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联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Продовольственная и сельскохозяйственная организация Объединенных Наций | Organización de las Naciones Unidas para la Alimentación y la Agricultura | منظمة الأغذية والزراعة للأمم المتحدة

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 6 of the Provisional Agenda

Fifteenth Regular Session

Rome, 19 – 23 January 2015

QUESTIONNAIRE FOR THE PREPARATION OF COUNTRY REPORTS FOR *THE STATE OF THE WORLD'S AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE*

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I. INTRODUCTION

1. At its Thirteenth Regular Session, the Commission noted that the preparation of a country-driven *State of the World's Aquatic Genetic Resources for Food and Agriculture* would provide countries with opportunities for assessing the status of their aquatic genetic resources for food and agriculture and enhancing the contributions of aquatic genetic resources to food security and rural development, while assisting countries in determining their needs and priorities for the conservation and sustainable use of aquatic genetic resources for food and agriculture, and raising awareness among policy-makers.[1]

II. COUNTRY REPORTS

2. As with the other sectors, *The State of the World's Aquatic Genetic Resources for Food and Agriculture* will be compiled from Country Reports and Guidelines are necessary in order to assist countries in completing those reports. Guidelines for the preparation of Country Reports were presented at the Commission's 14th session.[1]

[1] CGRFA-14/13/Inf.25.

APPENDIX

QUESTIONNAIRE FOR PREPARATION OF COUNTRY REPORTS FOR *THE STATE OF THE WORLD'S AQUATIC GENETIC RESOURCES FOR FOOD AND AGRICULTURE*

Country report supporting the preparation of

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

Country _____

Prepared by _____

Date _____

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I. EXECUTIVE SUMMARY

The Country Report should contain an executive summary of 2-3 pages highlighting the main findings of the analysis and providing an overview of key issues, constraints and existing capacity to address the issues and challenges. The executive summary should indicate trends and driving forces and present an overview of the proposed strategic directions for future actions aimed at the national, regional and global levels.

Please include the Executive Summary here.

II. INTRODUCTION

The main objective of the Introduction is to present an overview that will allow a person who is unfamiliar with the country to appreciate the context for the Country Report. The Introduction should present a broad overview and present background information from your country on farmed aquatic species, their wild relatives and culture based fisheries. Detailed information should be provided in the main body of the Country Report. Countries may wish to consider developing their Introductions after completing the main body of their Country Reports.

Please write the overview here

III. MAIN BODY OF THE COUNTRY REPORT

Aquaculture, culture-based fisheries and capture fisheries, have differing importance among countries. The structure of chapters in each Country Report will reflect those differences. Countries which do not have a well-developed aquaculture sector but where wild relatives of farmed aquatic species are located, should report on these resources. Countries should decide how to prioritize the coverage of their Country Reports depending on their aquatic genetic resources.

Chapter 1: The Use and Exchange of Aquatic Genetic Resources of Farmed Aquatic Species and their Wild Relatives within National Jurisdiction

The main objective of Chapter 1 is to provide annotated inventories of aquatic genetic resources (AqGR) of farmed aquatic species and their wild relatives.

Farmed aquatic species

1. Over the last 10 years, has production been: ***Please mark appropriate box.***

- Increasing;
- Stable;
- Decreasing;
- Stopped;
- Still in Research and Development;
- Not known

2. What is the expected trend over the next 10 years? ***Please mark appropriate box.***

- Increasing;
- Stable;
- Decreasing;
- Stopped;
- Still in Research and Development;
- Not known

3. Is the identification and naming of farmed species, subspecies, hybrids, crossbreeds, strains, triploids, other distinct types accurate and up- to-date? ***Please mark appropriate box.***

- Yes
- No
- Mostly yes
- Mostly no

Please include any explanation or additional information here.

4. To what extent are genetic data for farmed aquatic organisms available and used in management? ***Please mark appropriate box.***

- Not at all
- To a minor extent
- To some extent
- To a great extent

Please add any explanation here.

5. To what extent are the aquatic organisms farmed in your country sourced as wild seed or from wild brood stock? ***Please mark appropriate box.***

- Not at all
- To a minor extent
- To some extent
- To a great extent

Please add any explanation here.

6. What proportions (%) of breeding programmes and efforts for the genetic improvement of farmed aquatic species in your country are being managed by the public sector (government research, universities etc.), the private sector, and public-private partnerships?

- Percent managed by public sector. ***Please enter appropriate percent here***
- Percent managed by private sector. ***Please enter appropriate percent here***
- Percent managed by private /public partnership. ***Please enter appropriate percent here***

Please add any explanation here.

