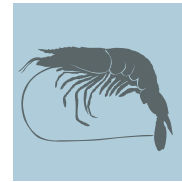
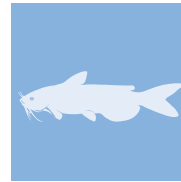
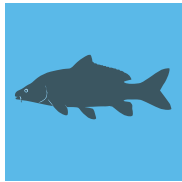
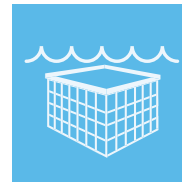
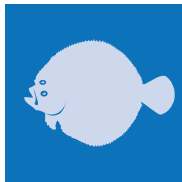




Food and Agriculture  
Organization of the  
United Nations

COUNTRY REPORTS

## Cambodia



Country Report Supporting the Preparation of the  
First Report on *The State of the World's Aquatic  
Genetic Resources for Food and Agriculture*

This Country Report has been submitted by the national authorities as a contribution to the Food and Agriculture Organization of the United Nations (FAO) publication, *The State of the World's Aquatic Genetic Resources for Food and Agriculture*. The information in this Country Report has not been verified by FAO, and its content is entirely the responsibility of the entity preparing the Country Report, and does not necessarily represent the views of FAO, or its Members. The designations employed and the presentation of material do not imply the expression of any opinion whatsoever on the part of FAO concerning legal or development status of any country, territory, city or area or of its authorities or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.



Food and Agriculture  
Organization of the  
United Nations

COMMISSION ON  
GENETIC RESOURCES  
FOR FOOD AND  
AGRICULTURE

**Questionnaire for the Preparation of  
Country Reports for *the First State of  
the World's Aquatic Genetic Resources  
for Food and Agriculture***

COMMISSION ON  
GENETIC RESOURCES  
FOR FOOD AND  
AGRICULTURE



## INSTRUCTIONS FOR COMPLETING THE DYNAMIC GUIDELINES

### How do I complete the dynamic guidelines?

1. You will require Adobe Reader to open the dynamic guidelines. Adobe Reader can be downloaded free of charge from: <http://get.adobe.com/uk/reader/otherversions/>. Use Adobe Reader Version 10 or higher.
2. Open the dynamic guidelines and save it (save as a pdf) on your hard drive.
3. Please rename it <name of your country>.pdf.
4. You may forward the dynamic guidelines to stakeholders you would like to involve or inform by e-mail. You may also print and/or save the dynamic guidelines.
5. It is advisable to prepare textual responses (including any formatting such as bullet points) first in a separate document and then to copy and paste them into the form. Please use font Arial 10. Acronyms and abbreviations should be avoided if possible. If included, they must be introduced (i.e. written out in full) the first time they are used. Note that the text boxes are expandable. Once text has been entered, the box will automatically enlarge to make its content fully visible when you click outside its border. To delete a row you have added, click on the "X" on the far right of the table
6. When you have finished completing the dynamic guidelines, click the "Submit form" button at the end of the form and send the completed dynamic guidelines to [Devin.Bartely@fao.org](mailto:Devin.Bartely@fao.org); [Matthias.Halwart@fao.org](mailto:Matthias.Halwart@fao.org); and [ruth.garciagomez@fao.org](mailto:ruth.garciagomez@fao.org).
7. This should automatically attach the document to an email that you can then send. Otherwise, please attach the completed dynamic guidelines manually to an e-mail and send it to [Devin.Bartely@fao.org](mailto:Devin.Bartely@fao.org); [Matthias.Halwart@fao.org](mailto:Matthias.Halwart@fao.org); and [ruth.garciagomez@fao.org](mailto:ruth.garciagomez@fao.org).
8. A letter confirming official endorsement by relevant authorities should also be attached to the email.
9. You will receive a confirmation that the submission was successful.

### Where can I get further assistance?

If you have any questions regarding the dynamic guidelines, please contact [Devin.Bartely@fao.org](mailto:Devin.Bartely@fao.org); [Matthias.Halwart@fao.org](mailto:Matthias.Halwart@fao.org); [ruth.garciagomez@fao.org](mailto:ruth.garciagomez@fao.org)

Several websites provide useful information on aquatic species that can be consulted for proper species names and for information on aquatic genetic resources: [AlgaeBase](http://www.algaebase.org), [Aquamaps](http://www.aquamaps.org), [Barcode of Life](http://www.barcodeoflife.org), [Census of Marine Life](http://www.censusofmarinelife.org), [FishBase](http://www.fishbase.org), [Frozen Ark](http://www.frozenark.org), [GenBank](http://www.genbank.org), [Global Biodiversity Information Facility](http://www.gbif.org), [International Union for Conservation of Nature](http://www.iucn.org), [National Institutes of Health Database on Genomes and Bioinformatics](http://www.nih.gov), [Ornamental Fish International](http://www.sealifebase.org), [SealifeBase](http://www.sealifebase.org), [Sea Around Us](http://www.searoundsus.org), and [World Register of Marine Species](http://www.marinespecies.org).

### How, by whom and by when must the completed dynamic guidelines be submitted?

Once officially endorsed by the relevant authorities, the completed dynamic guidelines should be submitted (click the "Submit form" button on the header banner) by the National Focal Point. **Completed dynamic guidelines should be sent by December 31<sup>st</sup> 2015.**

[www.algaebase.org](http://www.algaebase.org)  
[www.aquamaps.org](http://www.aquamaps.org)  
[www.barcodeoflife.org](http://www.barcodeoflife.org)  
[www.coml.org](http://www.coml.org)  
[www.fishbase.org](http://www.fishbase.org)  
[www.frozenark.org](http://www.frozenark.org)  
[www.genbank.org](http://www.genbank.org)  
[www.gbif.org](http://www.gbif.org)  
[www.iucn.org](http://www.iucn.org)  
<http://discover.nci.nih.gov/>  
[www.ornamental-fish-int.org](http://www.ornamental-fish-int.org)  
[www.sealifebase.org](http://www.sealifebase.org)  
[www.searoundsus.org](http://www.searoundsus.org)  
[www.marinespecies.org](http://www.marinespecies.org)

## I. INTRODUCTION

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. Additionally the process of producing Country Reports will assist countries in determining their needs and priorities for the conservation and sustainable use of aquatic genetic resources for food and agriculture, and will help raise awareness among policy-makers.

## II. COUNTRY REPORTS

As with the other sectors, *The State of the World's Aquatic Genetic Resources for Food and Agriculture (SoWAqGR)* will be compiled from Country Reports. It is recognized that guidance is necessary in order to assist countries in completing those reports under a common framework. The Country Reports will become official government documents submitted to FAO.

The following questionnaire is the suggested format for the preparation and submission of Country Reports. The questionnaire has been prepared by FAO to assist in the preparation of Country Reports contributing to the SoWAqGR Report. It has been designed to assist countries to undertake a strategic assessment of their aquatic genetic resources for food and agriculture.

The scope of the first State of the World's Aquatic Genetic Resources for Food and Agriculture, and therefore the emphasis in the Country Reports, is farmed aquatic species and their wild relatives within national jurisdiction.

Country Reports should:

- become powerful tools for improving the conservation, sustainable use and development of aquatic genetic resources for food and agriculture, at national and regional levels;
- identify threats to aquatic genetic resources, gaps in information about aquatic genetic resources and needs for the strengthening of national capacity to manage aquatic genetic resources effectively;
- inform the development of national policies, legislation, research and development, education, training and extension concerning the conservation, sustainable use and development of aquatic genetic resources for food and agriculture;
- contribute to raising public awareness about the importance of aquatic genetic resources for food and agriculture;
- complement other national reporting activities on the conservation, sustainable use and development of aquatic genetic resources.

### Timeline and process

In line with the overall process, as established by the Commission, the Director-General of FAO sent a Circular State Letter on 19 April 2012 to countries requesting them to identify National Focal Points for the preparation of Country Reports by 31 December, 2015.

The following steps are recommended in preparing the Country Report, using a participatory approach:

- Each participating country should appoint a National Focal Point for the coordination of the preparation of the Country Report who will also act as focal point to FAO. National Focal Points should be communicated to the Secretary, Commission on Genetic Resources for Food and Agriculture ([cgrfa@fao.org](mailto:cgrfa@fao.org)) immediately.
- Countries are encouraged to establish a national committee to oversee the preparation of the Country Report. The national committee should consist of as many representative stakeholders as practical (representing government, industry, research and civil society).
- The national committee should meet frequently to review progress and consult widely with key stakeholders.

