

# Simplified guidelines for the preparation of brief country reports contributing to *The State of the World's Biodiversity for Food and Agriculture*

Prepared by the Secretariat of the FAO Commission on Genetic Resources for Food and Agriculture

## Introduction

The present guidelines are intended to assist countries that have not submitted a Country Report for *The State of the World's Biodiversity for Food and Agriculture* to prepare a brief report, capturing the major issues and findings on the state of their biodiversity for food and agriculture.

While countries may report using the simplified guidelines prepared by the Secretariat, the Commission at its Sixteenth Regular Session noted that the use of the full guidelines<sup>1</sup> is the preferred option.<sup>2</sup>

## Context

Conservation and sustainable management of biodiversity for food and agriculture require a comprehensive understanding of the state and use of its components. Biodiversity for food and agriculture includes the variety and variability of animals, plants and micro-organisms at the genetic, species and ecosystem levels that sustain the structure, functions and processes of agricultural, pastoral, forest and aquatic production systems. This diversity has been managed or influenced by farmers, livestock keepers, forest dwellers and fisherfolk for hundreds of generations and reflects the diversity of both human activities and natural processes.

In 2007, the Commission on Genetic Resources for Food and Agriculture (the Commission)<sup>3</sup> requested FAO to prepare the first report on *The State of the World's Biodiversity for Food and Agriculture* (Report).<sup>4</sup>

At its Fourteenth Regular Session, the Commission invited countries to participate in the process by preparing Country Reports on the state of their national biodiversity for food and agriculture.<sup>5</sup> To assist countries in this task, FAO developed guidelines for the preparation of Country Reports (country report guidelines).<sup>6</sup> Building on previous global assessments prepared under the aegis of the Commission, the Report will focus on the interactions between sectors (plant, animal, forest and aquatic genetic resources) and on cross-sectoral matters. It will also provide baseline information on the state of associated biodiversity<sup>7</sup> and the ecosystem services they provide (please consult Appendix 1 for the

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<sup>1</sup> See <http://www.fao.org/nr/cgrfa/biodiversity/guidelines/en/>.

<sup>2</sup> CGRFA-16/17/Report.

<sup>3</sup> The FAO Commission on Genetic Resources for Food and Agriculture is the only intergovernmental forum that specifically develops policies for the sustainable use and conservation of genetic resources for food and agriculture and the fair and equitable sharing of benefits derived from their use. As of 1 December 2015, 178 countries are member of the Commission.

<sup>4</sup> CGRFA-11/07/Report, Appendix E.

<sup>5</sup> CGRFA-14/13/Report, paragraph 14.

<sup>6</sup> See <http://www.fao.org/nr/cgrfa/biodiversity/guidelines/en/>.

<sup>7</sup> Associated biodiversity includes a range of organisms that are found in and around production systems, above and below ground, and that have a functional role in the ecosystem, for example through pollination, soil formation, water provision, etc. For a more detailed definition, see Annex 1 of the country report guidelines.

scope of the Report).

A draft of the Report was presented for information to the Commission at its Sixteenth Regular Session.<sup>8</sup>

### **Recommended approach for the preparation of brief country reports**

Given the cross-sectoral nature of the brief report, National Focal Points are encouraged to involve as many representative stakeholders as practical, including government, research and civil society representatives from different sectors (fisheries and aquaculture, forest, livestock and plants) and those able to support analysis of associated biodiversity.

The National Focal Point is invited to submit the brief report to the Secretariat of the Commission by email at: [SOW-BFA@fao.org](mailto:SOW-BFA@fao.org) in English, French or Spanish. To ensure the brief reports are taken into consideration in the preparation of the Report, countries are requested to submit them no later than **30 June 2017**.

To assist countries with the preparation of the brief report, the guidance presented below is organized around the following four areas of biodiversity for food and agriculture:

- I. Assessment and monitoring
- II. Conservation and sustainable use
- III. Policies, institutions and capacity
- IV. Regional and international cooperation

Countries are invited to provide information on the above mentioned priority areas, to identify areas where information is missing.<sup>9</sup>

NOTE: The description of terms used in the guidelines is provided in the Annexes to this document.

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<sup>8</sup> CGRFA-16/17/Inf.10 (available here, in English: <http://www.fao.org/3/a-mr762e.pdf>)

<sup>9</sup> The Commission acknowledged that the Report's findings would be preliminary and incomplete in a number of areas and requested FAO to ensure that such information gaps would be assessed and highlighted in the report (CGRFA-14/13/Report, paragraph 15).