7. To what extent do genetically improved aquatic organisms, including hybrids, crossbreeds, strains, triploids and other distinct types contribute to aquaculture production? ***Please mark appropriate box.***

- Not at all
- To a minor extent
- To some extent
- To a great extent

8. Please list most significant examples where genetic improvement contributed to increased production and indicate whether they were developed by public, private or public/private partnerships.

Species	**Type of genetic improvement** ***select all that apply***	**Developed by** ***select all that apply***
List species name	• Traditional selective breeding • Hybrids • Triploids and other polyploids • Mono-sex production • Other	• Private sector • Public sector • Public/private partnership
Continue as needed		

9. Please complete Table 1.1

Table 1.1 Aquatic genetic resources (AqGR) of farmed aquatic species in (Country)

Farmed species	**Genetic type**	**Availability of genetic data**	**Trends in production**	**Future trends in production**	**Genetic improvement**	**Future genetic improvement**	**Comments**
List species as scientific names (put in brackets the most widely used national common name or names).	***Indicate all genetic types that apply to the species.***	Are genetic data available for farmed populations? If yes, give summary details in comments	Over the last 10 years, production has been (***mark one)***:	Expected trend over the next 10 years is that production will (***mark one)***:	Which genetic technologies are currently being used on the species ***(mark all that apply)***	Which genetic technologies are most likely to be used for genetic improvement over the next 10 years? (***mark all that apply)***:	For example important traits improved, how data are used in management or name of breed
	- Wild type - Selective bred type - Hybrids - Cross breeds - Strains - Varieties - Polyploids	- Yes - No - Not known	- Increasing - Stable - Decreasing - Stopped - Not known	- Increasing - Stable - Decreasing - Stopped - Not known	- Selective breeding - Hybridization - Polyploidy (chromosome set manipulation) - Monosex production - Marker assisted selection - Other (specify in comment)	- Selective breeding - Hybridization - Polyploidy (chromosome set manipulation) - Monosex production - Marker assisted selection - Other (specify in comment)	
Add species as necessary							

10. Which aquatic species in your country are thought to have potential for domestication and future use in aquaculture?

Species	**Is the species native to your country?**	**Comments**
Please add species name here	• Yes • No • Not known	
Continue adding rows as needed		

11. Please list the aquatic genetic resources of farmed aquatic species your country has transferred or exchanged with other countries over the past 10 years.

Species	**Genetic alteration of exchanged material**	**Details of transfer or exchange**	**Type of genetic material exchanged**	**Country or countries involved with exchange**
Please add species name	• No genetic alteration • Traditional selective breeding • Hybrids • Triploids and other polyploids • Mono-sex production • Other	- Import - Export	- DNA - Genes - Gametes - Tissues - Embryos -Living specimens - Other	
Continue adding rows as needed				

Wild relatives of farmed aquatic species

12. Please list any wild relatives of farmed species in your country and indicate how they are used.

Species	**Use (*mark all that apply*)**	**Comments**
Add species name here	• Capture fisheries • Recreational fishing • Aquaria • Biological control • Research and development	

	• Other – ***please specify in comments***	
Continue listing species as needed		

13. Please list the aquatic genetic resources of wild relatives of farmed aquatic species your country has transferred or exchanged with other countries over the past 10 years.

Species	**Details of transfer or exchange** *mark all that apply*	**Type of genetic material exchanged**	**Country**
Please add species name here	• Import • Export	- DNA - Genes - Gametes - Tissues - Embryos -Living specimens	
Continue listing species as needed			

14. Please complete Table 1.2

Table 1.2 Aquatic genetic resources of wild relatives of farmed aquatic species in (Country)

Target species, stocks or other management units	**Characteristics of species**	**Capture fisheries**	**Management measures**	**Availability of genetic data**	**Use of genetic data in management**	**Trends in catches**	**Future trends in catches**	**Ecosystem(s) where the fishery is located**	**Changes in ranges and habitats**	**Reasons for change in ranges and habitat**
For each row, list the species as scientific names (put in brackets the most widely used national common For each species, include the named stocks and name of other management units if known)	Is the species ***(mark as appropriate):***	Is this species targeted by capture fisheries?	Are there any management measures in place?	Are genetic data available for the fishery?	Are genetic data used in management?	Over the last 10 years, catches have been:	Expected trend over the next 10 years.	Indicate the ecosystem where the fishery is located (***mark all that apply)***	The habitat or range is	What are likely reasons for changes? (***mark all that apply)***

	- Straddling Transboundary - Introduced - Native	Yes - No - Not known	- Yes - No - Not known	- Yes - No - Not known	- Yes - No - Not known	- Increasing - Stable -Decreasing - Depleted - Not known	- Increasing - Stable - Decreasing - Depleted-Not known	- Intertidal - Coastal in EEZ - High Seas - Lake - Reservoir - River, - Swamp - Other (specify)	- Increasing - Decreasing - Stable - Not known	- Loss of habitat - Climate - Invasive species - Pollution Rehabilitation - Others - Not known
Please add additional species as necessary										

Chapter 2: Drivers and Trends in Aquaculture: Consequences for Aquatic Genetic Resources within National Jurisdiction

The main objective of Chapter 2 is to review the main drivers and trends that are shaping aquaculture and their consequences for aquatic genetic resources.

