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Report of the

**REGIONAL WORKSHOP FOR ASIA AND THE PACIFIC REGION
ON THE DEVELOPMENT OF A REGISTRY OF FARMED TYPES OF
AQUATIC GENETIC RESOURCES
(INCORPORATING A REVIEW OF STRATEGIC PRIORITIES FOR A
GLOBAL PLAN OF ACTION)**

Virtual Workshop, 8–12 June 2020

Report of the
Regional Workshop for Asia and the Pacific Region on the Development of a Registry of Farmed Types
of Aquatic Genetic Resources (Incorporating a review of strategic priorities for a Global Plan of Action)
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PREPARATION OF THIS DOCUMENT

This report describes the activities and outputs of the FAO virtual workshop for Asia and the Pacific Region on the Development of a Registry of Farmed Types of Aquatic Genetic Resources (Incorporating a review of strategic priorities for a Global Plan of Action), held from 08-12 June 2020.

This document was prepared by Mr Graham Mair and Ms Daniela Lucente of FAO supported by Mr Joachim Carolsfeld and Mr Devin Bartley of 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 and adoption.

ABSTRACT

This report summarizes the proceedings and outcomes of the “Regional Workshop for Asia and the Pacific 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)” held from 8 to 12 June 2020. The final wrap-up session was held on 22 June 2020.

This workshop, supported financially by the Government of Germany, was the second in a series of regional workshops held to generate feedback on the Registry of Farmed Types of Aquatic Genetic Resources (Registry) being developed by FAO in response to the findings of the first report on *The State of the World’s Aquatic Genetic Resources for Food and Agriculture* (SoW-AqGR) prepared under the guidance of the Commission on Genetic Resources for Food and Agriculture (Commission) and launched by FAO in 2019. As requested by the Commission, the workshop also sought feedback on an outline of a Global Plan of Action for Aquatic Genetic Resources for Food and Agriculture (GPA. The workshop was originally planned to be held face to face in early 2020 but was eventually cancelled due to the challenges of the Covid-19 pandemic. The workshop was thus held in a virtual online format over a period of six days, with sessions lasting between 60 and 120 minutes.

The workshop was attended by National Focal Points for Aquatic Genetic Resources from Member Nations from Asia and the Pacific. The participants included officials from ministries, governmental organizations, research institutions and representatives of regional aquaculture organizations. The objectives of the workshop were to promote standardized use of nomenclature and terminology in the description and categorization of aquatic genetic resources (AqGR), especially below the level of species (i.e. farmed types). Also to identify priority regional stakeholders who would benefit from and could contribute to an information system, such as the Registry, to evaluate the key elements of the prototype Registry using regionally relevant species and their farmed types and finally to review the strategic priorities and propose concrete activities under each of the four Priority Areas of the GPA.

Participants identified academia and researchers, government resource managers, aquaculture producers and policy-makers as the principal stakeholders and beneficiaries of the Registry. These same stakeholders would also be the main contributors of information to the Registry. Several participants noted the difficulty of knowing or even of estimating production data for farmed types and it was agreed that initially the registry would only attempt to collect estimates of the proportional contribution of farmed types to overall species production for the country.

Through a series of working group sessions, participants identified regionally relevant long-term goals for the four Priority Areas of the GPA, revised the list of strategic priorities of the GPA, and identified specific regionally relevant actions that should be taken under the different strategic priorities, and identified some potential indicators that may be used to monitor progress in the implementation of the GPA. This input will be considered in the preparation of the draft GPA.

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ABBREVIATIONS AND ACRONYMS

AqGR	Aquatic genetic resources for food and agriculture
COFI	FAO Committee on Fisheries
CBD	Convention on Biological Diversity
FAO	Food and Agriculture Organization of the United Nations
GPA	Global Plan of Action for Aquatic Genetic Resources for Food and Agriculture
ITWG-AqGR	Intergovernmental Technical Working Group on Aquatic Genetic Resources for Food and Agriculture
NFP	National focal point
Registry	Registry of Farmed Types of Aquatic Genetic Resources
SDG	Sustainable Development Goal
SoW-AqGR	The State of the World's Aquatic Genetic Resources for Food and Agriculture

OPENING OF THE WORKSHOP

1. This regional workshop was organized by the Fisheries and Aquaculture Division of FAO, supported by the Secretariat of the Commission on Genetic Resources for Food and Agriculture (herein after known as “the Commission”). The meeting was held using a virtual format based on daily sessions of 90 to 120 minutes over the week of 8–12 June 2020. A final wrap-up session was held on Monday 22 June 2020.
2. Mr Graham Mair, Senior Aquaculture Officer opened the meeting and briefly introduced the workshop hosts. Participants were requested to introduce themselves via the chat page of the meeting.
3. Mr Matthias Halwart, Head of the Aquaculture Branch, welcomed the delegates. He pointed out that this meeting was taking place not only on World Oceans Day but also on the same day as FAO published its flagship report on *The State of World Fisheries and Aquaculture (SOFIA)* (FAO, 2020a). He provided background on the recent publication of the first ever report on the *The State of the World’s Aquatic Genetic Resources for Food and Agriculture (SoW-AqGR)* (FAO, 2019; FAO, 2020a)
4. Ms Irene Hoffmann, Secretary of the Commission, also welcomed participants and provided some background and history on the inclusion of aquatic genetic resources (AqGR) in the work of the Commission. She noted that, in response to the SoW-AqGR, the Commission has made the ad hoc Technical Working Group on AqGR a permanent working group. She further noted that the Commission requested FAO to develop a Global Plan of Action (GPA) for AqGR in response to the SoW-AqGR.

INTRODUCTION AND BACKGROUND

5. FAO has recently published its report on SoW-AqGR. This report identified a number of important needs and challenges in the conservation, sustainable use and development of AqGR.

A Registry of Farmed Types as a Key Component of a Global Information System on Aquatic Genetic Resources for Food and Agriculture

6. One of the major priorities identified 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. improvement and harmonization of reporting procedures and expanded existing species-based information systems to cover unreported AqGR including ornamental species and micro-organisms;
 - c. 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).