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## STATE OF KNOWLEDGE OF BIODIVERSITY FOR FOOD AND AGRICULTURE

***Please consult referenced sections of the country report guidelines<sup>10</sup> and annexes for additional information, descriptions and definitions.***

### I. Assessment and monitoring of biodiversity for food and agriculture

#### 1.1 General context<sup>11</sup>

- a) Provide a brief account on the role of biodiversity for food and agriculture in your country.<sup>12</sup>
- b) Indicate which of the production systems listed in Table 1 below are found in your country<sup>13</sup> and briefly describe each of them (e.g. area under production, share of smallholders, importance of the production system to the incomes, livelihoods and well-being of rural communities, etc.).<sup>14</sup>

**Table 1.** Production systems present in the country.

Production system	Indicate if present in the country (Y/N)	Description <sup>13</sup>
Livestock grassland-based systems		
Livestock landless systems		
Naturally regenerated forests		
Planted forests		
Self-recruiting capture fisheries		
Culture-based fisheries		
Fed aquaculture		
Non-fed aquaculture		
Irrigated crops (rice)		
Irrigated crops (other)		
Rainfed crops		
Mixed systems (livestock, crop,		
Others (please specify)		

*[Insert rows as needed]*

#### 1.2. State, trends and drivers of change of biodiversity for food and agriculture

<sup>10</sup> See <http://www.fao.org/nr/cgrfa/biodiversity/guidelines/en/>.

<sup>11</sup> Reference: questions 2, 3, 4, 5, 6 and 7 of country report guidelines.

<sup>12</sup> Reference: question 3 of country report guidelines.

<sup>13</sup> Reference: Annex 2 of this document, questions 4 and 5 of country report guidelines. For the purpose of this table, aggregated production systems are used (disregarding climatic zones).

<sup>14</sup> Reference: questions 5 and 7 (Table 3) of country report guidelines and FAOSTAT: <http://faostat3.fao.org/home/E>

- a) Describe the main features of the state and trends<sup>15</sup> of and the main drivers of change<sup>16</sup> affecting plant, animal, forest and aquatic genetic resources in the country's production systems as identified in Table 1.
- b) Indicate whether the country has any national information system in place on associated biodiversity and identify the most frequently monitored components of associated biodiversity.<sup>17</sup>
- c) List associated biodiversity species that are actively managed in production systems for the provision of ecosystem services in Table 2.

**Table 2.** List of associated biodiversity species that are actively managed in production systems for the provision of ecosystem services.<sup>18</sup>

Associated biodiversity species	Ecosystem functions and services provided by the species in the production system
Species 1	
Species 2	

*[Insert rows as needed]*

- d) Provide in Table 3 a list of wild food species known to be harvested, hunted, captured or gathered for food in your country. Indicate the change in state of the species over the last 10 years (strongly increasing (2), increasing (1), stable (0), decreasing (-1), or strongly decreasing (-2), or not known (NK)).

**Table 3.** Wild food species used for food in the country.<sup>19</sup>

Wild food species	Change in state (2,1,0,-1,-2, NK)
Species 1	
Species 2	

*[Insert rows as needed]*

- e) If available, provide information on the proportion of the population in your country that uses wild food on a regular basis for food and nutrition.<sup>20</sup>

<sup>15</sup> Reference: (i) the First and Second Reports on the *State of the World's Plant Genetic Resources for Food and Agriculture*; the First and Second Reports on the *State of the World's Animal Genetic Resources for Food and Agriculture*; and *The State of the World's Forest Genetic Resources*; and (ii) questions 3, 11, and 20 of country report guidelines.

<sup>16</sup> Reference: (i) the First and Second Reports on the *State of the World's Plant Genetic Resources for Food and Agriculture*; the First and Second Reports on the *State of the World's Animal Genetic Resources for Food and Agriculture*; and *The State of the World's Forest Genetic Resources*; (ii) Annex 3 of the country report guidelines includes a list of drivers of change and descriptions; Annex 3 to this document; and (iii) questions 44, 45 and 55 of country report guidelines.

<sup>17</sup> Reference: questions 28 and 75 of country report guidelines.

<sup>18</sup> Reference: question 27 of country report guidelines.

<sup>19</sup> Reference: question 34 of country report guidelines.

<sup>20</sup> Reference: question 59 of country report guidelines.