15. Please indicate the ways the aquatic genetic resources (AqGR) of **farmed aquatic species** have been impacted by the following drivers. Please give examples of positive and negative impacts for specific drivers.

Driver impacting aquaculture	**Effect on AqGR** ***Mark appropriate box***	**Comments** ***List examples or other relevant information***
Human population increase	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Increased wealth and demand for fish	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Governance (ability of government, industry and the public to work together in managing resources)	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Climate change	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Competition for resources, especially freshwater	• strongly positive • positive • negative • strongly negative effect	

	• no effect • unknown	
Changes in values and ethics of consumers	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Please add additional drivers if needed	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	

16. Please indicate the ways the aquatic genetic resources of **wild relatives of farmed aquatic species** have been impacted by the following drivers. Please give examples of positive and negative impacts for specific drivers.

Drivers impacting wild relatives of farmed aquatic species	**Effect on AqGR** ***Mark appropriate box***	**Comments** ***List examples or other relevant information***
Human population increase	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Increased wealth and demand for fish	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Governance (ability of government, industry and the public to work together in managing resources)	• strongly positive • positive	

	• negative • strongly negative effect • no effect • unknown	
Climate change	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Competition for resources, especially freshwater	• strongly positive • positive • negative • strongly negative effect • no effect	
Changes in values and ethics of consumers	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Others ***Add other drivers as necessary***	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	

17. What countermeasures might be taken to reduce adverse impacts on the aquatic genetic resources that sustain current aquaculture and/or provide for its future development?

Describe countermeasures

Biotechnologies

18. To what extent have the following biotechnologies been used in your country for the genetic improvement of farmed aquatic organisms.

Selective breeding	○ Not at all ○ To a minor extent ○ To some extent ○ To a great extent
Hybridization	○ Not at all ○ To a minor extent ○ To some extent ○ To a great extent
Polyploidy (chromosome set manipulation)	○ Not at all ○ To a minor extent ○ To some extent ○ To a great extent
Monosex production	○ Not at all ○ To a minor extent ○ To some extent ○ To a great extent
Marker assisted selection	○ Not at all ○ To a minor extent ○ To some extent ○ To a great extent
Gynogenesis/androgenesis	○ Not at all ○ To a minor extent ○ To some extent ○ To a great extent
Other ***continue adding rows as necessary***	○ Not at all ○ To a minor extent ○ To some extent ○ To a great extent

19. Please indicate the ways aquatic genetic resources of the wild relatives of farmed aquatic species have been impacted by drivers that are changing aquatic ecosystems. Please give countermeasures might be taken to reduce adverse consequences for the aquatic genetic resources that sustain capture fisheries on wild relatives of farmed species.

Drivers that are changing aquatic ecosystems	**Effect on AqGR** ***mark appropriate box***	**Countermeasures and examples**
Habitat loss and degradation	• strongly positive • positive	

	• negative • strongly negative effect no effect • unknown	
Pollution of waters	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Increased frequency of extreme climatic events and long-term climate change	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Establishment of invasive species	• strongly positive • positive • negative • strongly negative effect no effect • unknown	
Introductions of parasites and pathogens	• strongly positive • positive • negative • strongly negative effect no effect • unknown	
Impacts of purposeful stocking and escapes from aquaculture.	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	

Capture fisheries	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	
Other drivers ***Continue listing other drivers that may be important***	• strongly positive • positive • negative • strongly negative effect • no effect • unknown	

Chapter 3: *In Situ* Conservation of Aquatic Genetic Resources of Farmed Aquatic Species and their wild Relatives within National Jurisdiction

The main objective of Chapter 3 is to review the current status and future prospects for the *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives within national jurisdiction for food and agriculture.

The specific objectives are as follows:

- To review the current and likely future contributions to *in sit*u conservation of aquatic genetic resources of farmed aquatic species and their wild relatives by those who use them in responsible and well managed capture fisheries, aquaculture, and culture-based fisheries.
- To identify and describe any existing and planned aquatic protected areas that are contributing, or will contribute, to *in situ* conservation of aquatic genetic resources of wild relatives of farmed aquatic species.
- To identify and describe any major existing and planned efforts for the *in situ* conservation of threatened or endangered aquatic genetic resources (farmed and wild).
- To review needs and priorities for the future development of *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives.