Examples of incorporating genetic diversity into national and global reporting and monitoring do exist, but primarily in the terrestrial agriculture sector where nomenclature for breeds and varieties has been standardized and used for centuries (FAO, 2021a).

7. The FAO Intergovernmental Technical Working Group on AqGR (ITWG-AqGR), at its Second Session, highlighted the critical need to “*assess, explore and develop mechanisms to monitor the status and trends of AqGR through the establishment of a global information system and a Registry of farmed*

types of AqGR as well as stock of wild relatives, subject to the availability of the necessary funds” (FAO, 2018a).

8. The Government of Germany responded by supporting a project 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.

9. Some progress has been made on these outputs. A prototype registry was constructed, working from recommendations from an Expert consultation workshop, and provisionally hosted as an online questionnaire on the Survey Solutions platform. A workshop to secure feedback from the African region on this prototype was held in Addis Ababa, Ethiopia, in late 2019 and the current workshop is designed to gather feedback from Asia and the Pacific region.

A Global Plan of Action on Aquatic Genetic Resources for Food and Agriculture

10. The Commission, at its Seventeenth Regular Session in February 2019, in response to the SoW-AqGR, requested that FAO prepare a GPA on AqGR in consultation with the regions and in collaboration with Committee on Fisheries (COFI) and its relevant subsidiary bodies. The Commission requested FAO to seek regional inputs to the proposed objectives, principles, overall structure and follow-up strategic priorities of the proposed GPA, as presented to the Commission (FAO, 2018b). A full draft GPA, reflecting all comments and inputs received, will be presented to the next sessions of the Commission’s ITWG-AqGR in September 2020 (tbc) and the Commission Regular Session in March 2021 (tbc), for their consideration. The FAO Conference is expected to consider the GPA for adoption in June/July 2021 (tbc). An anticipated timeline for the development of a GPA is outlined in Annex 1.

11. The regional consultation workshops are being used to provide feedback on both the Registry and the outline of the GPA as, in future, a functional and well-populated information system, of which the Registry will be a core component, will be an essential tool for the effective monitoring of the implementation of the GPA.

WORKSHOP OBJECTIVES

12. This workshop was held to gather regional perspectives on the prototype Registry and on the priorities of the outline GPA. The specific objectives in relation to the Registry included:

- Promote standardized use of nomenclature and terminology in the descriptions and categorization of AqGR, especially below the level of species (i.e. farmed types and stocks).
- Identify the priority stakeholders in a Registry of farmed types of AqGR.
- Identify potential indicators for the effective monitoring of AqGR within a future GPA.

13. With regard to the GPA, the review of the outline addressed the following questions in the context of needs and challenges on AqGR management in their region:

- What should be the long-term goals for each Priority Area?

- Is the list of strategic priorities within each Priority Area appropriate and inclusive for the region?
- Are there goals and specific actions that could be taken within the strategic priorities?
- What indicators can be used to monitor progress on the key elements of the GPA and how can these be integrated into the Registry or the broader global information system on AqGR?
- Are there recommendations on implementation and financing of the GPA or any of its elements?

WORKSHOP PARTICIPANTS

14. All registered national focal points (NFPs) from Asia-Pacific countries were invited to the workshop and other countries were informed through regional and subregional FAO offices. Invitations were also extended to regional organizations engaged in aquaculture. Over the course of the workshop, seven NFPs or their alternates attended and, in addition, other representatives attended as observers from countries that could not send their NFP. Four regional organizations were represented. Overall, there were 25 participants in the workshop coming from nine Member Nations and four regional organizations. The list of participants is provided in Annex 2.

WORKSHOP STRUCTURE AND FORMAT

15. The workshop was conducted over five days on a virtual format, with the original planned face-to-face workshop being cancelled due to travel restrictions related to COVID-19. Background documents and links were provided together with the meeting prospectus during the week prior to the workshop. Each daily session consisted of 90 to 120 minutes session of online presentations and discussion, facilitated by the team of FAO staff in Rome and two representatives of World Fisheries Trust based in North America. Participants contributed from their home countries across multiple time zones.

16. The first day provided an overview of the main findings of the SoW-AqGR and the rationale for an information system for farmed types of AqGR. The second day focused on the priority stakeholders benefiting and/or contributing to the Registry and on the standard terminology for identifying farmed types. The third day covered presentations and discussions on data to be collected for the Registry. The fourth and fifth day were devoted to the review of the outline GPA, including both a presentation of its background and virtual break-out working groups to collect feedback and inputs on its contents. Background readings were provided ahead of each daily session, which were also accompanied by polls and surveys to assess opinions and levels of understanding among the participants. The agenda for the meeting is provided in Annex 3.

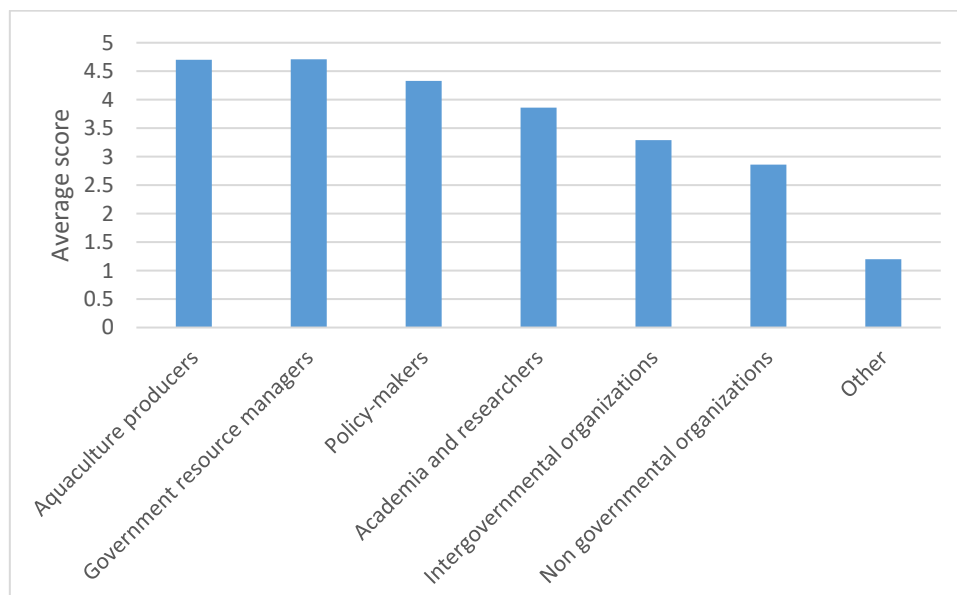
17. Background reading and links to associated quizzes were emailed to participant the day before each session and all presentations and recordings of the sessions were shared with participants via email after the completion of each session.