- The National Focal Point should coordinate the preparation of the first draft of the Country Report, which should be reviewed by the national committee. The National Focal Point should facilitate a consultative process for broader stakeholder review.
- Following the stakeholder review, the National Focal Point should coordinate the finalization of the Country Report, submit it to the government for official endorsement and transmit it to FAO in one of the Organization's official languages (Arabic, Chinese, English, French, Russian and Spanish) by 31 December 2015.
- The Country Report will be an official government report.
- If countries are unable to submit final Country Reports by the set deadline, preliminary reports of findings should be provided to FAO to contribute to the identification of global priorities for inclusion in the SoWAqGR Report.

**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	Cambodia
Prepared By	Thay Somony
Date	Apr 4, 2016

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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
- Fluctuating
- 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
- Fluctuating
- 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.*

In Cambodia, the movement of live aquaculture species from neighboring countries and regionally and internationally (ornamental fishes) are not strictly controlled and monitored. Hence there are some hybrids species such as groupers are imported for culture in coastal areas of Cambodia. Fisheries Administration is having a Task Force in the Department of Aquaculture Department to implement on inspection of imported culture species for aquaculture and aquarium.

4. To what extent are genetic data for farmed aquatic organisms

a) Available? *Please mark appropriate box.*

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

b) 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.*

Genetic data for farmed aquatic organisms is crucially important for broodstock management in aquaculture and stock enhancement. Fisheries Administration is going to give the priority action for getting the project on genetic studies of farmed indigenous aquatic species broodstock in Cambodia. Cambodia is fortunate to have many indigenous farmed species in the wild. Hence Fisheries Administration requests FAO to support this genetic studies and data records on indigenous farmed species.

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.*

For marine farmed species such as cobia, groupers, blood cockle, green mussel and mud crab our fish farmers collected fingerlings, crab-lets from the wild for fattening. For freshwater farmed species, broodstock of Silver barb, Pangasianodon hypophthalmus, red tail catfish, freshwater eels and so on.

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 Percentage Here**

• Percent managed by private sector. **Please Enter Percentage Here**

• Percent managed by private /public partnership. **Please Enter Percentage Here**

**Total**

*Please add any explanation here.*

Breeding program and genetic improvement of farmed aquatic species are at this stage will be the roles and responsibilities of the government aquaculture research centers and institute. There is going to be some initiatives by the private investment in aquaculture where the companies are keen to ensure the quality of farmed aquatic species.

7. To what extent do genetically improved aquatic organisms, including hybrids, crossbreeds, strains, triploids and other distinct types contribute to national aquaculture production in terms of volume ?

*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.

Add Row

Species	Type of genetic improvement <i>mark all that apply</i>	Developed By <i>mark all that apply</i>	
	<input checked="" type="checkbox"/> Traditional selective breeding	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input checked="" type="checkbox"/> Hybrids <small>Specify parental species in the box below</small> walking catfish and African catfish	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
Oreochromis niloticus	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input checked="" type="checkbox"/> Mono-sex production	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input checked="" type="checkbox"/> Traditional selective breeding	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Hybrids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
Barbonymus gonionotus	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input type="checkbox"/> Mono-sex production	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	

Macrobrachium rosenbergii	<input checked="" type="checkbox"/> Traditional selective breeding	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input type="checkbox"/> Hybrids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Mono-sex production	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input checked="" type="checkbox"/> Traditional selective breeding	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Hybrids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
Snakeskin gourami	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input type="checkbox"/> Mono-sex production	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	

	<input checked="" type="checkbox"/> Traditional selective breeding	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Hybrids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
Channa argus	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input type="checkbox"/> Mono-sex production	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input checked="" type="checkbox"/> Traditional selective breeding	<input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Hybrids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
Pangasius hypophthalmus	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input type="checkbox"/> Mono-sex production	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	

	<input type="checkbox"/> Traditional selective breeding	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input checked="" type="checkbox"/> Hybrids	Specify parental species in the box below <input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
Clarias gariepinus x C. macrocephalus	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input type="checkbox"/> Mono-sex production	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Traditional selective breeding	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input checked="" type="checkbox"/> Hybrids	Specify parental species in the box below <input checked="" type="checkbox"/> Private Sector <input checked="" type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
Rana spp	<input type="checkbox"/> Triploids and other polyploids	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	X
	<input type="checkbox"/> Mono-sex production	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	
	<input type="checkbox"/> Other	<input type="checkbox"/> Private Sector <input type="checkbox"/> Public Sector <input type="checkbox"/> Private/Public partnership	

9. Please fill in table 1.1

**Table 1.1 Aquatic genetic resources (AqGR) of farmed aquatic species in your country**

<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">Add Row</div>							
Farmed species	Genetic type	Availability of genetic data	Trends in production	Future trends in production	Genetic improvement	Future genetic improvement	Comments
List species (scientific names), strains and varieties as scientific names (put in brackets the most widely used national common name or names) and indicate whether native or introduced	<i>Indicate all genetic types that apply to the species</i>	Are genetic data available for farmed populations? If yes, give summary details in comments	Over the last 10 years, production has been <b>(mark one)</b>	Expected trend over the next 10 years is that production will <b>(mark one)</b>	Which genetic technologies are currently being used on the species <b>(mark all that apply)</b>	<b>mark all that apply</b>	For example important traits improved, how data are used in management or name of breed, source of information, etc.
<input checked="" type="radio"/> Native <input type="radio"/> Introduced <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Barbonymus gonionotus</div>	<input checked="" type="checkbox"/> Wild Type <input checked="" type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	

<input type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type <input checked="" type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input checked="" type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)		X
<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type <input type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)		X
<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type <input type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)		X
<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type <input type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)		X



<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input checked="" type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
Pangasius spp	<input type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)		X
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids							
<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input checked="" type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
Hemibagrus nemurus	<input type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	Redtail catfish of Mekong and Tonle Sap Great Lake and River.	X
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids							

<input type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input checked="" type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
Chitala chitala	<input type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)		
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids							
<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input checked="" type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
Macrobrachium rosenbergii	<input checked="" type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)		
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input checked="" type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids						<p>Giant freshwater prawns used to be plenty in Cambodia in the wild. Now their catches are very low and seed production and growth-out are urgently needed.</p>	

<input checked="" type="radio"/> Native <input type="radio"/> Introduced									
Crocodylus siamensis	<input checked="" type="checkbox"/> Wild Type	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization	<p>It is a listed species in CITES. But Crocodylus siamensis is artificially bred and cultured throughout Cambodia.</p>	X	
	<input checked="" type="checkbox"/> Selective bred type			<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)				
	<input type="checkbox"/> Hybrids			<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex				
	<input type="checkbox"/> Cross breeds			<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection				
	<input type="checkbox"/> Strains			<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)				
	<input type="checkbox"/> Varieties								
	<input type="checkbox"/> Polyploids								
<input checked="" type="radio"/> Native <input type="radio"/> Introduced									
Lates calcarifer	<input checked="" type="checkbox"/> Wild Type	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization			
	<input checked="" type="checkbox"/> Selective bred type				<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)			
	<input type="checkbox"/> Hybrids				<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex			
	<input type="checkbox"/> Cross breeds				<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection			
	<input type="checkbox"/> Strains				<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)			
	<input type="checkbox"/> Varieties								
	<input type="checkbox"/> Polyploids								

<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input checked="" type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
Leptobarbus hoeveni	<input type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)		X
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids							
<input checked="" type="radio"/> Native <input type="radio"/> Introduced	<input checked="" type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input checked="" type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
Portunidae	<input type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)		
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids						Mainly for stock enhancement in the sea of Cambodia.	X

<input type="radio"/> Native <input checked="" type="radio"/> Introduced								
Oreochromis niloticus	<input type="checkbox"/> Wild Type <input checked="" type="checkbox"/> Selective bred type	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input checked="" type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input checked="" type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input checked="" type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	Gift tilapia and red tilapia.	X
	<input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids							
<input type="radio"/> Native <input checked="" type="radio"/> Introduced								
Cyprinus carpio	<input type="checkbox"/> Wild Type <input checked="" type="checkbox"/> Selective bred type	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Increasing <input checked="" type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	The Common carp is mainly used for small-scale aquaculture in the rural areas of Cambodia	X
	<input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids							