Overview of the current status and future prospects for the *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives

20. To what extent are responsible and well managed aquaculture and culture-based fisher*ies* contributing to *in situ* conservation of the aquatic genetic resources of farmed aquatic species and their wild relatives that sustain their current productivity and provide for their future productivity and sustainability, in changing environments and demand scenarios.

Please mark appropriate box.

- To a great extent
- To a limited extent
- Not at all
- Not applicable

Please include any additional information

21. To what extent are existing contributing to *in situ* conservation of aquatic genetic resources of wild relatives of farmed aquatic species?

Please mark appropriate box.

- To a great extent
- To a limited extent
- Not at all
- Not applicable

Please include any additional information

22. Please provide ex*amples* of current or planned activities for the *in situ* conservation of endangered or threatened farmed species and their wild relatives with demonstrated or potential importance for aquaculture, culture-based fisheries, and capture fisheries.

Please describe examples

23. Please indicate the importance of the following for *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives in your country

Objectives of *in situ* conservation	**Importance**
Preservation of aquatic genetic diversity	- Not important - Somewhat important - Very important - Unknown importance
Maintain good strains for aquaculture production	- Not important - Somewhat important - Very important - Unknown importance
Meet consumer and market demands	- Not important - Somewhat important - Very important - Unknown importance
To help adapt to impacts of climate change	- Not important - Somewhat important - Very important - Unknown importance
Future breed improvement in aquaculture	- Not important - Somewhat important - Very important - Unknown importance
Please continue listing any other objectives as needed	- Not important - Somewhat important - Very important - Unknown importance

Review of the *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives through their use in responsible and well managed aquaculture and culture-based fisheries

24. Is the *in situ* conservation of aquatic genetic resources included as an objective in the management of aquaculture and/or culture-based fisheries in your country?

Please mark appropriate box

- Yes
- Not yet, but planned to be included
- No
- Unknown

If yes, please give examples

25. To what extent are collectors of wild seed and brood stock for aquaculture and culture-based fisheries contributing to the conservation of aquatic genetic resources by maintaining habitats and/or limiting the quantities collected?

Please mark appropriate box

- To a great extent
- To a limited extent
- Not at all
- Not applicable

Please include any additional details

Review of the *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives through their use in responsible and well managed capture fisheries

26. Is the conservation of aquatic genetic resources of wild relatives of farmed aquatic species included as an objective in the management of any capture fisheries in your country?

Please mark appropriate box

- Yes
- Not yet, but under development
- No
- Unknown

If yes, please give examples

27. Do capture fisheries in your country targeting wild relatives of farmed aquatic genetic resources have a fisheries management plan?

Species being fished	**For each fishery is a management plan in place?**	**Comments** *include any additional details*
Please list species	• Yes • No	
Continue adding rows as necessary	• Yes • No	

Review of the *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives through the establishment and management of aquatic protected areas

28. Please list any aquatic protected areas in your country that are contributing to the *in situ* conservation of aquatic genetic resources of wild relatives of farmed aquatic species and an assessment of effectiveness

Aquatic protected area	**Effectiveness of conserving Aquatic Genetic Resources**	**Comments** *provide any additional information*
	• Very effective • Somewhat effective • Not effective • Unknown	
Please continue as necessary		

Chapter 4: *Ex Situ* Conservation of Aquatic Genetic Resources of Farmed Aquatic Species and their Wild Relatives within National Jurisdiction

The main objective of Chapter 4 is to review the current status and future prospects for the *ex situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives.

The specific objectives are:

- To review existing *ex situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives in aquaculture facilities, culture collections and gene banks, research facilities, zoos and aquaria;

- To review the contributions that various stakeholders are making to the *ex situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives;
- To review needs and priorities for the future development of *ex situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives, including any that are threatened or endangered.

Review of existing and planned collections of live breeding individuals of aquatic genetic resources of farmed aquatic species and their wild relatives

29. Please list your country's existing collections of live breeding aquatic organisms that can be considered as contributing to the *ex situ* conservation of aquatic genetic resources. This includes not only collections of species farmed directly for human use, but also collections of live feed organisms (e.g., bacterial flocs, yeasts, microalgae, rotifers and brine shrimp (*Artemia*)).