- f) Briefly summarize the state and trends<sup>21</sup> of and the drivers of change<sup>22</sup> affecting:
- Associated biodiversity<sup>23</sup>: micro-organisms, invertebrates, vertebrates, plants
  - Ecosystem services<sup>24</sup>: regulating, supporting
  - Wild food resources<sup>25</sup>

**BOX 1.** Describe one or two examples of countermeasures that have been taken in the country to reduce adverse effects of drivers on associated biodiversity, ecosystem services and/or wild foods.<sup>26</sup>

### 1.3 Needs and priorities

- a) Identify the country's main needs and priorities in terms of the state of biodiversity for food and agriculture, and in particular of associated biodiversity, wild foods and ecosystem services.<sup>27</sup>

## II. Sustainable use and conservation of biodiversity for food and agriculture

### 2.1 Sustainable use

- a) List in Table 4 management and diversity based practices that support the maintenance and use of biodiversity for food and agriculture in production systems.

**Table 4.** Management<sup>28</sup> and diversity based<sup>29</sup> practices that support the maintenance and use of biodiversity for food and agriculture in production systems.

Production system	Management/ diversity based practice <sup>30</sup>	Trends in the application of the practice over the past ten years

*[Insert rows as needed]*

**BOX 2.** Describe a successful programme or project that has been undertaken in the country to support one of the practices listed in Table 4.<sup>31</sup>

- b) Provide examples whereby the diversity *per se*,<sup>32</sup> or its lack,<sup>33</sup> had a direct effect on productivity;

<sup>21</sup> Reference: questions 21, 22, 23, 24, 29, 34 and 35 of country report guidelines.

<sup>22</sup> Reference: Annex 3 and questions 9, 10, 12, 14, 44, 45 and 55 of country report guidelines.

<sup>23</sup> Annex 1 provides a definition of associated biodiversity.

<sup>24</sup> Annex 4 provides a definition of ecosystem services.

<sup>25</sup> Reference: question 34 of country report guidelines.

<sup>26</sup> Reference: question 19 of country report guidelines.

<sup>27</sup> Reference: questions 28, 48 and 49 of country report guidelines.

<sup>28</sup> Annex 5 describes a list of management practices supporting the use and conservation of biodiversity for food and agriculture.

<sup>29</sup> Annex 6 describes a list of diversity based interventions supporting the use and conservation of biodiversity for food and agriculture.

<sup>30</sup> Reference: questions 52, 53 and 56 of country report guidelines.

<sup>31</sup> Reference: question 54 of country report guidelines.

<sup>32</sup> Reference: question 58 of country report guidelines.

<sup>33</sup> Reference: question 57 of country report guidelines.

food security and nutrition; rural livelihoods; ecosystem services; sustainability; resilience; or sustainable intensification.

- c) List in Table 5 examples whereby the use of biodiversity for food and agriculture contributed to cope with climate change, invasive alien species, and natural or human-made disasters

**Table 5.** Examples whereby the use of biodiversity for food and agriculture (BFA) contributed to cope with climate change, invasive alien species, and natural or human-made disasters

Objective	Description
Use of BFA to adapt to and mitigate climate change <sup>34</sup>	
Use of BFA to manage the spread of/control invasive alien species <sup>35</sup>	
Use of BFA to prevent natural or human-made disasters and/or reduce their effects on livelihoods, food security and nutrition <sup>36</sup>	

- d) List and briefly describe ecosystem/landscape/seascape approaches<sup>37</sup> that have improved the management and use of BFA in the country.<sup>38</sup>
- e) Provide examples of activities undertaken to maintain and use traditional knowledge of associated biodiversity and wild foods.<sup>39</sup>
- f) Identify possible needs and priorities in terms of the sustainable use of biodiversity for food and agriculture, and in particular of associated biodiversity and wild foods.

## 2.2. Conservation

- a) Describe the status of *in situ* conservation of associated biodiversity and wild food species in your country<sup>40</sup>:
1. List and describe any existing national *in situ* conservation initiative(s).

<sup>34</sup> Reference: question 69 of country report guidelines.

<sup>35</sup> Reference: question 46 of country report guidelines.

<sup>36</sup> Reference: question 43 of country report guidelines.

<sup>37</sup> The ecosystem approach concept is generally understood to encompass the management of human activities, based on the best understanding of the ecological interactions and processes, so as to ensure that ecosystems structure and functions are sustained for the benefit of present and future generations. Ecosystem approaches include the Convention on Biological Diversity's Ecosystem Approach, Integrated Land Use Planning, Integrated Water Resource Management, Sustainable Forest Management, Code of Conduct for Responsible Fisheries, Ecosystem approach to fisheries management, etc.

- A "landscape approach" means taking both a geographical and socio-economic approach to managing the land, water and forest resources that form the foundation – the natural capital – for meeting our goals of food security and inclusive green growth. By taking into account the inter-actions between these core elements of natural capital and the ecosystem services they produce, rather than considering them in isolation from one another, we are better able to maximize productivity, improve livelihoods, and reduce negative environmental impacts.