<input type="radio"/> Native <input checked="" type="radio"/> Introduced	<input type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input checked="" type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
<b>Anabas testudineus</b>	<input checked="" type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	The fingerlings are imported from Vietnam.	X
<input type="radio"/> Native <input checked="" type="radio"/> Introduced	<input type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input checked="" type="checkbox"/> Selective breeding		
<b>Hypophthalmichthys molitrix</b>	<input checked="" type="checkbox"/> Selective bred type	<input checked="" type="radio"/> No	<input type="radio"/> Stable	<input checked="" type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	Mainly used for rural areas of Cambodia.	X

<input type="radio"/> Native <input checked="" type="radio"/> Introduced	<input type="checkbox"/> Wild Type <input type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Increasing <input checked="" type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)			X
<input type="radio"/> Native <input checked="" type="radio"/> Introduced	<input type="checkbox"/> Wild Type <input checked="" type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Increasing <input checked="" type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)			X
<input type="radio"/> Native <input checked="" type="radio"/> Introduced	<input type="checkbox"/> Wild Type <input checked="" type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Increasing <input checked="" type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)			X
<input type="radio"/> Native <input checked="" type="radio"/> Introduced	<input type="checkbox"/> Wild Type <input checked="" type="checkbox"/> Selective bred type <input type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Increasing <input checked="" type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input checked="" type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)			X

<input type="radio"/> Native <input type="radio"/> Introduced	<input type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input type="radio"/> Increasing	<input type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input type="checkbox"/> Selective breeding		
Channa argus	<input checked="" type="checkbox"/> Selective bred type	<input type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)		X
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input checked="" type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids							
<input type="radio"/> Native <input type="radio"/> Introduced	<input type="checkbox"/> Wild Type	<input type="radio"/> Yes	<input checked="" type="radio"/> Increasing	<input type="radio"/> Increasing	<input checked="" type="checkbox"/> Selective breeding	<input type="checkbox"/> Selective breeding		
Snakeskin gourami	<input checked="" type="checkbox"/> Selective bred type	<input type="radio"/> No	<input type="radio"/> Stable	<input type="radio"/> Stable	<input type="checkbox"/> Hybridization	<input type="checkbox"/> Hybridization		
	<input type="checkbox"/> Hybrids	<input type="radio"/> Not Known	<input type="radio"/> Fluctuating	<input type="radio"/> Fluctuating	<input type="checkbox"/> Polyploidy (chromosome set manipulation)	<input type="checkbox"/> Polyploidy (chromosome set manipulation)		X
	<input type="checkbox"/> Cross breeds		<input type="radio"/> Decreasing	<input type="radio"/> Decreasing	<input type="checkbox"/> Monosex	<input type="checkbox"/> Monosex		
	<input type="checkbox"/> Strains		<input type="radio"/> Stopped	<input type="radio"/> Stopped	<input type="checkbox"/> Marker assisted selection	<input type="checkbox"/> Marker assisted selection		
	<input type="checkbox"/> Varieties		<input type="radio"/> Not known	<input type="radio"/> Not known	<input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Other (specify in comment)		
	<input type="checkbox"/> Polyploids							



<input type="radio"/> Native <input type="radio"/> Introduced	<input type="checkbox"/> Wild Type <input type="checkbox"/> Selective bred type <input checked="" type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="checkbox"/> Selective breeding <input checked="" type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)		
Clarias gariepinus x C. macrocephalus								X
<input type="radio"/> Native <input type="radio"/> Introduced	<input type="checkbox"/> Wild Type <input type="checkbox"/> Selective bred type <input checked="" type="checkbox"/> Hybrids <input type="checkbox"/> Cross breeds <input type="checkbox"/> Strains <input type="checkbox"/> Varieties <input type="checkbox"/> Polyploids	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input type="radio"/> Decreasing <input type="radio"/> Stopped <input type="radio"/> Not known	<input type="checkbox"/> Selective breeding <input checked="" type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)	<input type="checkbox"/> Selective breeding <input type="checkbox"/> Hybridization <input type="checkbox"/> Polyploidy (chromosome set manipulation) <input type="checkbox"/> Monosex <input type="checkbox"/> Marker assisted selection <input type="checkbox"/> Other (specify in comment)		
Rana spp								X

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

Add Row

Species <i>Type and select a species</i>	Is the species native to your country?	Comments <i>For example main sources of information</i>	
Cirrhinus microlepis	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>This species used to be plenty in the Tonle Sap Great Lake but it is declined remarkably. Fisheries Administration intends to conduct artificial propagation as this fish catches good demand and prices.</p>	X
Chitala chitala	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known		X
Wallago attu	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known		X

Pangasianodon gigas	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>This Pangasianodon gigas is the endangered species in Cambodia and the World. There are still few numbers of this species in the Cambodia ( Upstream Mekong, Tonle Sap River and Tonle Sap Great Lake). Also there are many private farms have good sizes of this species. If conditions and funding permitted Fisheries Administration is keen to have its genetic populations study in the private farms. It is reported that their wild population genetics were assessed. Also artificial breeding of this species can be tried out.</p>	X
<div style="border: 1px solid black; padding: 2px;">Panaeus monodon</div>	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Presently seed production of tiger prawn is not yet propagated. However broodstock of tiger prawns were sold to VN and Thailand for breeding. Fisheries Administration is going to carry out the seed production.</p>	X
<div style="border: 1px solid black; padding: 2px;">Scylla serrata</div>	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Illegal wild harvest of crab lets for fattening and illegal exports to neighboring countries. Fisheries Administration is going to conduct artificial propagation when artemia cyst production trials in Cambodia are successful.</p>	X

Marble goby	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Marble goby used to be very plenty in the wild population in the Tonle Sap Great Lake and were exported to Hong Kong, and Singapore. However their populations are declined remarkably. Fisheries Administration is keen to conduct artificial propagation and growth-out.</p>	X
Rachycentron canadum	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Fish farmers are collecting wild cobia fingerlings for fattening. Also there are some import of cobia fingerlings from VN for growth out in Preah Sihanouk province.</p>	X
Epinephelus spp	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Fish farmers are collected fingerlings from the wild and raise them using small-value fish for feeding. Fisheries Administration is going to carry out artificially propagation soon.</p>	X

Pangasius spp	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Spotted-ear catfish (<i>Pangasius larnaudii</i>) seems not successfully bred in Cambodia. Still fish farmers collect wild fingerlings from the wild in Cambodia.</p>	X
Osteochilus melanopleurus	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Giant bony-lipcarb is a potential candidate for domestication and artificial propagation.</p>	X
Labeo chrysophekadion	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<p>Sailfin shark carp is a potential candidate for domestication and artificial propagation.</p>	X

Catlocarpio siamensis

- Yes
- No
- Not Known

Mekong giant carp can be domesticated and tried with the artificial propagation.

X

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.

Add Row					
Species	Genetic alteration of exchanged material <b>Mark all that apply</b>	Details of transfer or exchange	Type of genetic material exchanged <b>Mark all that apply</b>	Country or countries involved with exchange <b>Hold CTRL button to select more than one country</b>	Comments <i>Please add main purpose or objective of the exchange and main sources of information</i>
Pangasius hypophthalmus	<input checked="" type="checkbox"/> No deliberate genetic alteration <input type="checkbox"/> Traditional selective breeding <input type="checkbox"/> Hybrids <input type="checkbox"/> Triploids and other polyploids <input type="checkbox"/> Mono-sex production <input type="checkbox"/> Other	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Gametes <input type="checkbox"/> Tissues <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Trinidad and Tobago Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Ta United States of Ame Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian <b>Viet Nam</b> Yemen	Vietnam needs to renew its river catfish broodstock. Hence there are illegal trading of wild river catfish to VN.
Snakeskin gourami	<input checked="" type="checkbox"/> No deliberate genetic alteration <input type="checkbox"/> Traditional selective breeding <input type="checkbox"/> Hybrids <input type="checkbox"/> Triploids and other polyploids <input type="checkbox"/> Mono-sex production <input type="checkbox"/> Other	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Gametes <input type="checkbox"/> Tissues <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Trinidad and Tobago Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Ta United States of Ame Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian <b>Viet Nam</b> Yemen	Vietnam needs to renew its Snakeskin gourami broodstock. Hence there are illegal trading of wild snakeskin gourami to VN.