Species (*include information on subspecies or strain in comments if available*)	**Type of use** *Please mark all that apply*	**Is the species (or subspecies) threatened or endangered for example in the IUCN Red List, CITES Appendices or national lists?** *Please mark appropriate box*	**Comments** *Please list any additional information*
Indicate species here	• Direct human consumption • Live feed organism • other	• Yes • No • Unknown	
Other ***Continue adding rows as needed***	• Direct human consumption • Live feed organism • other	• Yes • No • Unknown	

Review of existing *ex situ* conservation activities of aquatic genetic resources of farmed aquatic species and their wild relatives *in vitro.*

30. Please list your country's *in vitro* collections and gene banks of the gametes, embryos, tissues, spores and other quiescent forms of farmed aquatic species and their wild relatives , using cryopreservation or other methods of long-term storage. Describe the major examples, identifying the facilities in which the collections are held and indicate the managers and users. Include examples of any such genetic material from your country that is being kept in *in vitro* collections outside your country on behalf of beneficiaries in your country.

Species (*include information on subspecies or strain if available in comments*)	**Type of *ex-situ* conservation collection *in vitro*** ***mark all that apply***	**Facilities where collection is located** ***mark all that apply***	**Comments** ***list all breeds, subspecies of the species and any additional information***
list species here	• In vitro collection of gametes • In vitro collection of embryos • In vitro collection of tissues • Spores • Other	• Aquaculture facilities • Research facilities • Universities • Zoos and aquaria • Other	
Continue as needed	• In vitro collection of gametes • In vitro collection of embryos • In vitro collection of tissues • Spores • Other	• Aquaculture facilities • Research facilities • Universities • Zoos and aquaria • Other	

31. Please list any museums and herbaria or other collections of farmed aquatic species and their wild relatives in your country that maintain collections from which DNA could be sourced for research in support of capture fisheries, aquaculture and culture-based fisheries.

Name of museum, herbarium or other facility	**Comments** ***list any additional information***
Continue adding rows as needed	

Future prospects, needs and priorities in your country for the *ex situ* conservation

32. Please indicate the future objectives in your country and their importance for the ex situ conservation of aquatic genetic resources of farmed aquatic species and their wild relatives?

Objectives of *in situ* conservation	**Importance**
Preservation of aquatic genetic diversity	- Not important - Somewhat important

	- Very important - Unknown importance
Maintain good strains for aquaculture production	- Not important - Somewhat important - Very important - Unknown importance
Meet consumer and market demands	- Not important - Somewhat important - Very important - Unknown importance
To help adapt to impacts of climate change	- Not important - Somewhat important - Very important - Unknown importance
Future breed improvement in aquaculture	- Not important - Somewhat important - Very important - Unknown importance
Other ***continue adding rows as necessary***	- Not important - Somewhat important - Very important - Unknown importance

Chapter 5: Stakeholders with Interests in Aquatic Genetic Resources of Farmed Aquatic Species and their Wild Relatives within National Jurisdiction

The main objective of Chapter 5 is to provide an overview of the perspectives and needs of the principal stakeholders who have interests in aquatic genetic resources of farmed aquatic species and their wild relatives for food and agriculture. Stakeholder groups can be identified from existing institutional knowledge, from sectoral and sub-sectoral consultations conducted during the country reporting process and where necessary from expert opinions. Gender issues pertaining to the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives should be considered, as well as the perspectives and needs of indigenous peoples and local communities.

The specific objectives are:

- To describe the different principal stakeholder groups with interests in aquatic genetic resources of farmed aquatic species and their wild relatives To identify the type(s) of aquatic genetic resources of farmed aquatic species and their wild relatives in which each stakeholder group has interests and why.

- To describe the roles of stakeholder groups and the actions they are taking for the conservation, sustainable use and development of the aquatic genetic resources in which they have interests.

- To describe the further actions that stakeholder groups would like to see taken for the conservation, sustainable use and development of aquatic genetic resources in which they have interests, and the constraints that are hindering those actions, including lack of capacity and perceived threats.

Overview of the principal stakeholder groups who have interests in aquatic genetic resources of farmed aquatic species and their wild relatives

33. Please indicate the principal stakeholder groups who have interests in aquatic genetic resources of farmed aquatic species and their wild relatives including, *inter alia*: fish farmers; fishers in capture fisheries; persons involved in stocking and harvesting in culture-based fisheries; persons employed in postharvest chains; government officials; staff and members of aquaculture associations; managers of aquatic protected areas and others working for the conservation of aquatic ecosystems; researchers; and civil society.