18. The main elements and outputs of the workshop discussions are presented in the following sections under their related items.

STAKEHOLDERS IN THE INFORMATION SYSTEM ON AQUATIC GENETIC RESOURCES

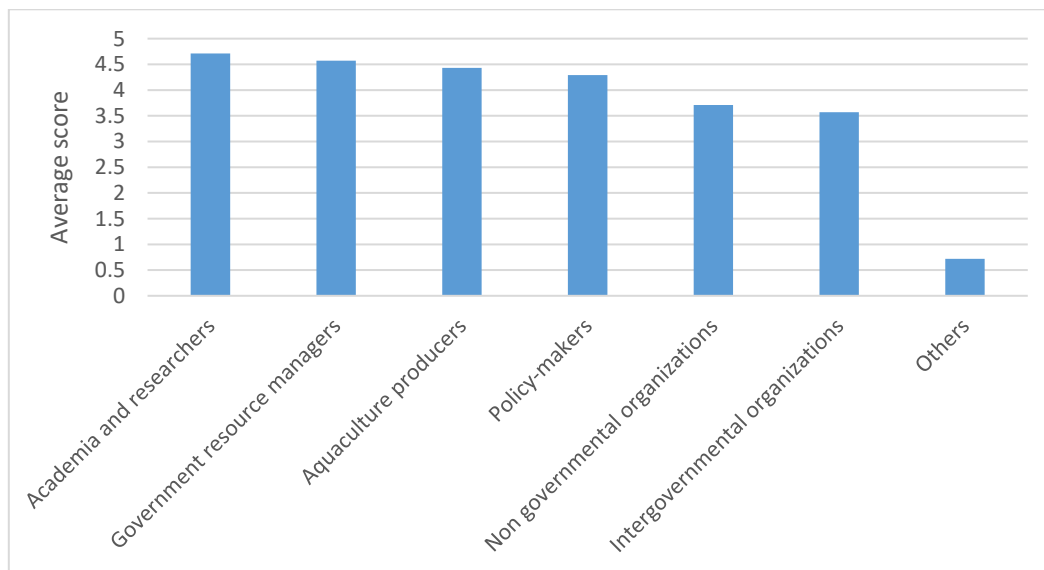
19. The workshop presented the possible primary stakeholders, as identified during the expert workshop on the development of the Registry, that would be most interested in contributing to or using its information. The following discussion, including a poll, indicated that government resource managers were considered the most likely to both use and provide information for the Registry in Asia and the Pacific region, with academia and aquaculture producers falling about equally in second place. This discussion was backed up by an online survey asking participants to score the relative importance of these stakeholders in both contributing information to the Registry (see Figure 1) and also in accessing and utilizing information from the Registry (see Figure 2). The relative scoring again showed aquaculture producers and government resource managers as the most important sources of information. Academia, policy-makers, intergovernmental organizations (IGOs) and non-governmental organizations (NGOs) were ranked lower (in this order) but still relatively important sources of information. A slightly different ranking of scoring was observed in the survey to determine the relative importance of the same primary stakeholders in terms of their access to and utilization of information from the Registry. Again, government resource managers were considered the most important users of the information system together with academia and researchers, followed closely by policy-makers and producers. Again, IGOs and NGOs, whilst still important users of the Registry, were ranked lowest.

Figure 1: Summary of the scoring of participants of the relative importance of primary stakeholders as sources of information for the Registry system



Source: Online survey conducted with workshop participants, 2020.

Figure 2: Summary of the scoring of participants of the relative value of the Registry with regard to accessing and utilizing the system by primary stakeholders



Source: Online survey conducted with workshop participants, 2020.

CLASSIFICATION OF FARMED TYPES

20. An overview of the classification system being adopted in the Registry was presented on the second day. In particular, significant time was allocated to explain the term “farmed type” and present the new classifications developed by FAO (FAO, 2020b), in consultation with an expert group, of the different farmed types being used in aquaculture. It was clarified that the farmed types fall under two different categorizations. The primary categorization refers to the level of domestication from the original wild-sourced farmed type, and the secondary categorization refers to any value-added categories of genetic manipulation used in creating the farmed type. Doubts clarified in the discussion included the need for guidance on correct classification, identification of genetically distinct wild sources as “stocks,” and an initial low priority for entering information on ornamental species. Regarding the last point, it was clarified that the ornamental industry is diverse and develops many farmed types that could likely be defined as “strains” due to their distinctive characteristics, which is their main point of market differentiation. However, due to the concern that these farmed types would dominate the Registry to the detriment of farmed types used for food and agriculture, the ornamental species will not be initially prioritized. It was agreed that an initial focus will be on food species, but that ornamental species could be included at a later stage.

RATIONALE AND ELEMENTS OF THE REGISTRY

21. The first and third day reviewed and discussed the utility of an information system and the elements and content of the proposed Registry, respectively. The lack of current information on farmed aquatic organisms below the level of species was emphasized as the main issue being addressed, with this lack of information inhibiting both development and effective risk assessment and management of AqGR in aquaculture. A poll conducted during the presentation on the rationale for an information system indicated that 40 percent of participants confirmed their countries did not have a national registry for farmed types, whereas 47 percent did not know whether such a registry existed. Furthermore, 80 percent of participants indicated they had experienced confusing uses of terminology to describe aquatic genetic resources.

