGR.
   Indicator: Increased number of visitors of the Registry system.
   Indicator: Number of registered Members to the information sharing network.
   Indicator: Increased frequency of updates.
   Indicator: Popularity of terminology recognition.

Strategic Priority 4.4: Promote development of understanding of the roles and responsibilities of key stakeholders in AqGR, including indigenous communities, youth and women, and their roles in the conservation, sustainable use and development of AqGR.

Actions

1. Establish and/or support collaborative management committees in raising awareness and sensitization of target groups on their role in the conservation, sustainable use and development of AqGR, taking into consideration the communication strategy.

Strategic Priority 4.5: Develop, review and harmonize national and regional legislations and policies governing AqGR, as appropriate.

Actions

1. Draft and review national and regional legislations that govern the responsible use of native and non-native AqGR, including transboundary movements.
   Indicator: Increased aquaculture production and income generation through the sustainable use of AqGR.
2. Develop, as applicable, appropriate national and regional legislation on access and benefit-sharing and intellectual property rights relating to AqGR.
3. Adjust existing national and regional legislation on access and benefit-sharing and intellectual property rights on AqGR, as appropriate.
   Indicator: Number of laws and implementing regulations on AqGR adopted.
   Indicator: Number of aspects specific to AqGR covered by the law.

Strategic Priority 4.6: Establish or strengthen national and regional institutions for management of AqGR.

Actions

1. Develop a legal framework for establishing national and regional institutions.
   Indicator: Legal framework developed.
2. Establish and continuation of active national focal point for AqGR.
   Indicator: NFPs appointed.
3. Build capacity of national and regional institutions, including education and research, on AqGR.
   Indicator: Human resources developed.
   Indicator: Number of regional institutions with increased capcity
4. Mobilize resources for AqGR programmes.
   Indicator: Financial resources mobilized.
5. Conduct regular monitoring and evaluation of AqGR.

Strategic Priority 4.7: Countries and regions to strengthen efforts to mobilize resources, including financial resources for the conservation, sustainable use and development of AqGR.

Actions

1. Develop a funding strategy for the implementation of the GPA.
   Indicator: Number of programmes funded.
   Indicator: Number of strategies developed.
2. Make recommendations on the implementation and financing of the GPA or any of its elements by:
   - Using the regional bodies to get funding;
   - Developing a detailed market (value proposition); and
   - Collaborating with the private sector.

3. Integrate AqGR into relevant national policies.

Annex 6 - List of participants

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In December 2019, the Food and Agriculture Organization of the United Nations (FAO) held a virtual regional workshop for Africa on the *"Development of a global information system for farmed types of aquatic genetic resources (incorporating a review of strategic priorities for a global plan of action)"*. The workshop aimed at promoting a standardized use of nomenclature and terminology in the descriptions and categorization of farmed types of aquatic genetic resources (AqGR), and seeking feedback from Members Africa on the development of an FAO-hosted information system on farmed types and on the outline of a Global Plan of Action for AqGR.

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