Stakeholders	**Role of stakeholder** *mark all that apply*	**To what extent are women included**	**Genetic resource of main interest** *mark all that apply*	**To what extent are indigenous and/or local communities included**	**Comments**
Fish farmers	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
Fishers	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
Fish hatchery people	• Conservation • Production • Feed	• To a great extent • To some	• DNA • Stock , Breed or variety	• To a great extent • To some extent • No extent	

	manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	extent • No extent • Unknown	• Species • Other	• Unknown	
People involved in post-harvest processing	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
People involved in marketing	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
Government resource managers	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	

	• Advocacy • Outreach				
Fishing or aquaculture associations	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
Aquatic protected area managers	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
University and academic people	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
Non-Governmental	• Conservation • Production	• To a great extent • To some	• DNA • Stock , Breed or	• To a great extent • To some extent	

Organizations	• Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	extent • No extent • Unknown	variety • Species • Other	• No extent • Unknown	
Politicians	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	
Other stakeholders ***add rows as necessary***	• Conservation • Production • Feed manufacturing • Breeding • Research • Marketing • Processing • Advocacy • Outreach	• To a great extent • To some extent • No extent • Unknown	• DNA • Stock , Breed or variety • Species • Other	• To a great extent • To some extent • No extent • Unknown	

Chapter 6: National Policies and Legislation for Aquatic Genetic Resources of Farmed Aquatic Species and their Wild Relatives within National Jurisdiction

The main objective of Chapter 6 is to review the status and adequacy of national policies and legislation concerning aquatic genetic resources of farmed aquatic species and their wild relatives including access and benefit sharing.

The specific objectives are as follows:

- To describe the existing national policy and legal framework for the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives.

- To review current national policies and instruments for access to aquatic genetic resources of farmed aquatic species and their wild relatives and the fair and equitable sharing of benefits arising from their utilization.

- To identify any significant gaps in policies and legislation concerning aquatic genetic resources of farmed aquatic species and their wild relatives..

Review of national policies and legislation for Aquatic Genetic Resources of farmed aquatic species and their wild relatives within national jurisdiction

Chapter 6 should commence with a review of the status and adequacy of national policies and legislation concerning aquatic genetic resources of farmed aquatic species and their wild relatives. The review should include an explanation of how aquaculture and culture-based fisheries and, as far as wild relatives of farmed species are concerned, capture fisheries are governed in your country. The review should include a summary of the past history of current status of national policies and instruments for access and benefit sharing concerning aquatic genetic resources of farmed aquatic species and their wild relatives.

34. Please list national legislation, policies and/or mechanisms that address aquatic genetic resources of farmed species and their wild relatives.

National legislation, policy and/or mechanism	**Date established**	**Scope** *select all that apply*
		• Genes or molecules only • Aquaculture • Capture fisheries • Conservation • Intellectual property protection • Importation • Trade and commerce • Access and benefit sharing • Other
Continue adding rows as necessary		• Genes or molecules only • Aquaculture • Capture fisheries • Conservation • Intellectual property protection • Importation • Trade and commerce • Access and benefit sharing

		• Other

Review of the current status and gaps in national policies and legislation for the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives

Chapter 6 can continue with reviews of the current status and gaps in national policies and legislation for the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives.

35. Please list any gaps in the coverage or constraints in implementing national legislation, policies and/or mechanisms in regard to aquatic genetic resources.

36. Please indicate any national aquatic genetic resources of farmed aquatic species and their wild relatives for which your country restricts access.

Type of genetic resource (can be species name, DNA, gametes or other descriptor)	**Comments** ***Please provide description of type of restriction and for who does the restriction apply***
DNA	
Stock , Breed or variety	
Species	
Other ***Continue adding rows as necessary***	

37. Over the past 10 years, indicate the actions your country has taken to maintain or enhance access to aquatic genetic resources of farmed aquatic species and their wild relatives located outside your country; for example, by establishing germplasm acquisition agreements or material transfer agreements.

Action taken to enhance access to aquatic genetic resources outside your country	**Type of genetic resource** ***Mark all that apply***	**Comment** ***for example other types of genetic resources***
	• DNA • Genes • Gametes • Tissues	

	• Embryos • Living specimens	
Continue adding rows as necessary		

38. Please indicate any obstacles your country has encountered when try to access aquatic genetic resources of farmed aquatic species and their wild relatives outside of your country (including access for research purposes).

Obstacles to accessing aquatic genetic resources	**Please describe type of genetic resource** ***mark all that apply***	**Comments** ***please include additional information as needed***
Intellectual Property protection	• DNA • Stock , Breed or variety • Species • Other	
National laws of your country	• DNA • Stock , Breed or variety • Species • Other	
National laws of donor country	• DNA • Stock , Breed or variety • Species • Other	
International laws or protocols	• DNA • Stock , Breed or variety • Species • Other	
Too expensive	• DNA • Stock , Breed or variety • Species • Other	
Material transfer agreements required	• DNA • Stock , Breed or variety • Species • Other	
Other obstacles ***continue adding rows as needed***	• DNA • Stock , Breed or variety	

	• Species • Other	

Chapter 7: Research, Education, Training and Extension on Aquatic Genetic Resources within National Jurisdiction: Coordination, Networking and Information

The main objective of Chapter 7 is to review the status and adequacy of national research, education, training and extension, coordination and networking arrangements and information systems that support the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives for food and agriculture.