22. Participants recognized this importance in their comments and, with a poll, indicated that the work to achieve the level of information being proposed would be manageable. While in the African workshop participants practised actual entries using the Survey Solutions questionnaire, this was considered not practical in the virtual environment. Instead, the data structure was explained in a presentation. A demonstration of the functions of the user interface for querying information in the Registry (still under development at the time of the workshop) was also provided. In response to a poll, 56 percent of participants revealed that they agreed with the information proposed to be collected in the Registry, with 44 percent indicating they would like to see some changes, however, none were specifically identified. In another poll, all participants indicated that it would be difficult to source all the information on farmed types being sought for the Registry.

23. Discussion items included the use of local common names, the role of the NFP in entering data into the Registry and seeking contributions to the Registry, and some of the challenges of obtaining accurate data on production of farmed types.

CLARIFICATIONS AND SUGGESTIONS BASED ON THE PLENARY DISCUSSION

24. The Registry would be a searchable database based on a standardized terminology and accessible to national and international stakeholders. It would provide improved capacity to guide informed exchange and development of AqGR, as well as its usefulness in reporting for the different production databases and Sustainable Development Goal (SDG) 2.5 (maintaining genetic biodiversity). Entries would be limited to farmed types representing at least 10 percent of the national production of the species in question (especially for captive propagated farmed types). This is to control the size of the task of identifying farmed types where many exist. Ultimately, the decision to endorse or sign off on entries into the Registry would be at the discretion of the NFP.

25. The species list preloaded list in the Registry is based on the list of species of the Aquatic Sciences and Fisheries Information System and includes the scientific name and a global common name used as the basis for identifying species to enter into the system. Species common names in local languages will not be included in the species preloaded list. Support was provided for including of local common names including in local languages and it was confirmed that users will be prompted to enter a local name for species once they commence data entry for that species.

26. The Registry only allows for species and farmed type names; it cannot be based on species items that are not individual species. In this regard, the Registry may differ from data kept in other data systems (e.g. FishStatJ) (FAO, 2021b). It is hoped that the Registry will start to provide more refined information on what is being farmed at the species level and below. This would include teasing out the components of what is listed elsewhere as “nei” (not elsewhere included).

27. The NFP will be the person responsible for the data submission to FAO but other stakeholders, such as industry representatives, may be valuable sources of information. Mechanisms to clearly define roles and further guide NFPs in the data-collection process are requested to be better identified.

28. FAO is aware that production statistics are usually reported by taxonomic group, species item or by species, and not by farmed types, and therefore this might be challenging for a NFP to retrieve this information. For this reason, the Registry allows the provision of estimates on the production of single farmed types (as proportions of national production for that species rather than absolute value), avoiding the need to enter actual production numbers and avoiding requirements to match up with the official production statistics. From this point of view, the Registry represents an important opportunity to foster the collection of more detailed production data in the future and, consequently, to assess the contribution of the developed farmed types to national aquaculture production. Several participants noted the difficulty of knowing or even of estimating production data for farmed types and it was agreed

that initially the registry would only attempt to collect estimates of the proportional contribution of farmed types to overall species production.

29. The GPA should encourage countries to collect information below the level of species and make this available to the new AqGR Registry.

REVIEW OF THE OUTLINE GLOBAL PLAN OF ACTION FOR AQUATIC GENETIC RESOURCES

30. The second part of the workshop (the fourth and fifth day) focused on the GPA for AqGR. The session commenced with a brief presentation on the history of the Commission and the concept and applications of GPAs with reference to GPAs already developed and being implemented for other agricultural sectors. This was followed by a presentation specifically on the outline of the AqGR GPA which is based on the main needs and challenges identified in the SoW-AqGR. The focus of participation was on reviewing the four Priority Areas of the draft GPA for AqGR, namely:

1. establish and strengthen national and global characterization, monitoring and information systems for AqGR;
2. accelerate appropriate development of AqGR for aquaculture;
3. promote sustainable use and conservation of AqGR; and
4. policies, institutions and capacity building.

31. The participants were divided into three groups (Priority Areas 1 and 2 were considered together). The groups were assigned to virtual break-out rooms with two facilitators in each, for discussion of about one hour for each session. The information on each Priority Area was developed and evolved over each session as the participants rotated between the groups. After three virtual working group sessions, all Priority Areas had defined long-term goals, revised strategic priorities and proposed regionally relevant actions against each strategic priority. In some case above, guiding principles were defined and goals and indicators developed within the Priority Areas.

32. Annex 4 summarizes the resulting outputs from these group discussions for the four Priority Areas. These outputs reflect the priorities in the region for a GPA for AqGR.

CONCLUSIONS AND NEXT ACTIONS

33. The workshop was considered successful in achieving its outputs, which can be summarized as follows:

- identification of the key stakeholders in an information system on AqGR in the region;
- an evaluation of the structure and key information of the Registry;
- identification of challenges 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
- some potential goals and indicators that can be derived from the Registry to monitor the progress against the GPA.

34. Participants gained a comprehensive understanding of farmed types and the Registry designed to collect information on these. The scale of the task to enter this information for a small majority of participants was considered appropriate, but all participants indicated that it would be difficult to access all the information sought on farmed types for all species in their countries. Some changes and additions to information sought were identified, specifically the difficulty of accessing information on production

volumes of farmed types (as opposed to species) and it was agreed that it was only realistic in the first instance to report estimated proportions of production rather than absolute values.

35. Input from this and other regional workshops, together with trial data entry on key species, will be consolidated and the Registry structure and system will thus evolve. By the end of 2020, it is intended to transition from the current platform to a more user-friendly web-based interface for data entry and query. At that point, the system will be reintroduced to the NFPs for data entry.