<sup>38</sup> Reference: questions 60, 61 and 80 of country report guidelines.

<sup>39</sup> Reference: questions 32, 33, 38 and 39 of country report guidelines.

<sup>40</sup> Reference: questions 31 (Table 13) and 37 (Table 17) of country report guidelines.

2. Indicate which species/groups of species are being conserved and with what objective(s).
3. Describe any existing subregional/regional *in situ* conservation initiative(s) the country is involved in.

b) Describe the status of *ex situ* conservation<sup>41</sup> of associated biodiversity and wild food species in your country:

1. List and describe any existing national *ex situ* conservation initiative(s).
2. Indicate which species/groups of species are being conserved and with what objective(s).
3. Describe any existing subregional/regional *in situ* conservation initiative(s) the country is involved in.

c) Identify possible needs and priorities in terms of the conservation of biodiversity for food and agriculture, and in particular of associated biodiversity and wild food species.

### 2.3 Access and exchange<sup>42</sup>

a) Describe in Table 6 the main measures in the country (i) regulating access to; and (ii) ensuring the fair and equitable sharing of benefits arising from the utilization of biodiversity for food and agriculture (BFA).

**Table 6.** Description of the main measures in the country (i) regulating access to; and (ii) ensuring the fair and equitable sharing of benefits arising from the utilization of biodiversity for food and agriculture (BFA).<sup>43</sup>

Components of BFA	Description of measures governing access to BFA	Description of measures regulating the fair and equitable sharing of benefits arising from the utilization of BFA
<i>Genetic resources for food and agriculture</i>		
Plant		
Animal		
Forest		
Aquatic		
<i>Associated biodiversity</i>		
Micro-organisms		
Invertebrates		
Vertebrates		
Plants		
<i>Wild foods</i>		

[Insert rows as needed]

b) Identify possible needs and priorities in terms of the policies and regulations governing the access to and ensuring the fair and equitable sharing of benefits arising from the utilization of biodiversity for

<sup>41</sup> Reference: questions 30 (Table 12) and 36 (Table 16) of country report guidelines.

<sup>42</sup> Reference: questions 72 and 73 of country report guidelines.

<sup>43</sup> Measures facilitating access to the different components of biodiversity for food and agriculture usually vary according to the intended use of the resource (e.g. any use, research and development, commercial use). Examples of possible measures consist of the need to obtain prior informed consent (PIC), sharing benefits based on mutually agreed terms (MAT), having special considerations in place for access to resources held by indigenous peoples and local communities, etc.

food and agriculture, and in particular of associated biodiversity.

### III. Policies, institutions and capacity

#### 3.1 Policies, programmes, institutions and other stakeholders

- a) Describe relevant policies and programmes the country has adopted and is implementing to support the conservation and sustainable use of biodiversity for food and agriculture, and specify to which extent they address associated biodiversity and wild foods.<sup>44</sup> Relevant policies and programmes are those that aim at:
- the coordinated use and conservation of sectoral genetic resources
  - addressing food security and nutrition<sup>45</sup>
  - the sustainable use and conservation of associated biodiversity
  - the maintenance of ecosystem services
  - improving resilience and sustainability of production systems
  - supporting farmers, livestock keepers, forest dwellers and fisher folk to adopt and maintain practices that strengthen the conservation and use of biodiversity for food and agriculture
  - the application of an ecosystem/landscape/seascape approach<sup>46</sup>
- b) Provide a short analysis of the strengths and weaknesses of the policies and programmes mentioned above and indicate their level of implementation.<sup>47</sup>

**BOX 3.** Provide up to three examples to highlight how stakeholder groups in the country, such as groups or associations of farmers, forest dwellers, fisher folk and livestock keepers, NGOs or other civil society organizations, have actively contributed to the improved sustainable use and/or conservation of biodiversity for food and agriculture and the maintenance of ecosystem services.<sup>48</sup>

- c) Provide examples of successful interministerial cooperation in the area of conservation and sustainable use of biodiversity for food and agriculture and describe the relevant collaboration mechanisms.<sup>49</sup>
- d) Identify possible needs and priorities in terms of policies, programmes and institutions governing biodiversity for food and agriculture, and in particular associated biodiversity and wild food species.<sup>50</sup>

#### 3.2 Capacity

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<sup>44</sup> Reference: questions 66, 67 and 78 of country report guidelines; Policies and programmes can include incentives or benefits, such as payments, provision of inputs and subsidies, to support activities for the conservation and sustainable use of biodiversity for food and agriculture.