The specific objectives are:

- To describe the current status, future plans, gaps, needs and priorities for research, training, extension and education on the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives
- To describe existing or planned national networks for the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives.
- To describe existing or planned information systems for the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives.
- To review the state of national public awareness concerning aquatic genetic resources of farmed aquatic species and their wild relatives.

Research

39. Does your national research programme support the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives? If yes, give details of current and/or planned research; if no, explain the main reasons why not in box below.

Please mark appropriate box

- Yes
- No
- Unknown

Please provide details

40. Please list main institutions, organizations, corporations and other entities in your country that are engaged in field and/or laboratory research related to the conservation, sustainable

use and development of aquatic genetic resources of farmed aquatic species and their wild relatives.

Main institutions, organizations, corporations and other entities	**Area of research** ***Mark all that apply***
	• Basic knowledge on aquatic genetic resources • Characterization and monitoring of aquatic genetic resources • Genetic improvement • Economic valuation of aquatic genetic resources • Conservation of aquatic genetic resources • Communication on aquatic genetic resources • Access and distribution of aquatic genetic resources • Other
Continue adding rows as necessary	

41. What capacity strengthening is needed to improve national research in support of the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives?

Please mark appropriate box or boxes

- Improve basic knowledge on aquatic genetic resources
- Improve capacities for characterization and monitoring of aquatic genetic resources
- Improve capacities for genetic improvement
- Improve capacities for economic valuation of aquatic genetic resources
- Improve capacities for conservation of aquatic genetic resources
- Improve communication on aquatic genetic resources
- Improve access to and distribution of aquatic genetic resources

Please describe any other capacity building needs in regards to aquatic genetic resources

Education, training and extension

42. Please indicate the extent that education, training and extension in your country covers the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives? List the main institutions involved and the types of courses offered.

Thematic areas	**Extent of coverage**	**Institution**	**Types of courses** ***mark all that apply***
Characterization and monitoring of aquatic genetic resources	• Fully covered • Partially covered		• Undergraduate • Graduate

	• Not covered		• Post-graduate • Training • Extension
Genetic improvement	• Fully covered • Partially covered • Not covered		• Undergraduate • Graduate • Post-graduate • Training • Extension
Economic valuation of aquatic genetic resources	• Fully covered • Partially covered • Not covered		• Undergraduate • Graduate • Post-graduate • Training • Extension
Conservation of aquatic genetic resources	• Fully covered • Partially covered • Not covered		• Undergraduate • Graduate • Post-graduate • Training • Extension
Other ***continue adding rows as necessary***	• Fully covered • Partially covered • Not covered		• Undergraduate • Graduate • Post-graduate • Training • Extension

Coordination and networking

43. Please list any mechanisms in your country responsible for coordinating the aquaculture, culture-based fisheries and capture fisheries subsectors with the other sectors that use watersheds and coastal ecosystems and have impacts on aquatic genetic resources of wild relatives of farmed aquatic species (e.g., agriculture, forestry, mining, tourism, waste management and water resources).

If no mechanism exists check here: __

Name of mechanism	**Description of how mechanism operates**
Continue as needed	

44. Please indicate how capacity strengthening can be improved in intersectoral coordination in support of the conservation, sustainable use and development of aquatic genetic resources.

Please mark appropriate box or boxes

- Increase awareness in institutions
- Increase technical capacities of institutions
- Increase information sharing between institutions
- Other, ***please specify in box below***

45. Please list any national networks in your country or any international networks your country belongs to that support the conservation, sustainable use and development of aquatic genetic resources.

Network	**Objectives of the network** ***Please mark all that apply***	**Comments**
	• Improve basic knowledge on aquatic genetic resources • Improve capacities for characterization and monitoring of aquatic genetic resources • Improve capacities for genetic improvement • Improve capacities for economic valuation of aquatic genetic resources • Improve capacities for conservation of aquatic genetic resources • Improve communication on aquatic genetic resources • Improve access to and distribution of aquatic genetic resources	
Continue adding rows as necessary		

Information systems

46. Please list any information systems existing in your country for receiving, managing and communicating information about the conservation, sustainable use and development of aquatic genetic resources of farmed aquatic species and their wild relatives.