Siamese crocodile	<input checked="" type="checkbox"/> No deliberate genetic alteration <input type="checkbox"/> Traditional selective breeding <input type="checkbox"/> Hybrids <input type="checkbox"/> Triploids and other polyploids <input type="checkbox"/> Mono-sex production <input type="checkbox"/> Other	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Gametes <input type="checkbox"/> Tissues <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Trinidad and Tobago Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Ta United States of Amer Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Viet Nam Yemen	Cambodia grows Siamese crocodiles and export to VN lives and skins.
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X



### Wild relatives of farmed aquatic species

12. Please list any wild relatives of aquatic species present in your country that are farmed in another country (but not in your country) and indicate their uses.

This question refers to aquatic genetic resources that are present in the wild in your country and that are being farmed elsewhere (but not farmed in your country), indicating any uses these resources may have in your country.

Add Row

Species	Use <i>(mark all that apply)</i>	Comments	
Pangasius pangasius	<input checked="" type="checkbox"/> Capture fisheries <input type="checkbox"/> Recreational fishery <input type="checkbox"/> Aquaria <input type="checkbox"/> Biological control <input checked="" type="checkbox"/> Research and development <input type="checkbox"/> Other (specify in comments)		X

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.

Add Row

This question refers to wild aquatic genetic resources collected from the wild, not from farming facilities as in question 11.

Species	Details of transfer or exchange <i>mark all that apply</i>	Type of genetic material exchanged	Country <b>Hold CTRL button to select more than one country</b>	Comments <i>main sources of information, if the transfer was legal or not</i>	
Macrobrachium rosenbergii	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Tanzania United States of America Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Republic of) <b>Viet Nam</b> Yemen		X
Pangasius hypophthalmus	<input type="checkbox"/> Import <input type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Tanzania United States of America Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Republic of) <b>Viet Nam</b> Yemen		X
Osphronemus goramy	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Tanzania United States of America Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Republic of) <b>Viet Nam</b> Yemen		X

Snakeskin gourami	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Tansar United States of America Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Rep Viet Nam Yemen		X
Chitala chitala	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Tansar United States of America Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Rep Viet Nam Yemen		X
Hemibagrus wyckioides	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Tansar United States of America Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Rep Viet Nam Yemen		X
Asian bonytongue	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Slovenia Solomon Islands Somalia South Africa South Sudan Spain Sri Lanka Sudan Suriname Swaziland Sweden Switzerland Syrian Arab Republic Tajikistan Thailand Timor-Leste		X

Pangasius spp	<input type="checkbox"/> Import <input checked="" type="checkbox"/> Export	<input type="checkbox"/> Tissues <input type="checkbox"/> Gametes <input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Embryos <input checked="" type="checkbox"/> Living specimens <input type="checkbox"/> Other	Tunisia Turkey Turkmenistan Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United Republic of Tanzania United States of America Uruguay Uzbekistan Vanuatu Venezuela (Bolivarian Republic of) Viet Nam Yemen	Pangasius bocourti	X
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14. Please fill in table 1.2

**Table 1.2 Aquatic genetic resources of wild relatives of farmed aquatic species in your country.**

Add Row											
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 abundance of species	
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 <b>(mark as appropriate)</b> :	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 <b>(mark all that apply)</b>	The habitat or range is	What are likely reasons for changes? <b>(mark all that apply)</b>	
Pangasius hypophthalmus	<input type="checkbox"/> Straddling <input type="checkbox"/> Transboundary <input type="checkbox"/> Introduced <input checked="" type="checkbox"/> Native	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="checkbox"/> Intertidal <input type="checkbox"/> Coastal in EEZ <input type="checkbox"/> High seas <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input checked="" type="checkbox"/> River <input type="checkbox"/> Swamp <input type="checkbox"/> Other <b>(specify)</b> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="radio"/> Increasing <input type="radio"/> Stable <input checked="" type="radio"/> Decreasing <input type="radio"/> Not known	<input checked="" type="checkbox"/> Habitat <input checked="" type="checkbox"/> Climate <input type="checkbox"/> Invasive species <input type="checkbox"/> Pollution <input type="checkbox"/> Rehabilitation of habitat <input checked="" type="checkbox"/> Others <input type="checkbox"/> Not known	X

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 abundance of species	
Channa argus	<input type="checkbox"/> Straddling <input type="checkbox"/> Transboundary <input type="checkbox"/> Introduced <input checked="" type="checkbox"/> Native	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="checkbox"/> Intertidal <input type="checkbox"/> Coastal in EEZ <input type="checkbox"/> High seas <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input type="checkbox"/> River <input checked="" type="checkbox"/> Swamp <input type="checkbox"/> Other (specify) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="radio"/> Increasing <input type="radio"/> Stable <input checked="" type="radio"/> Decreasing <input type="radio"/> Not known	<input checked="" type="checkbox"/> Habitat <input checked="" type="checkbox"/> Climate <input type="checkbox"/> Invasive species <input type="checkbox"/> Pollution <input type="checkbox"/> Rehabilitation of habitat <input checked="" type="checkbox"/> Others <input type="checkbox"/> Not known	X
Chitala chitala	<input type="checkbox"/> Straddling <input type="checkbox"/> Transboundary <input type="checkbox"/> Introduced <input checked="" type="checkbox"/> Native	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="checkbox"/> Intertidal <input type="checkbox"/> Coastal in EEZ <input type="checkbox"/> High seas <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input checked="" type="checkbox"/> River <input type="checkbox"/> Swamp <input type="checkbox"/> Other (specify) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="radio"/> Increasing <input type="radio"/> Stable <input checked="" type="radio"/> Decreasing <input type="radio"/> Not known	<input checked="" type="checkbox"/> Habitat <input checked="" type="checkbox"/> Climate <input type="checkbox"/> Invasive species <input type="checkbox"/> Pollution <input type="checkbox"/> Rehabilitation of habitat <input checked="" type="checkbox"/> Others <input type="checkbox"/> Not known	X

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 abundance of species	
Cirrhinus microlepis	<input type="checkbox"/> Straddling <input type="checkbox"/> Transboundary <input type="checkbox"/> Introduced <input checked="" type="checkbox"/> Native	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="checkbox"/> Intertidal <input type="checkbox"/> Coastal in EEZ <input type="checkbox"/> High seas <input checked="" type="checkbox"/> Lake <input checked="" type="checkbox"/> Reservoir <input checked="" type="checkbox"/> River <input type="checkbox"/> Swamp <input type="checkbox"/> Other (specify) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="radio"/> Increasing <input type="radio"/> Stable <input checked="" type="radio"/> Decreasing <input type="radio"/> Not known	<input checked="" type="checkbox"/> Habitat <input checked="" type="checkbox"/> Climate <input type="checkbox"/> Invasive species <input type="checkbox"/> Pollution <input type="checkbox"/> Rehabilitation of habitat <input checked="" type="checkbox"/> Others <input type="checkbox"/> Not known	X
Palaemonidae	<input type="checkbox"/> Straddling <input type="checkbox"/> Transboundary <input type="checkbox"/> Introduced <input checked="" type="checkbox"/> Native	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="checkbox"/> Intertidal <input type="checkbox"/> Coastal in EEZ <input type="checkbox"/> High seas <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input checked="" type="checkbox"/> River <input checked="" type="checkbox"/> Swamp <input type="checkbox"/> Other (specify) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="radio"/> Increasing <input type="radio"/> Stable <input checked="" type="radio"/> Decreasing <input type="radio"/> Not known	<input checked="" type="checkbox"/> Habitat <input checked="" type="checkbox"/> Climate <input type="checkbox"/> Invasive species <input type="checkbox"/> Pollution <input type="checkbox"/> Rehabilitation of habitat <input checked="" type="checkbox"/> Others <input type="checkbox"/> Not known	X