<sup>45</sup> The relevant policies and programmes should have an explicit reference to associated biodiversity and/or wild foods.

<sup>46</sup> Reference: question 67 of country report guidelines.

<sup>47</sup> Reference: questions 66 and 67 of country report guidelines.

<sup>48</sup> Reference: question 77 of country report guidelines.

<sup>49</sup> Reference: questions 81 and 82 of country report guidelines.

<sup>50</sup> Reference: question 88 of country report guidelines.

- a) Identify and prioritize training and education needs that target the conservation and sustainable use of associated biodiversity and describe possible constraints.<sup>51</sup>
- b) Identify and prioritize research needs to strengthen the conservation and sustainable use of associated biodiversity, wild foods and ecosystem services and describe possible constraints.<sup>52</sup>

#### IV. Regional cooperation

4.1 Regional initiatives the country is involved in to conserve and use biodiversity for food and agriculture

- a) Describe in Table 7 relevant regional policies and programmes embedding the conservation and/or use of biodiversity for food and agriculture, and in particular associated biodiversity, wild food species and ecosystem services.

**Table 7.** Description of relevant regional policies and programmes that embed the conservation and/or use of biodiversity for food and agriculture, and in particular associated biodiversity, wild food species and ecosystem services.<sup>53</sup>

Regional policies and programmes	Description

*[Insert rows as needed]*

4.2 Needs and priorities

- a) Identify possible needs and priorities in terms of embedding biodiversity for food and agriculture, and in particular associated biodiversity, wild foods and ecosystem services into regional and international initiatives.

<sup>51</sup> Reference: questions 85, 86 and 90 of country report guidelines.

<sup>52</sup> Reference: questions 87 and 91 of country report guidelines.

<sup>53</sup> Reference: question 84 of country report guidelines.

## **ANNEX 1: Recommended scope of the Country Report**

### **Biodiversity for food and agriculture**

Biodiversity for food and agriculture includes the variety and variability of animals, plants and micro-organisms at the genetic, species and ecosystem levels that sustain the ecosystem structures, functions and processes in and around production systems, and that provide food and non-food agriculture products. Production systems, as defined for the purposes of this report, include the livestock, crop, fisheries and aquaculture and forest sectors. The diversity found in and around production systems has been managed or influenced by farmers, pastoralists, forest dwellers and fisherfolk over many hundreds of generations and reflects the diversity of both human activities and natural processes.

The present Guidelines for the SoWBFA mainly focus on those areas not covered by completed or on-going Country Reports on Animal, Forest, Plant and Aquatic Genetic Resources, e.g. the biological diversity associated with different supporting and regulating ecosystem services within production systems or of importance to them, referred to hereinafter as associated biodiversity, and wild resources used for food (Figure 1).

### **Associated biodiversity**

For the scope of this report, associated biodiversity comprises those species of importance to ecosystem function, for example, through pollination, control of plant, animal and aquatic pests, soil formation and health, water provision and quality, etc., including *inter alia*:

- a) Micro-organisms (including bacteria, viruses and protists) and fungi in and around production systems of importance to use and production such as mycorrhizal fungi, soil microbes, planktonic microbes, and rumen microbes;
- b) Invertebrates, including insects, spiders, worms, and all other invertebrates that are of importance to crop, animal, fish and forest production in different ways, including as decomposers, pests, pollinators, and predators, in and around production systems;
- c) Vertebrates, including amphibians, reptiles, and wild (non-domesticated) birds and mammals, including wild relatives, of importance to crop, animal, fish and forest production as pests, predators, pollinators or in other ways, in and around production systems;
- d) Wild and cultivated terrestrial and aquatic plants other than crops and crop wild relatives, in and around production areas such as hedge plants, weeds, and species present in riparian corridors, rivers, lakes and coastal marine waters that contribute indirectly to production.

Note that domesticated species may also provide ecosystem services other than provisioning ones and affect crop, animal, fish and forest production in different ways. However since these species are already addressed in other State of the World Reports, countries may choose whether or not they want to include them in their Country Reports for the SoWBFA.

### **Integrated analysis of biodiversity for food and agriculture**

The scope of the Report builds upon the contribution of individual sector reports by providing an

integrative analysis of interactions, including synergies, interlinkages and trade-offs, between genetic resources of the different sectors. This is achieved through the identification of production systems within the country (Annex 2), and particular focus upon ecosystem perspectives in relation to biodiversity for food and agriculture. Questions addressing overall biodiversity for food and agriculture target information that would build upon what may be available in previous or ongoing country reports.