Name of information system	**Type of information stored** ***mark all that apply***	**Main users** ***mark all that apply***
	• DNA sequence • Genes and genotype • Breeds, strains or stocks • Species names • Production figures • Distribution • Level of	• Fish farmers • Fishers in capture fisheries • Fish hatchery people • People involved in post-harvest processing • People involved in

	endangerment • Other	marketing • Government resource managers • Fishing or aquaculture associations • Aquatic protected area managers • University and academic people • Non-Governmental Organizations • Politicians • Please list other stakeholders as necessary
Continue adding rows as necessary	• DNA sequence • Genes and genotype • Breeds, strains or stocks • Species names • Production figures • Distribution • Level of endangerment • Other	• Fish farmers • Fishers in capture fisheries • Fish hatchery people • People involved in post-harvest processing • People involved in marketing • Government resource managers • Fishing or aquaculture associations • Aquatic protected area managers • University and academic people • Non-Governmental Organizations • Politicians • Please list other stakeholders as necessary

47. What capacity strengthening is needed to improve national information systems to support the conservation, sustainable use and development of aquatic genetic resources?

Please mark appropriate box or boxes

- Improve information technology and database management
- Improve basic knowledge on aquatic genetic resources
- Improve capacities for characterization and monitoring of aquatic genetic resources
- Improve capacities for genetic improvement
- Improve capacities for economic valuation of aquatic genetic resources
- Improve capacities for conservation of aquatic genetic resources
- Improve communication on aquatic genetic resources
- Improve access to and distribution of aquatic genetic resources

Please describe any other capacity building needs in regards to information systems for aquatic genetic resources

Chapter 8: International Collaboration on Aquatic Genetic Resources of Farmed Aquatic Species and Their Wild Relatives

The main objective of Chapter 8 is to review the mechanisms and instruments through which your country participates in international collaborations on aquatic genetic resources of farmed aquatic species and their wild relatives.

The specific objectives are:

- To identify your country's current participation in bilateral, sub-regional, regional, other international and global forms of collaboration on aquatic genetic resources. List national memberships, status as a Party and other forms of affiliation in agreements, conventions, treaties, international organizations, international networks and international programmes.
- To identify any other forms of international collaboration on aquatic genetic resources.
- To review the benefits from existing forms of international collaboration on aquatic genetic resources.
- To identify needs and priorities for future international collaboration on aquatic genetic resources

International collaboration includes bilateral arrangements and the sharing of particular waters and stocks of wild relatives of farmed aquatic species.

International, regional or sub-regional agreements, conventions and treaties concerning aquatic genetic resources of farmed aquatic species and their wild relatives

48. Please list the international, regional or sub-regional agreements your country subscribes to that cover aquatic genetic resources of farmed species and their wild relatives, such as the Nagoya Protocol[2], the Convention on Biological Diversity and the Cartagena Protocol and how they have impacted aquatic genetic resources and stakeholders in your country. Examples could include:

    - Establishment and management of shared or networked aquatic protected areas as far as wild relatives of farmed aquatic species are concerned
    - Aquaculture and culture-based fisheries in transboundary or shared water bodies
    - Sharing aquatic genetic material and related information
    - Fishing rights, seasons and quotas as far as wild relatives of farmed aquatic species are concerned

[2] http://www.cbd.int/abs/nagoya-protocol/signatories/

- Conservation and sustainable use of shared water bodies and watercourses as far as wild relatives of farmed aquatic species are concerned
- Quarantine procedures for aquatic organisms and for control and notification of aquatic diseases

International, Regional or Sub-Regional agreement	**Year your country ratified or subscribed to the agreement**	**Impact on aquatic genetic resources**	**Impact on stakeholders**
		• strongly positive • positive • negative • strongly negative • no effect	• strongly positive • positive • negative • strongly negative • no effect
Please continue adding rows as necessary			

49. Please list the priority needs regarding collaboration on conservation and sustainable use of aquatic genetic resources of farmed aquatic species and their wild relatives. Are they being addressed, i.e. are there any critical gaps?

Collaboration is needed in order to ... ***mark all that apply***	**Level of priority**	**To what extent are the needs being met**
Improve information technology and database management	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown
Improve basic knowledge on aquatic genetic resources	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown
Improve capacities for characterization and monitoring of aquatic genetic resources	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown
Improve capacities for genetic improvement	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown
Improve capacities for economic valuation of aquatic genetic resources	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown

Improve capacities for conservation of aquatic genetic resources	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown
Improve communication on aquatic genetic resources	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown
To improve access to and distribution of aquatic genetic resources	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown
Other ***continue adding other needs as necessary***	• High • Medium • Low • No priority	• To a great extent • To some extent • None • Unknown

50. Please describe the types of collaboration that have been most beneficial for your country, and why?

51. Is there a need for your country to expand its collaboration concerning the conservation, sustainable use and development of aquatic genetic resources? If yes, give details, including any requirements for capacity strengthening in box below
    - Yes
    - No

    If yes, please give details

52. Describe important roles that your country performs within its region (and/or sub-region) and globally in terms of being a keeper, user and sharer of aquatic genetic resources and aquatic ecosystems.