36. Upon completion of all regional workshops the information will be consolidated, including inputs from the COFI Advisory Working Group on AqGR and technologies, and a full draft GPA will be presented to the ITWG-AqGR and to the Eighteenth Regular Session of the Commission as outlined in Annex 1. The draft GPA will then be negotiated by the ITWG-AqGR and thus there will be further opportunity to provide input to the GPA through the representatives of this working group.

CLOSING REMARKS

37. In a short closing address, Mr Matthias Halwart thanked the participants for their engagement and dedication and highlighted the importance of the work and challenges ahead. He also expressed his gratitude to the organizers, facilitators and Commission for the smooth running of the meeting.

38. Mr Dan Leskien echoed Mr Halwart in thanking the participants and organizers. He noted that though a physical meeting could have provided additional inputs that this meeting was still very fruitful. He noted that the Commission is looking forward to the results of the workshop and the development of the GPA.

39. Mr Graham Mair, again thanks all participants and organizers and closed the meeting.

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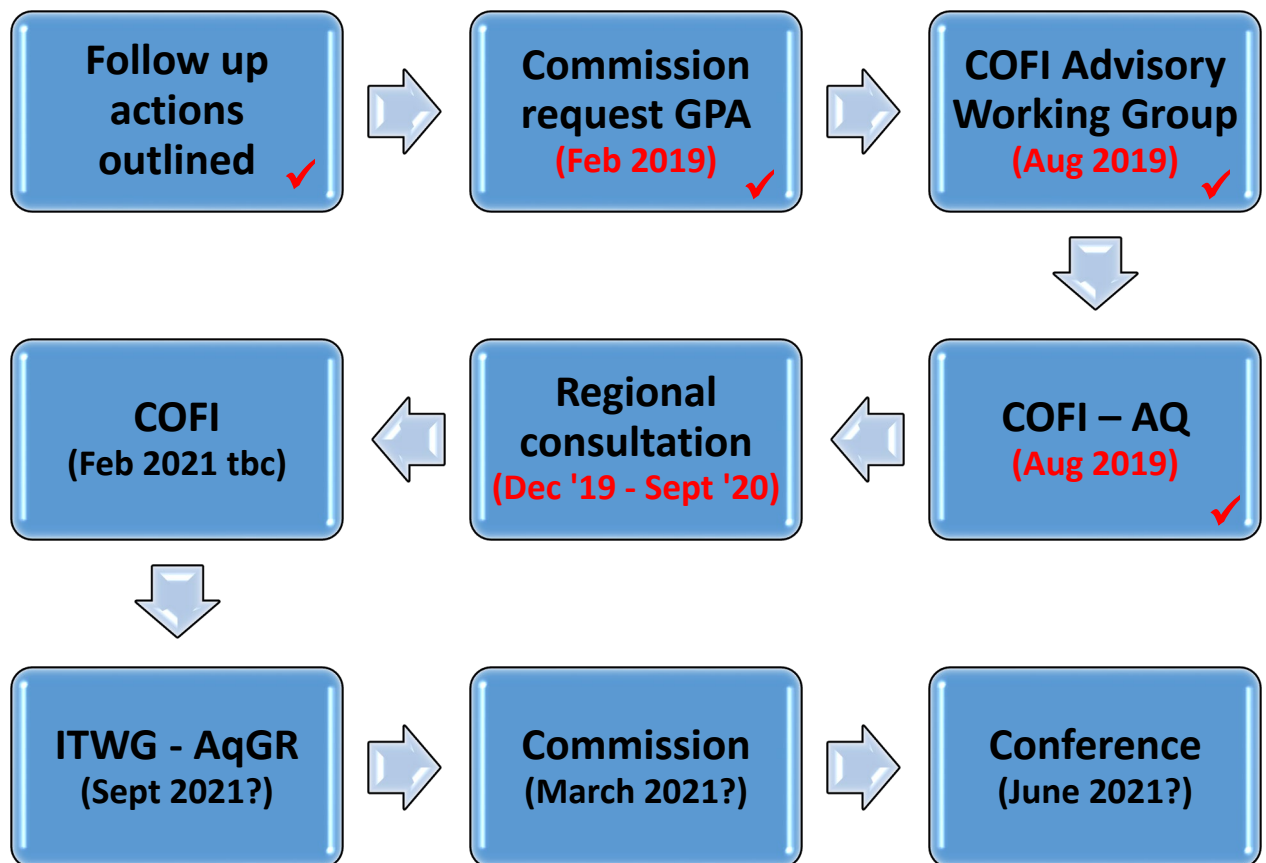
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ANNEX 1 - Putative timeline for development and approval of a Global Plan of Action for Aquatic Genetic Resources

Note: all dates after June 2020 are considered tentative due to the disruption to schedules resulting from the COVID-19 pandemic.



ANNEX 2 - LIST OF PARTICIPANTS

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ANNEX 3 - AGENDA FOR ASIA AND THE PACIFIC REGIONAL WORKSHOP

Session	Title	Objective	Key messages	Format
Day 1: Monday 8 June 07.30–09.00 (1hr 30m)	Introduction to the Registry	Raise awareness of key findings of the SoW-AqGR and rationale for the Registry	<ul style="list-style-type: none"> • The SoW-AqGR identified many needs and challenges • Lack of information on AqGR beyond species is a critical challenge • The value of the Registry to countries and the types of information it will contain 	<ul style="list-style-type: none"> • Welcome remarks (<i>M. Halwart, I. Hoffmann</i>) • Introduction to the workshop (<i>G.C. Mair</i>) • The SoW-AqGR: needs and challenges summary (<i>G.C. Mair</i>) • Discussion • Why do we need a Registry? (<i>D. Lucente</i>) • Discussion
Day 2: Tuesday 9 June 8.00–9.30 (1 hr)	Stakeholders and farmed types	Facilitate understanding of members stakeholders that will use the information system and explain concept of farmed types.	<ul style="list-style-type: none"> • Who will use the information system • The concept of farmed types and the relationship between species, primary and secondary farmed types 	<ul style="list-style-type: none"> • Stakeholders in the Registry (<i>D. Bartley</i>) • Discussion • What are farmed types? (<i>G.C. Mair</i>) • Discussion
Day 3: Wednesday 10 June 8.00–9.30 (1hr 30m)	Information content for the Registry	Seek feedback on the information content of the Registry	<ul style="list-style-type: none"> • Are we collecting the correct information on species and farmed types? • Is there anything missing in the Registry? 	<ul style="list-style-type: none"> • Data queries from the system (<i>G.C. Mair</i>) • Species level data collection (<i>D. Lucente</i>) • Discussion • Feedback on farmed type data collection (<i>D. Lucente</i>) • Discussion
Day 4: Thursday 11 June 8.00–9.30 (1hr 30m)	Introduction to the GPA-AqGR	Understand the role of GPAs and the draft priorities for a GPA for AqGR	<ul style="list-style-type: none"> • What is the value of a GPA? • What GPAs achieved in other sectors • What is the structure of the GPA-AqGR? 	<ul style="list-style-type: none"> • What is a Global Plan of Action? (<i>S. Redfern</i>) • Q&A • The outline of the GPA-AqGR & introduction to working groups (<i>G.C. Mair</i>) • Discussion