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 abundance of species	
Dicentrarchus spp	<input type="checkbox"/> Straddling <input type="checkbox"/> Transboundary <input type="checkbox"/> Introduced <input checked="" type="checkbox"/> Native	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input checked="" type="checkbox"/> Intertidal <input checked="" type="checkbox"/> Coastal in EEZ <input type="checkbox"/> High seas <input type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input type="checkbox"/> River <input type="checkbox"/> Swamp <input type="checkbox"/> Other (specify) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="radio"/> Increasing <input type="radio"/> Stable <input checked="" type="radio"/> Decreasing <input type="radio"/> Not known	<input checked="" type="checkbox"/> Habitat <input checked="" type="checkbox"/> Climate <input type="checkbox"/> Invasive species <input type="checkbox"/> Pollution <input type="checkbox"/> Rehabilitation of habitat <input checked="" type="checkbox"/> Others <input type="checkbox"/> Not known	X
Epinephelus spp	<input type="checkbox"/> Straddling <input type="checkbox"/> Transboundary <input type="checkbox"/> Introduced <input checked="" type="checkbox"/> Native	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Not Known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Fluctuating <input checked="" type="radio"/> Decreasing <input type="radio"/> Depleted <input type="radio"/> Not known	<input checked="" type="checkbox"/> Intertidal <input checked="" type="checkbox"/> Coastal in EEZ <input type="checkbox"/> High seas <input type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input type="checkbox"/> River <input type="checkbox"/> Swamp <input type="checkbox"/> Other (specify) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="radio"/> Increasing <input type="radio"/> Stable <input checked="" type="radio"/> Decreasing <input type="radio"/> Not known	<input checked="" type="checkbox"/> Habitat <input checked="" type="checkbox"/> Climate <input type="checkbox"/> Invasive species <input type="checkbox"/> Pollution <input type="checkbox"/> Rehabilitation of habitat <input checked="" type="checkbox"/> Others <input type="checkbox"/> Not known	X



## 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.

This question refers to drivers impacting farmed aquatic genetic resources, not about impacts on the entire aquaculture sector. Drivers should be seen from a national perspective.

Driver impacting aquaculture	Effect on AqGR <i>Mark appropriate box</i>	Comments <i>List examples or other relevant information</i>
Human population increase	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	Strong fishing pressures through over fishing and illegal fishing and habitat destruction and clearances of flooded forests and mangroves.
Increased wealth and demand for fish	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	Demand for wild fish populations increased
Governance (ability of government, industry and the public to work together in managing resources)	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input checked="" type="radio"/> No effect <input type="radio"/> Unknown	
Climate change	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	Due to climate change lower water levels experienced. This resulted in some tributary lakes and floods plains were dried out and affecting the population of freshwater species in Cambodia.
Competition for resources, especially freshwater	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	Dry rice farming and promotion of rice farming can result in flooded forest clearances and making dam for water uses for rice.

Driver impacting aquaculture	Effect on AqGR <i>Mark appropriate box</i>	Comments <i>List examples or other relevant information</i>
Changes in values and ethics of consumers	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	Our Cambodian customers prefer wild fish while there are so much pressure already on the capture fish stock.
Other <b>Add other drivers as necessary</b>	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Add Row	Remove Row	

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

This question refers to drivers impacting wild aquatic genetic resources of farmed species, not about impacts on the entire aquaculture sector. Drivers should be seen from a national perspective.

Driver impacting aquaculture	Effect on AqGR <i>Mark appropriate box</i>	Comments <i>List examples or other relevant information</i>
Human population increase	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Increased wealth and demand for fish	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Governance (ability of government, industry and the public to work together in managing resources)	<input type="radio"/> Strongly positive <input checked="" type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	Still there are many challenging tasks for the government to handle the most hot spots of fish sanctuaries and conservation areas.
Climate change	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Competition for resources, especially freshwater	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	

Driver impacting aquaculture	Effect on AqGR <i>Mark appropriate box</i>	Comments <i>List examples or other relevant information</i>
Changes in values and ethics of consumers	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Other <b>Add other drivers as necessary</b>	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Add Row	Remove Row	

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*

First priority for Cambodia is to ensure fish sanctuaries in Tonle Sap Great Lake and fish conservation areas in Community Fisheries and deep pools along the Mekong River and its tributaries well protected and managed. Aquaculture Research Centers and Institute shall domesticate the economic value species. This will allow us to have diverse broodstock while we still good candidates for broodstock. Also another intervention we will breed natural broodstock and nurse and rear in the aquaculture research centers and release those fingerlings into natural water bodies.

**Biotechnologies**

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

Biotechnology	Extent of use	Comments <i>main sources of information, important species for which the biotechnology is applied</i>
Selective breeding	<input type="radio"/> Not at all <input type="radio"/> To a minor extent <input checked="" type="radio"/> To some extent <input type="radio"/> To a great extent	
Hybridization	<input type="radio"/> Not at all <input checked="" type="radio"/> To a minor extent <input type="radio"/> To some extent <input type="radio"/> To a great extent	
Polyploidy (chromosome set manipulation)	<input type="radio"/> Not at all <input type="radio"/> To a minor extent <input type="radio"/> To some extent <input type="radio"/> To a great extent	
Monosex production	<input checked="" type="radio"/> Not at all <input type="radio"/> To a minor extent <input type="radio"/> To some extent <input type="radio"/> To a great extent	
Marker assisted selection	<input type="radio"/> Not at all <input checked="" type="radio"/> To a minor extent <input type="radio"/> To some extent <input type="radio"/> To a great extent	
Gynogenesis/androgenesis	<input checked="" type="radio"/> Not at all <input type="radio"/> To a minor extent <input type="radio"/> To some extent <input type="radio"/> To a great extent	
Other		
<b>Continue adding row as necessary</b>		
	<input type="radio"/> Not at all <input type="radio"/> To a minor extent <input type="radio"/> To some extent <input type="radio"/> To a great extent	
Add Row	Remove Row	

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 that 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 <i>mark appropriate box</i>	Countermeasures and effects
Habitat loss and degradation	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	Managing the main habitats and its connections are urgently exercised and management of the whole ecosystem (upstream and downstream) also crucially important.
Pollution of waters	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Increased frequency of extreme climatic events and long-term climate change	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Establishment of invasive species	<input type="radio"/> Strongly positive <input checked="" type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Introductions of parasites and pathogens	<input type="radio"/> Strongly positive <input checked="" type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	

Drivers that are changing aquatic ecosystems	Effect on AqGR <i>mark appropriate box</i>	Countermeasures and effects
Impacts of purposeful stocking and escapes from aquaculture	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	In Cambodia we try our best that exotic aquaculture species are not allowed farming in natural water river and lake. While many cages farming of exotic species are being practiced in Mekong Delta, VN and Laos. Hence it requires all Mekong riparian countries to implement this together.
Capture fisheries	<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	The deep reform in fisheries in 2012 where all fishing lots were demolished for public fishing (smalle-medium scales) could result in no protection of broodstock.
Other	<input type="radio"/> Strongly positive	
<b><i>Continue listing other driverst</i></b>	<input type="radio"/> Positive	
	<input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect <input type="radio"/> Unknown	
Add Row	Remove Row	



### 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 situ* 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 fisheries contributing to *in situ* conservation of the aquatic genetic resources of farmed aquatic species and their wild relatives.

*Please mark appropriate box.*

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

*Please include any additional information*

Only initial attempts to collect wild larvae populations of freshwater fish species floating from upstream Mekong in Kratie province, Cambodia and raised in ponds without feeding in the 1st month. These fishes are the potential candidates for aquaculture broodstock. The finding results on the species diversities, composition and species richness will be studied.

21. To what extent are existing facilities 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***

Our aquaculture research Centers and Institute maintain potential candidates for broodstock of wild relatives of farmed aquatic species.

22. Please provide *examples* 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***

There are many private farms that have endangered species and economic potential aquatic species where the Fisheries Administration can collaborate with for breeding trials. But we require artificial propagation techniques and genetics application and analysis.

23. Please rank (from 1 to 10) the importance of the following objectives for *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives in your country.