**Figure 1.** Recommended scope of *The State of the World’s Biodiversity for Food and Agriculture*.

	Ecosystem services	
	Mainly provisioning	Mainly supporting and regulating
<b>Biological resources</b>	<p>Food and non-food products provided by cultivated and wild species and genetic resources of plants, animals (vertebrate and invertebrate), aquatic resources and micro-organisms.</p> <p>Examples include trees (timber, fuelwood), crops (food, feed, fodder and dye), livestock (meat, eggs, hides, fur skins and fibre), fish, wild plants (food, medicine), wild relatives, edible fungi, edible insects, bush meat, crustaceans and mollusks (pearls).</p>	<p>Associated biodiversity: species and genetic resources directly involved in supporting and regulating production systems.</p> <p>Examples include soil and planktonic microbes, pollinators, symbionts and kelp forests.</p>
<b>Relevant CGRFA assessments</b>	<p>Plant genetic resources: First and Second Reports on the <i>State of the World’s Plant Genetic Resources for Food and Agriculture</i></p> <p>Animal genetic resources: First and Second Reports on the <i>State of the World’s Animal Genetic Resources for Food and Agriculture</i></p> <p>Forest genetic resources: <i>The State of the World’s Forest Genetic Resources</i></p> <p>Aquatic genetic resources: <i>The State of the World’s Aquatic Genetic Resources for Food and Agriculture</i></p>	<p><b><i>The State of the World’s Biodiversity for Food and Agriculture</i></b></p>

Note: The scope of *The State of the World’s Biodiversity for Food and Agriculture* includes interactions between plant, animal, forest and/or aquatic genetic resources, ecosystem services (mainly supporting and regulating), associated biodiversity and wild foods.

## ANNEX 2: Production systems

**Table 1.** Production systems descriptions

Name of production system	Description
Livestock grassland-based systems	<p>Systems in which the animals obtain a large proportion of their forage intake by grazing natural or sown pastures, includes:</p> <ul style="list-style-type: none"> <li>• Ranching: grassland-based systems in which livestock is kept on privately owned rangeland</li> <li>• Pastoralist: grassland-based systems in which the livestock keepers move with their herds or flocks in an opportunistic way on communal land to find feed and water for their animals (either from or not from a fixed home base)</li> </ul>
Livestock landless systems	<p>Systems in which livestock production is separated from the land where the feed given to the animals is produced.</p>
Naturally regenerated forests	<p>Includes:</p> <ul style="list-style-type: none"> <li>• Primary: Forests of native species, where there are no clearly visible indications of human activities and the ecological processes are not directly disturbed by humans</li> <li>• modified natural: Forests of naturally regenerated native species where there are clearly visible indications of significant human activities</li> <li>• semi-natural (assisted natural regeneration): Silvicultural practices in natural forest by intensive management (weeding, fertilizing, thinning, selective logging)</li> </ul>
Planted forests	<p>Includes :</p> <ul style="list-style-type: none"> <li>• semi-natural (planted component) : Forests of native species, established through planting or seeding, intensively managed</li> <li>• Plantations (productive) : Forests of introduced and/or native species established through planting or seeding mainly for production of wood or non-wood goods</li> <li>• Plantations (protective) : Forests of introduced and/or native species, established through planting or seeding mainly for provision of services</li> </ul>
Self-recruiting capture fisheries	<p>Includes capture fisheries in marine, coastal and inland areas that can involve</p> <ul style="list-style-type: none"> <li>• Natural ecosystems</li> <li>• Modified ecosystems e.g. reservoirs and rice paddies;</li> </ul>
Culture-based fisheries	<p>Fisheries on resources, the recruitment of which originates or is supplemented from cultured stocks (i.e., populations chosen for culture and not stocks in the same sense as that term is used for capture fisheries) raising total production beyond the level sustainable through natural processes.</p>
Fed aquaculture	<p>The farming of aquatic organisms including fish, mollusks, crustaceans, aquatic plants, crocodiles, alligators, turtles and amphibians. Farming implies some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators etc. Farming also implies individual or corporate ownership of the stock being cultivated; i.e., the population chosen for culture and not a stock in the same sense as that term is used for capture fisheries.</p> <p>Fed aquaculture production utilizes or has the potential to utilize aquafeeds of any type in contrast with the farming of filter-feeding invertebrates and aquatic plants that relies exclusively on natural productivity. Also defined as “farming of aquatic organisms utilizing aquafeeds in contrast to that deriving nutrition directly from nature”.</p>
Non-Fed aquaculture	<p>The farming of aquatic organisms including fish, mollusks, crustaceans, aquatic plants that do not need supplemental feeding. Farming implies some sort of intervention in the</p>