Session	Title	Objective	Key messages	Format
				<ul style="list-style-type: none"> Working Group Session 1
Day 5: Friday 12 June 8.00–9.30 (1hr 30m)	Feedback on the GPA-AqGR	Seek feedback from participants on regional priorities, actions and indicators for the GPA-AqGR	<ul style="list-style-type: none"> Suggested changes to Priority Areas and Strategic Priorities Possible actions on Strategic Priorities Possible indicators 	<ul style="list-style-type: none"> Working Group Session 2 Working Group Session 3
Day 6: Friday 22 June 8.00–9.00 (1 hr)	Discussion on the final Report	To present key outcomes of workshop.	<ul style="list-style-type: none"> Key feedback on Registry Key suggested changes to Registry structure. Summary of key changes to GPA-AqGR 	Presentation on Registry feedback (<i>G.C. Mair</i>) Discussion Presentation on GPA-AqGR development (<i>G.C. Mair</i>) Discussion Closing remarks (<i>M. Halwart, D. Leskien and G.C. Mair</i>)

ANNEX 4 - PRIORITY AREAS OF THE DRAFT GPA FOR AQUATIC GENETIC RESOURCES: LONG-TERM GOALS, STRATEGIC PRIORITIES, ACTIONS AND INDICATORS

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, sustainably resourced

Strategic priority	Actions
<p>Strategic Priority 1.1: Promote the globally standardized use of terminology, nomenclature and descriptions of AqGR</p> <p><i>Goal: Greater harmonization of terminology used to describe AqGR in the aquaculture community at all levels</i></p> <p><i>Indicator: Guidance book widely agreed and used as global standard. Development of a benchmark on terminology usage in aquaculture literature</i></p>	<ul style="list-style-type: none"> • Developing and distributing information material on the terminology and nomenclature (e.g. a glossary and popular articles) for distribution to IGO, academia, researchers and industry, through social media • Promote the usage of key nomenclature by major influencers (industry leaders, educators, regulators) • Development of a guidance book on standardized use of AqGR nomenclature
<p>Strategic Priority 1.2: Improve and harmonize national and regional reporting procedures and expand existing species-based information systems to cover unreported AqGR including ornamental species and micro-organisms</p> <p><i>Goal: Many countries utilizing the FAO Registry or adapting their existing information systems to improve the reporting of AqGR below the level of species, harmonized with existing species-based systems</i></p> <p><i>Indicators:</i> <i>Number of countries and the number of species and farmed types reported in the Registry in those countries</i></p> <p><i>Number of countries utilizing the Registry for national reporting of AqGR</i></p> <p><i>Number of countries that have associated national information systems with the Registry</i></p>	<ul style="list-style-type: none"> • Development of national and subnational reporting procedures for AqGR • Review information sources on AqGR within countries and identify opportunities and actions to link and harmonize these information sources

Strategic priority	Actions
<p data-bbox="204 248 724 539">Strategic Priority 1.3: Develop, promote and commercialize/institutionalize national, regional and global standardized information systems for the collection, validation, monitoring, reporting and updating on AqGR below the level of species (i.e. farmed types and stocks)</p> <p data-bbox="204 580 679 723"><i>Goal: Long-term resourcing and adoption of a metadata standard to facilitate exchange of AqGR records between information systems</i></p> <p data-bbox="204 763 699 981"><i>Indicator: Resourcing is available for the long-term maintenance and development of the information system and the number of countries utilizing the system as part of their national recording systems</i></p>	<ul data-bbox="756 248 1362 465" style="list-style-type: none"> • Incentivize the utilization of the information system (e.g. through licensing and accreditation systems) • Seek long-term funding resources for long-term information systems nationally, regionally and internationally

Priority Area 2: ACCELERATE APPROPRIATE DEVELOPMENT OF AQGR FOR AQUACULTURE

Long-term goal: Rational exploitation of AqGR and development of resilient farmed types with improved performance for sustainable, profitable aquaculture

Strategic priority	Actions
<p>Strategic Priority 2.1: Raise awareness and improve understanding of the properties, roles and risks of genetic improvement technologies and their application to AqGR with special consideration for conventional selective breeding and emerging technologies</p> <p><i>Goal: Acceleration of the application of genetic improvement technologies appropriate to local needs and related to the risks and benefits of these technologies in developing countries with a focus on priority species important to ensure food security and economic benefit</i></p> <p><i>Indicator: Number of training and education programmes utilizing guidelines or tools or methods that incorporate assessing risks and benefit analysis in the process of developing genetic improvement strategies and programmes</i></p>	<ul style="list-style-type: none"> • Develop and promote guidelines on risks and benefits of genetic technologies • Develop or support the role of biosafety committees in the development of genetic resources for aquaculture
<p>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</p> <p><i>Goal: Doubling the contribution of improved farmed types to aquaculture production in the next ten years</i></p> <p><i>Indicator: Country reports and the next state of the world report on AqGR. Number of improved types in production and production volume of improved farmed types reported by countries. Registry data</i></p>	<ul style="list-style-type: none"> • Encourage public–private partnerships to engage in selective breeding initiatives • Promote awareness and access to available technologies on selective breeding programmes for use in the development of priority species
<p>Strategic Priority 2.3: Establish national species and farmed types development strategies and programmes responsive to market needs to unlock the full potential of</p>	<ul style="list-style-type: none"> • Foresight and market analysis in government planning including private sector engagement