Objectives of <i>in situ</i> conservation	Rank 1=Very Important 10=No importance
Preservation of aquatic genetic diversity	<input type="text" value="1"/>
Maintain good strains for aquaculture production	<input type="text" value="1"/>
Meet consumer and market demands	<input type="text" value="1"/>
To help adapt to impacts of climate change	<input type="text" value="1"/>
Future breed improvement in aquaculture	<input type="text" value="1"/>
<b><i>Please continue listing any other objectives as needed</i></b>	<input type="text"/>
<div style="display: flex; justify-content: space-around;"> <span>Add Row</span> <span>Remove Row</span> </div>	

**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 in the policy 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***

Although at policy level Cambodia include the *in situ* conservation of aquatic genetic resources of farmed aquatic species and their wild relatives but implementation is limited due to expertise and financial resource allocations.

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***

Fisheries Administration works strongly to combat illegal fishing using fine mesh net during the larvae season from June - September. There are illegal trades of wild broodstock to VN where it is difficult to combat.

**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*

*If yes, please give examples*

- Yes  
 Not yet, but under development  
 No  
 Unknown

**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**

27. 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

Add Row

Aquatic protected area	Effectiveness of conserving Aquatic Genetic Resources	Comments <i>provide any additional information</i>	
	<input type="radio"/> Very effective <input type="radio"/> Somewhat effective <input type="radio"/> Not effective <input type="radio"/> Unknown		X

#### 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

28. 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*)).

Add Row				
Species (include information on subspecies or strain in comments if available)	Type of use <i>Please mark all that apply</i>	Is the species (or subspecies) threatened or endangered for example in the IUCN Red List, CITES Appendices or national lists? <i>Please mark appropriate box</i>	Comments <i>Please list any additional information</i>	
Pangasianodon hypothalamus	<input checked="" type="checkbox"/> Direct human consumption <input type="checkbox"/> Live feed organism <input checked="" type="checkbox"/> Other	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown	Only Cambodia that has this species in the wild of Mekong and Tonle Sap Great Lake and Rivers.	X
Barbonymus gonionotus	<input checked="" type="checkbox"/> Direct human consumption <input type="checkbox"/> Live feed organism <input checked="" type="checkbox"/> Other	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown	For domestication as potential for broodstock	X
Arius thalassinus	<input type="checkbox"/> Direct human consumption <input type="checkbox"/> Live feed organism <input checked="" type="checkbox"/> Other	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown	Small sizes of giant catfish was collected to raise in ponds private and public ponds.	X

53 Species (include information on subspecies or strain in comments if available)	Type of use <i>Please mark all that apply</i>	Is the species (or subspecies) threatened or endangered for example in the IUCN Red List, CITES Appendices or national lists?  <i>Please mark appropriate box</i>	Comments  <i>Please list any additional information</i>	
Catlocarpio siamensis	<input type="checkbox"/> Direct human consumption <input type="checkbox"/> Live feed organism <input checked="" type="checkbox"/> Other	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown	Small sizes were collected to raise in private and public ponds.	<div style="border: 1px solid black; padding: 2px; text-align: center;">X</div>

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

29. 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. 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.

Add Row					
Species (include information on subspecies or strain if available in comments)	Users and managers <i>List all that apply</i>	Type of <i>ex-situ</i> conservation collection <i>in vitro</i> <i>mark all that apply</i>	Facilities where collection is located <i>mark all that apply</i>	Comments <i>list all breeds, subspecies of the species and any additional information</i>	
see comments		<input type="checkbox"/> In vitro collection of gametes <input type="checkbox"/> In vitro collection of embryos <input type="checkbox"/> In vitro collection of tissues <input type="checkbox"/> Spores <input type="checkbox"/> Other	<input type="checkbox"/> Aquaculture facilities <input type="checkbox"/> Research facilities <input type="checkbox"/> Universities <input type="checkbox"/> Zoos and aquaria <input type="checkbox"/> Other	Fisheries Administration has yet carried out <i>in vitro</i> collections and gene banks of the gametes, embryos, tissues, spores and other quiescent forms of farmed aquatic species and their wild relatives.	X



30. Please rank (from 1 – 10) the importance of the following objectives for ex situ conservation of aquatic genetic resources of farmed aquatic species and their wild relatives in your country

Objectives of <i>ex situ</i> conservation	Rank 1=Very Important 10=No importance
Preservation of aquatic genetic diversity	<input type="text" value="1"/>
Maintain good strains for aquaculture production	<input type="text" value="1"/>
Meet consumer and market demands	<input type="text" value="2"/>
To help adapt to impacts of climate change	<input type="text" value="1"/>
Future breed improvement in aquaculture	<input type="text" value="1"/>
Other	
<b><i>Continue adding row as necessary</i></b>	<input type="text"/>
Add Row	Remove Row

## **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**

31. 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 in regards og AqGR <i>mark all that apply</i>	Genetic resource of main interest <i>mark all that apply</i>	Comments <i>Please provide any information or explanation of stakeholders' role</i>
Fish Farmers	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input checked="" type="checkbox"/> Processing <input type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	
Fishers	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input type="checkbox"/> Feed manufacturing <input type="checkbox"/> Breeding <input type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input type="checkbox"/> Processing <input type="checkbox"/> Advocacy <input type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	

Stakeholders	Role of stakeholder in regards og AqGR <i>mark all that apply</i>	Genetic resource of main interest <i>mark all that apply</i>	Comments <i>Please provide any information or explanation of stakeholders' role</i>
Fish hatchery people	<input checked="" type="checkbox"/> Conservation <input type="checkbox"/> Production <input type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input type="checkbox"/> Research <input type="checkbox"/> Marketing <input type="checkbox"/> Processing <input type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	
People involved in marketing	<input checked="" type="checkbox"/> Conservation <input type="checkbox"/> Production <input type="checkbox"/> Feed manufacturing <input type="checkbox"/> Breeding <input type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input checked="" type="checkbox"/> Processing <input type="checkbox"/> Advocacy <input type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	
Government resource managers	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input checked="" type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input checked="" type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input checked="" type="checkbox"/> Processing <input checked="" type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	

Stakeholders	Role of stakeholder in regards og AqGR <i>mark all that apply</i>	Genetic resource of main interest <i>mark all that apply</i>	Comments <i>Please provide any information or explanation of stakeholders' role</i>
Fishing or aquaculture associations	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input checked="" type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input checked="" type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input type="checkbox"/> Processing <input checked="" type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	
Aquatic protected area managers	<input checked="" type="checkbox"/> Conservation <input type="checkbox"/> Production <input type="checkbox"/> Feed manufacturing <input type="checkbox"/> Breeding <input checked="" type="checkbox"/> Research <input type="checkbox"/> Marketing <input type="checkbox"/> Processing <input checked="" type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	
Policy Makers	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input checked="" type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input type="checkbox"/> Processing <input type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	

Stakeholders	Role of stakeholder in regards og AqGR <i>mark all that apply</i>	Genetic resource of main interest <i>mark all that apply</i>	Comments <i>Please provide any information or explanation of stakeholders' role</i>
Non-Governmental Organizations	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input checked="" type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input checked="" type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input checked="" type="checkbox"/> Processing <input checked="" type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	
Intergovernmental Organizations	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input checked="" type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input checked="" type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input checked="" type="checkbox"/> Processing <input checked="" type="checkbox"/> Advocacy <input type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	
Donors	<input checked="" type="checkbox"/> Conservation <input checked="" type="checkbox"/> Production <input checked="" type="checkbox"/> Feed manufacturing <input checked="" type="checkbox"/> Breeding <input checked="" type="checkbox"/> Research <input checked="" type="checkbox"/> Marketing <input checked="" type="checkbox"/> Processing <input checked="" type="checkbox"/> Advocacy <input checked="" type="checkbox"/> Outreach/Extension <input type="checkbox"/> Other ( <b>specify</b> ) <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div>	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	