	rearing process to enhance production, such as regular stocking, feeding, protection from predators etc. Farming also implies individual or corporate ownership of the stock being cultivated; i.e., the population chosen for culture and not a stock in the same sense as that term is used for capture fisheries. In non-fed aquaculture systems culture is predominately dependent on the natural environment for food, e.g. aquatic plants and mollusks.
Irrigated crops (rice)	Irrigated rice refers to areas where rice is cultivated purposely provided with water, including land irrigated by controlled flooding.
Irrigated crops (other)	Irrigated crops other than rice refers to agricultural areas purposely provided with water, including land irrigated by controlled flooding.
Rainfed crops	Agricultural practice relying exclusively on rainfall as its source of water.
Mixed production systems (livestock, crop, forest and /or aquatic and fisheries mixed)	<p>Production systems with multiple components. They include:</p> <ul style="list-style-type: none"> <li>• Crop-livestock: mixed systems in which livestock production is integrated with crop production.</li> <li>• Agro-pastoralist: livestock-oriented systems that involve some crop production in addition to keeping grazing livestock on rangelands; they may involve migration with the livestock away from the cropland for part of the year; in some areas, agropastoral systems emerged from pastoral systems</li> <li>• Agroforestry-livestock: mixed system in which livestock production is integrated with the production of trees and shrubs<sup>38</sup></li> <li>• Integrated aquaculture: mixed systems in which aquaculture is integrated with crop and livestock production. May involve ponds on farms, flooded fields, enrichment of ponds with organic waste, etc.</li> <li>• Other combinations</li> </ul>

### ANNEX 3: Drivers of change

**Table 1.** Drivers of change and descriptions.

Drivers	Description, Subcategories and Examples
Changes in land and water use and management	A change in the use, management and practices around land and water (e.g., deforestation; fragmentation; modification of water regimes; forest degradation; land conversion for agriculture; ecosystem restoration; the role of women and men in land and water use and management, etc.)
Pollution and external inputs	The mismanaged, excessive or inappropriate use of external inputs (e.g., over application of fertilizer and pesticides; excessive use of antibiotics or hormones; nutrient loading, including from use of imported feed; ocean acidification, CO <sub>2</sub> fertilization; chemical and particulate pollutants, etc.)
Over-exploitation and overharvesting	Unsustainable extraction practices (e.g., overfishing; overhunting; overgrazing; logging and extractive activities exceeding replacement rates or affecting species of uncertain and at-risk conservation status, etc.)
Climate change	The impacts and effects of progressive climate change (e.g., alterations in precipitation regimes; temperature changes; loss of water supply; increased variability; sea level rise; shifts in flowering time or seasonality, etc.)
Natural disasters	Climate shocks, extreme weather events and other natural disasters that threaten agricultural production and resilience of production systems (e.g., hurricanes, earthquakes, floods, fires).
Pests, diseases, alien invasive species	New and emerging threats from pests, diseases and invasive species affecting biodiversity for food and agriculture (e.g., shifting ranges; introductions; increased suitability; loss of predator, etc.)
Markets, trade and the private sector	<p><b>Trade-</b> Changing terms of trade, globalization of markets, commercialization of products, retailing, the separate capacities of women and women to commercialize products, etc.</p> <p><b>Markets and consumption</b> - Demand driven changes in production or practices including the tastes, values or ethics of consumers that may impact directly or indirectly biodiversity for food and agriculture, product quantity or quality</p> <p><b>Private sector</b> - The changing role and influence of private sector and corporate interests</p>
Policies	<p><b>Policies</b> - Global, regional, national, and subnational legislation and regulations (e.g., conservation regulations, participation and compliance with International treaties and conventions);</p> <p><b>Economic and policy interventions</b> - Interventions that impact biodiversity for food and agriculture directly or indirectly (e.g., taxes, subsidies, charges for resource use, payments for ecosystem services)</p> <p><b>Intellectual Property Rights (IPR), Access and Benefit Sharing (ABS)</b> - Direct or indirect impacts of IPR and ABS policy and regulations on biodiversity for food and agriculture.</p>
Population growth and urbanization	<p><b>Population</b> - Changes in population metrics (e.g., growth, fertility, composition, mortality, migration, health and disease, including different affects on men and women.)</p> <p><b>Urbanization-</b> (e.g., shifts in proportion of urban and rural; change in urbanization trends, including different effects on men and women)</p>
Changing economic, socio-political, and cultural factors	<p><b>Economic development</b> - A change in economic circumstances of countries, industries, households (e.g., change in GDP and economic growth; structural change of economy; income diversification, and the different economic circumstances of men and women.)</p> <p><b>Changing socio-political, cultural or religious factors</b> - Variation in the forces influencing decision-making of men and women, e.g., public participation, shifts in the influence of the state vs. private sector, changes in levels of education and knowledge, shifts in the beliefs, values and norms held by a group of people.</p> <p><b>Participatory actions</b> – the role of collective action toward conservation and use of biodiversity by stakeholders</p>