Strategic priority	Actions
<p>AqGR, including identification of appropriate private sector engagement. 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</p> <p><i>Goal: More countries in the region having national strategies, particularly for the species contributing most to nutritional and food security and economic benefits</i></p> <p><i>Indicator: Number of countries with strategies and programmes for genetic improvement and the number reported in the Registry</i></p>	<ul style="list-style-type: none"> • Develop and implement strategies and policies for national and regional breeding programmes • Design and implement national and regional breeding programmes, for both native and non-native species • Monitor and evaluate the impact of policy reviews and changes • Implementation of breeding strategies and programmes, including uptake by producers and the delivery of benefits of improved farmed types to the market • Capacity building and technical support to the development of appropriate national and regional strategies • Monitor the impact of non-native species and introduced farmed types with reference to risk assessment • Encourage public and/or private entities to support research on the genetic improvement of economically important aquaculture species
<p>Strategic Priority 2.4: Conduct appropriate training at various levels within the aquaculture industry, including on the development and utilization of optimum farmed types and capacity building in genetic improvement, particularly in quantitative genetics</p> <p><i>Goal: Human resources are no longer a limitation to the appropriate implementation of genetic improvement and the adoption of improved farmed types in aquaculture. Capacity development programmes to ensure long-term availability of capacity including succession planning</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Create a database /directory and/or a network of aquaculture geneticists in the region • Conduct regular training needs assessments at the national and regional levels • Encourage funding agencies to support capacity building on the identified areas (e.g. quantitative genetics) which lack the necessary human resource • Conduct national and/or regional workshops/conferences to discuss updates/new technologies in the development of aquatic genetic resources • Educate and train key stakeholders on genetic improvement by providing training and technical support for the breeding activities of farming communities; and the integration of improved husbandry practices on aquatic genetic resources development programs.

Priority Area 3: PROMOTE SUSTAINABLE USE AND CONSERVATION OF AQGR – TO INCLUDE NON-NATIVE AND NATIVE SPECIES AND FARMED TYPES

Long-term goal: By 2030, AqGR are sustainably used and conserved for the economic, environmental, cultural and intrinsic benefit of all members of society

Strategic priority	Actions
<p>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 in order to optimize benefits and reduce their negative impacts on both farmed and wild relative AqGR</p> <p><i>Goal: Risk-based policies and controls developed and used</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Identify potential environmental and economic harm from non-native species and farmed types • Conduct economic studies of the expected benefits from the introduction of AqGR • Assess introduction of AqGR and non-native species into environment • Align national legislation and policies with international protocols and agreements • Ensure that genetic components are added into import risk analysis
<p>Strategic Priority 3.2: Identify native and non-native wild relatives of AqGR most at risk to ensure that they are managed sustainably and appropriate conservation measures are implemented where necessary</p> <p><i>Goal: Wild relatives of AqGR are not threatened</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Promote <i>in situ</i> conservation, including habitat protection and aquatic protected areas, as the primary measure to protect threatened wild relatives of AqGR. • Develop list of at-risk wild relatives • Conduct stock assessments and field surveys of wild relatives potentially at risk • Review existing conservation initiatives and identify and address gaps
<p>Strategic Priority 3.3: Monitor and anticipate the current and future impacts of environmental change on AqGR and respond accordingly</p> <p><i>Goal: Monitoring system for impacts of environmental change on AqGR and wild relatives established and functioning</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Develop climate change adapted farmed types for aquaculture • Identify key environmental and production variables to be monitored • Review existing initiatives and identify and address gaps • Screen wild types for adaptive qualities to climate change including the mapping of their distribution
<p>Strategic Priority 3.4: Combined with 3.2</p>	
<p>Strategic Priority 3.5: Identify threatened wild relatives of AqGR that are critical to aquaculture</p>	<ul style="list-style-type: none"> • Review existing initiatives and identify and address gaps

Strategic priority	Actions
<p>development and to wild capture fisheries and to prioritize these for <i>in situ</i> conservation</p> <p><i>Goal: List of priority species developed and incorporated into management plans</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Conduct stock assessments, and field and industry surveys
<p>Strategic Priority 3.6: Actively incorporate conservation of AqGR in the development of fisheries management plans, particularly for threatened species</p> <p><i>Goal: Fisheries are managed so as not to put AqGR at risk</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Review existing fishery management plans and identify and address gaps and needed changes • Include conservation sector in the development of fishery management approach
<p>Strategic Priority 3.7: Aquatic protected areas should be considered in the development of <i>in situ</i> conservation of key AqGR</p> <p><i>Goal: Sectoral and cross - sectoral aquatic protected areas established where appropriate and include sectors such as forestry and land use</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Review existing initiatives and identify and address gaps • Engage fishing and aquaculture industry groups and environmental management groups in the development of <i>in situ</i> conservation of AqGR • Promote co-management practices
<p>Strategic Priority 3.8: Identify the priority threatened and important AqGR as candidates for effective <i>ex situ</i> conservation in cases where they can supplement breeding programmes and restocking programmes, and where <i>in situ</i> conservation has not worked or is impractical</p> <p><i>Goal: Threatened and important AqGR conserved ex situ as a backup for aquaculture development and in situ conservation</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Develop and promote guidelines and best practices for both <i>in vivo</i> and <i>in vitro ex situ</i> conservation. • Develop methodologies <i>ex situ</i> conservation • Review existing initiatives and identify and address gaps • Conduct genetic resource management in <i>ex situ</i> conservation to maintain genetic diversity and understand impact on wild populations • Conduct science-based restocking programmes