Stakeholders	Role of stakeholder in regards og AqGR <i>mark all that apply</i>	Genetic resource of main interest <i>mark all that apply</i>	Comments <i>Please provide any information or explanation of stakeholders' role</i>										
Consumers	<table><tr><td><input type="checkbox"/> Conservation</td><td><input checked="" type="checkbox"/> Marketing</td></tr><tr><td><input checked="" type="checkbox"/> Production</td><td><input checked="" type="checkbox"/> Processing</td></tr><tr><td><input type="checkbox"/> Feed manufacturing</td><td><input type="checkbox"/> Advocacy</td></tr><tr><td><input checked="" type="checkbox"/> Breeding</td><td><input checked="" type="checkbox"/> Outreach/Extension</td></tr><tr><td><input type="checkbox"/> Research</td><td><input type="checkbox"/> Other (<b>specify</b>)</td></tr></table> <div style="border: 1px solid black; height: 60px; width: 100%;"></div>	<input type="checkbox"/> Conservation	<input checked="" type="checkbox"/> Marketing	<input checked="" type="checkbox"/> Production	<input checked="" type="checkbox"/> Processing	<input type="checkbox"/> Feed manufacturing	<input type="checkbox"/> Advocacy	<input checked="" type="checkbox"/> Breeding	<input checked="" type="checkbox"/> Outreach/Extension	<input type="checkbox"/> Research	<input type="checkbox"/> Other ( <b>specify</b> )	<input type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	
<input type="checkbox"/> Conservation	<input checked="" type="checkbox"/> Marketing												
<input checked="" type="checkbox"/> Production	<input checked="" type="checkbox"/> Processing												
<input type="checkbox"/> Feed manufacturing	<input type="checkbox"/> Advocacy												
<input checked="" type="checkbox"/> Breeding	<input checked="" type="checkbox"/> Outreach/Extension												
<input type="checkbox"/> Research	<input type="checkbox"/> Other ( <b>specify</b> )												

a) Please indicate the most important role of women in regards to AqGR

Women are cooking for the family. When women are educated about the important aspects of AqGR she will not cook the endangered fishes or the rare fish species.

b) Please indicate the most important role of indigenous and local communities in regards to AqGR

Indigenous and local communities are so crucial to AqGR when they understand the needs to protect those aquatic species for long term genetic resources. Then they will protect those aquatic species as they are living with them and dependent on them too.



## 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

32. Please list national legislation, policies and/or mechanisms that address aquatic genetic resources of farmed species and their wild relatives (see question 47 regarding international agreements).

Add Row

Add Row				
National legislation, policy and/or mechanism	Date established	Scope <i>Select all that apply</i>	Comments <i>Please provide any additional information for example whether it has been effective or not; and main sources of information</i>	

National legislation, policy and/or mechanism	Date established	Scope <i>Select all that apply</i>	Comments <i>Please provide any additional information for example whether it has been effective or not; and main sources of information</i>	
<p>Fisheries Law (2006) including Article 23 and 92; Sub-decree on Vulnerable, Rare and Endangered Aquatic Species (2009) and Strategy Planning Framework Fisheries Management (2010-2019 and updated 2015-2024)</p> <p>- Cambodia is also signatory to a diverse array of international agreements. Those which impact specifically on fisheries and the aquatic environment include:</p> <ul style="list-style-type: none"> <li>• Convention on Biodiversity.</li> <li>• Convention on Fishing and Conservation of Living Resources of the High Seas.</li> <li>• Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES).</li> <li>• Climate Change-Kyoto Protocol, United Nations Framework Convention on Climate Change.</li> <li>• Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar).</li> </ul>	2006, 2009	<input type="checkbox"/> Genes or molecules only <input checked="" type="checkbox"/> Aquaculture <input checked="" type="checkbox"/> Capture fisheries <input checked="" type="checkbox"/> Conservation <input type="checkbox"/> Intellectual property protection <input checked="" type="checkbox"/> Importation <input checked="" type="checkbox"/> Trade and commerce <input checked="" type="checkbox"/> Access and benefit sharing <input type="checkbox"/> Other		X

**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**

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

Limited capacities and experiences of fisheries and aquaculture officers, lecturers and academics and limited financial resources of Fisheries Administration and Universities in Fisheries and Aquaculture are the major constraints in implementing national legislation, policies and/or mechanisms in regard to aquatic genetic resources. Moreover, Development Partners and INGOs have little focuses on the aquatic genetic resources too. Universities in fisheries and aquaculture

34. 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 <i>Please, provide verifiable main sources of information, effectiveness of the restriction, description of type of restriction and for whom does the restriction apply</i>
DNA	
Stock, breed or variety	
Species	Giant catfish, Wild Siamese crocodiles, Giant Carp, Freshwater dolphin, Freshwater dragon fish
Other	
<b>Continue adding row as necessary</b>	
Add Row	Remove Row

35. 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.

Add Row

Action taken to enhance access to aquatic genetic resources outside your country	Type of genetic resource <i>Mark all that apply</i>	Comment <i>for example other types of genetic resources</i>	
	<input type="checkbox"/> DNA <input type="checkbox"/> Genes <input type="checkbox"/> Gametes <input type="checkbox"/> Tissues <input type="checkbox"/> Embryos <input type="checkbox"/> Living specimens		X

36. Please indicate any obstacles your country has encountered when trying 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 <i>mark all that apply</i>	Comments <i>please include additional information as needed</i>
Intellectual property protection	<input type="checkbox"/> DNA <input type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	
National laws of your country	<input type="checkbox"/> DNA <input type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	
National laws of donor country	<input type="checkbox"/> DNA <input type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	
International laws or protocols	<input type="checkbox"/> DNA <input type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	
Too expensive	<input checked="" type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	Knowledge and skills are limited.
Material transfer agreements required	<input type="checkbox"/> DNA <input type="checkbox"/> Stock, breed or variety <input checked="" type="checkbox"/> Species <input type="checkbox"/> Other	
Knowledge gaps	<input type="checkbox"/> DNA <input checked="" type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	
Public perception	<input type="checkbox"/> DNA <input type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	

Obstacles to accessing aquatic genetic resources	Please describe type of genetic resource <i>mark all that apply</i>	Comments <i>please include additional information as needed</i>
Other	<input type="checkbox"/> DNA <input type="checkbox"/> Stock, breed or variety <input type="checkbox"/> Species <input type="checkbox"/> Other	Indigenous aquatic species of wild relatives are still available in Cambodian natural water bodies. Except exotic species that Cambodia needs to import new candidates for broodstock for example Nile tilapia.
<b>Continue adding row as necessary</b>		
see comments		
Add Row		

## **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.

### **Research**

37. 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*

Fisheries Administration is promoting the collection of wild relative aquatic species to be stocked and raised for domestication in National Aquaculture Research Centers and Institute for future candidates for aquaculture broodstock. This is urgently needed for short, medium and long term of aquatic genetic resources for aquaculture.

38. 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.

Add Row

Main institutions, organizations, corporations and other entities	Area of research <i>Mark all that apply</i>	Comments <i>Please provide any additional information</i>	
Bati Fish Seed Production Center	<input type="checkbox"/> Genetic resource management <input checked="" type="checkbox"/> Basic knowledge on aquatic genetic resources Characterization and <input checked="" type="checkbox"/> monitoring of aquatic genetic resources <input type="checkbox"/> Genetic improvement <input type="checkbox"/> Economic valuation of aquatic genetic resources <input checked="" type="checkbox"/> Conservation of aquatic genetic resources <input type="checkbox"/> Communication on aquatic genetic resources <input checked="" type="checkbox"/> Access and distribution of aquatic genetic resources <input type="checkbox"/> Other	Main species are Pangasianodon hypophthalmus and giant freshwater prawn	X
National Aquaculture Research and Development Institute	<input type="checkbox"/> Genetic resource management <input checked="" type="checkbox"/> Basic knowledge on aquatic genetic resources Characterization and <input checked="" type="checkbox"/> monitoring of aquatic genetic resources <input type="checkbox"/> Genetic improvement <input type="checkbox"/> Economic valuation of aquatic genetic resources <input checked="" type="checkbox"/> Conservation of aquatic genetic resources <input checked="" type="checkbox"/> Communication on aquatic genetic resources <input checked="" type="checkbox"/> Access and distribution of aquatic genetic resources <input type="checkbox"/> Other	Main species: redbtail catfish and Leptobarbus hoeveni	X



Main institutions, organizations, corporations and other entities	Area of research <i>Mark all that apply</i>	Comments <i>Please provide any additional information</i>	
Marine Aquaculture Research Center	<input type="checkbox"/> Genetic resource management <input checked="" type="checkbox"/> Basic knowledge on aquatic genetic resources <input checked="" type="checkbox"/> Characterization and monitoring of aquatic genetic resources <input type="checkbox"/> Genetic improvement <input type="checkbox"/> Economic valuation of aquatic genetic resources <input checked="" type="checkbox"/> Conservation of aquatic genetic resources <input checked="" type="checkbox"/> Communication on aquatic genetic resources <input checked="" type="checkbox"/> Access and distribution of aquatic genetic resources <input type="checkbox"/> Other	Seabass and coral grouper	X