Strategic priority	Actions
<p>Strategic Priority 3.10: Include non-food AqGR, such as ornamental species, alongside that of food fish, and identify related risks and needs, especially in regard to invasive species</p> <p><i>Goal: Risk-based policies and controls developed and used</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Review existing non-food AqGR initiatives and identify and address gaps • Align and list government ministries responsible for regulation use and exchange of AqGR for food and non-food uses • Monitor the use and impact of AqGR for non-food on AqGR for food
<p>Strategic Priority 3.11: Develop Best Practices for the use and exchange of AqGR and genetic technologies including transgenic and gene edited secondary farmed types under national and international legal instruments</p> <p><i>Goal: Best practices used by industry and governments</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Develop Material Transfer Agreements • For national policy makers (especially representatives of National Biosafety Committee in countries where this has been created/established) to revisit national legal instruments covering use and exchange of AqGR; and for them to be actively involved/engaged in global discussions on whatever best practices can be agreed upon
<p>Strategic Priority 3.12: Increase public awareness and communication on risks and benefits of new genetic technologies, e.g. transgenic and gene edited farmed types, on AqGR development</p> <p><i>Goal: Public oversight instituted over aquaculture and other related industries</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Development and distribution of IEC materials (either in print, social media or whatever would be the most effective platform) • Promote public discussions or fora on the same

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	Actions
<p>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 in consideration of the national policies</p> <p><i>Goal: Consideration of AqGR widely included in national policy frameworks</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Support capacity building and training programmes in policy and enforcement compliance • Support preparation of comparative studies of the governance models of different countries. • Raise understanding and awareness of policy-makers and address misconceptions • Create an enabling environment for the private sector
<p>Strategic Priority 4.2: Develop, review and align, as appropriate, national strategies covering <i>in situ</i> and <i>ex situ</i> conservation of AqGR and their sustainable use</p> <p><i>Goal: Sustainable and applicable strategy developed and operated</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Development of a framework study on AqGR to identify the current status of <i>in situ</i> and <i>ex situ</i> conservation and sustainable use • Identify and consult stakeholders on the national strategy • Identify and address gaps in existing national strategies for example certification of genetically improved seed stocks
<p>Strategic Priority 4.3: Support improved global, national and regional communication on AqGR and raise awareness of the importance of AqGR among relevant stakeholders and public</p> <p><i>Goal: Stakeholders and public are better informed about aquaculture and the opportunities and risks of AqGR improvement in particular</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Development of social media materials • Development of outreach models to increase awareness • Produce social and public campaign material and activities • Develop communication materials to raise awareness on aquaculture • Establish targeted dialogues with relevant sectors. • Address misconceptions about the sector

Strategic priority	Actions
<p>Strategic Priority 4.4: Promote the understanding of the important roles and strengthen the involvement of key stakeholders in AqGR, including women, youth, small-scale producers and indigenous people and local communities in the conservation, sustainable use and development of AqGR</p> <p><i>Goal: Conservation and sustainable use is fully supported by all stakeholders</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Encourage co-management of AqGR by women, youth, small-scale producers and indigenous people and local communities
<p>Strategic Priority 4.5: Support reviews of national legislation governing AqGR including responsible use and exchange based on appropriate assessments</p> <p><i>Goal: Adoption of risk-based assessments on exchange of AqGR</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Incorporate AqGR issues into risk-assessment processes • Create extension and outreach programmes
<p>Strategic Priority 4.6: Promote 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</p> <p><i>Goal: International agreements have been fully implemented taking in to account the specific needs of the sector</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Consider negotiating a treaty, allowing exceptions to the CBD, to facilitate open access to and exchange of key AqGR food species (similar to the International Treaty on Plant Genetic Resources for Food and Agriculture)
<p>Strategic Priority 4.7: Establish or strengthen national institutions, including national focal points, for planning, implementing and monitoring AqGR measures, for aquaculture and fishery sector development</p>	<ul style="list-style-type: none"> • Establish better linkage and mechanism to enhance coordination and collaboration between institutions on technology policy implementation and information sharing • Establish capacity building and networking activities

Strategic priority	Actions
<p><i>Goal: National institutions, including national focal points established or strengthened</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Mobilize resources for AqGR
<p>Strategic Priority 4.8: Establish or strengthen national and regional institutions for education and research on AqGR and establish intersectoral coordination of their conservation, sustainable use and development</p> <p><i>Goal: Institutions for education and research have been established as well as intersectoral coordination</i></p> <p><i>Indicator: National, regional and international networks established</i></p>	<ul style="list-style-type: none"> • Governments to support the establishment and strengthening of existing national, regional and international networks that will share information, experiences and theoretical knowledge on AqGR and their management • Increase international financial support for research and development on AqGR
<p>Strategic Priority 4.9: Strengthen national human 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</p> <p><i>Goal: Capacity increased</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Build capacity through the establishment of training programmes, field visits and expert exchange programmes • Standardize capacity building and education across regions • Creation of extension and outreach programmes • Provide certification to local farmers
<p>Strategic Priority 4.10: Strengthen efforts to mobilize resources, including financial resources for the conservation, sustainable use and development of AqGR</p> <p><i>Goal: Sufficient resources mobilized</i></p> <p><i>Indicator: None Provided</i></p>	<ul style="list-style-type: none"> • Identify channel for financial support • Strengthen the countries' and regions' exchange of resources, including technology transfer, South –South cooperation
<p>Strategic Priority 4.11: Raise the profile of aquaculture at the global, regional and national levels</p>	<ul style="list-style-type: none"> • Raise awareness and profile on aquaculture specifically • Reinforce discussions on aquaculture specifically

Strategic priority	Actions
<i>Goal:</i> Establishment of a global forum dealing specifically with aquaculture <i>Indicator: None Provided</i>	

In June 2020, the Food and Agriculture Organization of the United Nations (FAO) held a virtual regional workshop for Asia and the Pacific Region 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 Asia and the Pacific Region 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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