39. 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 rank the following in regard to capacity strengthening.*

Capacities	Rank 1=Very Important 10=No importance
Improve basic knowledge on aquatic genetic resources	1
Improve capacities for characterization and monitoring of aquatic genetic resources	1
Improve capacities for genetic improvement	1
Improve capacities for genetic resource management	1
Improve capacities for economic valuation of aquatic genetic resources	3
Improve capacities for conservation of aquatic genetic resources	2
Improve communication on aquatic genetic resources	3
Improve access to and distribution of aquatic genetic resources	2
Add other rows as appropriate and rank <div style="border: 1px solid black; height: 75px; width: 100%;"></div> <div style="border: 1px solid black; padding: 2px;">Add Row</div> <div style="border: 1px solid black; padding: 2px;">Remove Row</div>	<div style="border: 1px solid black; height: 25px; width: 100%;"></div>

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

**Education, training and extension**

40. 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.

Add Row

Institution	Thematic Area	Type of courses mark all that apply	Comments	
Royal University of Agriculture, Faculty of Fisheries and Aquaculture; Prek Leap National School of Agriculture; Kampong Cham National School of Agriculture	Genetic resource management	<input checked="" type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Post-graduate <input type="checkbox"/> Training <input type="checkbox"/> Extension		
	Characterization and monitoring of aquatic genetic resources	<input checked="" type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Post-graduate <input type="checkbox"/> Training <input type="checkbox"/> Extension		
	Genetic improvement	<input checked="" type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Post-graduate <input type="checkbox"/> Training <input type="checkbox"/> Extension		X
	Economic valuation of aquatic genetic resources	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Post-graduate <input type="checkbox"/> Training <input type="checkbox"/> Extension		
	Conservation of aquatic genetic resources	<input checked="" type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Post-graduate <input type="checkbox"/> Training <input type="checkbox"/> Extension		

**Coordination and networking**

41. Please list any mechanisms within 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:

Add Row	
Name of mechanism	Description of how mechanism operates
Cambodia Development Council, Royal Government of Cambodia	Any investment and development that affect fisheries resources, genetics property and fish diversity and biodiversity watersheds, costal ecosystems require discussions and approval by all high level members of line Ministries.
National Sustainable Development Council	One of the Tasks is to lead, manage and facilitate blue economy, climate changes, biodiversity conservation and biosafety.

42. 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 rank the following in regards to capacity strengthening.*

Capacities	Rank 1=Very Important 10=No importance
Increase awareness in institutions	<input type="text" value="2"/>
Increase technical capacities of institutions	<input type="text" value="1"/>
Increase information sharing between institutions	<input type="text" value="5"/>
Add other rows as appropriate and rank <input type="text"/> <input type="button" value="Add Row"/> <input type="button" value="Remove Row"/>	<input type="text"/>

*Please specify in box below*

43. 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.

Add Row

Network	Objectives of the network <i>Please mark all that apply</i> to your country	Comments
<p>Fisheries Law (2006) including Article 23 and 92; Sub-decree on Vulnerable, Rare and Endangered Aquatic Species (2009) and Strategy Planning Framework Fisheries Management (2010-2019 and updated 2015-2024) - Cambodia is also signatory to a diverse array of international agreements. Those which impact specifically on fisheries and the aquatic environment include:</p> <ul style="list-style-type: none"> <li>• Convention on Biodiversity.</li> <li>• Convention on Fishing and Conservation of Living Resources of the High Seas.</li> <li>• Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES).</li> <li>• Climate Change-Kyoto Protocol, United Nations Framework Convention on Climate Change.</li> <li>• Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar).</li> </ul>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Improve basic knowledge on aquatic genetic resources</li> <li><input checked="" type="checkbox"/> Improve capacities for characterization and monitoring of aquatic genetic resources</li> <li><input type="checkbox"/> Improve capacities for genetic improvement</li> <li><input checked="" type="checkbox"/> Improve capacities for economic valuation of aquatic genetic resources</li> <li><input checked="" type="checkbox"/> Improve capacities for conservation of aquatic genetic resources</li> <li><input checked="" type="checkbox"/> Improve communication on aquatic genetic resources</li> <li><input checked="" type="checkbox"/> Improve access to and distribution of aquatic genetic resources</li> </ul>	<p style="text-align: right;">X</p>

### Information systems

44. 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.

Add Row

Name of information system	Type of information stored <i>mark all that apply</i>	Main stakeholders <i>mark all that apply</i>	
Mekong Fish	<input type="checkbox"/> DNA sequence <input type="checkbox"/> Genes and genotype <input type="checkbox"/> Breeds, strains or stocks <input checked="" type="checkbox"/> Species names <input type="checkbox"/> Production figures <input type="checkbox"/> Distribution <input type="checkbox"/> Level of endangerment <input type="checkbox"/> Other	<input type="checkbox"/> Fish farmers <input type="checkbox"/> Fishers in capture fisheries <input type="checkbox"/> Fish hatchery people <input type="checkbox"/> People involved in marketing <input type="checkbox"/> Government resource managers <input type="checkbox"/> Fishing or aquaculture associations <input type="checkbox"/> Aquatic protected area managers <input type="checkbox"/> University and academic people <input type="checkbox"/> Non-Governmental Organizations <input type="checkbox"/> Intergovernmental Organizations <input type="checkbox"/> Policy makers <input type="checkbox"/> Donors <input type="checkbox"/> Consumers <input type="checkbox"/> Politicians <p><b>Please list other stakeholders as necessary</b></p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>	X

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

*Please describe what capacities need to be strengthened*

Database establishment, management and data analysis

*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

46. 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<sup>2</sup> 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:

<sup>2</sup> <http://www.cbd.int/abs/nagoya-protocol/signatories/>

- 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
- 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

Add Row

International, Regional, bilateral or Sub-Regional agreement	Year your country ratified or subscribed to the agreement	Impact on aquatic genetic resources	Impact on stakeholders	Comments
CITES		<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input checked="" type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect	X

International, Regional, bilateral or Sub-Regional agreement	Year your country ratified or subscribed to the agreement	Impact on aquatic genetic resources	Impact on stakeholders	Comments	
Nagoya		<input type="radio"/> Strongly positive <input checked="" type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input checked="" type="radio"/> No effect		X
CBD		<input checked="" type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input checked="" type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect		X
Cartagena		<input type="radio"/> Strongly positive <input checked="" type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input checked="" type="radio"/> No effect		X
Ramsar		<input type="radio"/> Strongly positive <input checked="" type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input type="radio"/> No effect	<input type="radio"/> Strongly positive <input type="radio"/> Positive <input type="radio"/> Negative <input type="radio"/> Strongly negative <input checked="" type="radio"/> No effect		X

47. 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 ...	Rank 1=Very Important 10=No importance	To what extent are the needs being met	Comments <i>For example any critical gaps</i>
Improve information technology and database management	1	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Improve basic knowledge on aquatic genetic resources	1	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Improve capacities for characterization and monitoring of aquatic genetic resources	2	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Improve capacities for genetic improvement	1	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Improve capacities for economic valuation of aquatic genetic resources	3	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Improve capacities for conservation of aquatic genetic resources	1	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Improve communication on aquatic genetic resources	4	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	

Collaboration is needed in order to ...	Rank 1=Very Important 10=No importance	To what extent are the needs being met	Comments <i>For example any critical gaps</i>
To improve access to and distribution of aquatic genetic resources	2	<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Other		<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
<b>Continue adding row as necessary</b>		<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
		<input type="radio"/> To a great extent <input type="radio"/> To some extent <input type="radio"/> None <input type="radio"/> Unknown	
Add Row	Remove Row		

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

South-South cooperation  
International exchange via NACA and SEAFDEC

49. 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*

Strengthening of capacities regarding AqGR characterization, data collection, improvement, management and conservation is extremely needed.

50. 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.

Pangasinodon spp.

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