Advancements and innovations in science and technology	The development and diffusion of scientific knowledge and technologies, (e.g., advances in breeding; improvements in mobile extension; tools for monitoring; biotechnology applications, access of men and women to information).
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## ANNEX 4: Ecosystem services

The SoWBFA Guidelines focus primarily on regulating and supporting ecosystem services, described below. Provisioning services relating to biodiversity for food and agriculture are the focus of sectoral State of the World Reports, and are addressed in these guidelines only in relation to associated biodiversity and wild foods, which often fall outside of traditional sectoral reporting. Countries may choose to address additional ecosystem services, including cultural services, for the completion of national reports, particularly where they are directly relevant to the objectives of the SoWBFA Report<sup>54</sup>.

**Table 1.** Regulating and supporting ecosystem services.

Category	Ecosystem services	Description	Relevant ecosystem functions
Regulating services	Pollination	Role ecosystems play in transferring pollen from male to female flower parts	Agricultural productivity; production of food and goods.
	Pest and disease regulation	Influence ecosystems have on the prevalence of crop and livestock pests and diseases	Biological control; the maintenance and feedback mechanisms preventing outbreaks of pests and diseases, including invasive species.
	Water purification and waste treatment	Role ecosystems play in the filtration and decomposition of organic wastes and pollutants in water; assimilation and detoxification of compounds through soil and subsoil processes	Filtering function performed by vegetation cover, soil and aquatic biota.
	Natural hazard regulation	Capacity for ecosystems to ameliorate and reduce the damage caused by natural disasters	Vegetative structure can alter potentially catastrophic effects of storms, floods and droughts through its storage capacity and surface resistance; coral reefs buffer waves and protect adjacent coastlines from storm damage. The services provided by this function relate to providing safety of human life and human constructions.
Supporting services	Nutrient cycling	Flow of nutrients (e.g., nitrogen, sulfur, phosphorus, carbon) through ecosystems	Maintenance of fertility; regulation of excess nutrients; climate regulation; regulation of biotic communities
	Soil formation and protection	Degradation of ecosystems, such as decomposition of organisms or weathering of substrate, to form soil	Maintenance of crop productivity on cultivated lands and the integrity and functioning of natural ecosystems.
	Water cycling	Flow of water through ecosystems in its solid, liquid, or gaseous forms	Regulation of hydrological flows at the earth surface. Maintenance of natural irrigation and drainage, buffering of extremes in discharge of rivers, regulation of channel flow, and provision of a medium for transportation.

<sup>54</sup> Including those described in the Millennium Ecosystem Assessment, or subsequent adaptations by the TEEB or other sources.

	Habitat provisioning	Role of ecosystems in creating and maintaining habitats for a wide variety of organisms	Providing diverse and suitable habitats for species; nursery function for migratory species and as breeding areas.
	Production of oxygen/ Gas regulation	The creation of atmospheric oxygen through photosynthesis	Gas regulation functions include the maintenance of clean, breathable air, and the prevention of diseases (e.g. skin cancer, asthma) May include regulation of the CO <sub>2</sub> /O <sub>2</sub> balance, maintaining ozone-layer (O <sub>3</sub> ), and regulation of SO <sub>x</sub> levels.

## ANNEX 5: Management practices supporting the use and conservation of biodiversity for food and agriculture

**Table 1.** Management practices supporting the use and conservation of biodiversity for food and agriculture.

<b>Management practices supporting the use and conservation of biodiversity for food and agriculture</b>	<b>Description/ examples of management practices</b>
Integrated Plant Nutrient Management (IPNM)	Soil, nutrient, water, crop, and vegetation management practices undertaken with the aim of improving and sustaining soil fertility and land productivity and reducing environmental degradation, often tailored to a particular cropping and farming system. May include the use of farmyard manures, natural and mineral fertilizers, soil amendments, crop residues and farm wastes, agroforestry and tillage practices, green manures, cover crops, legumes, intercropping, crop rotations, fallows, irrigation, drainage, plus a variety of other agronomic, vegetative and structural measures designed to conserve both water and soil.
Integrated Pest Management (IPM)	Pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment by encouraging natural pest control mechanisms that include: crop rotation; inter-cropping; seedbed sanitation, sowing dates and densities, under-sowing, conservation tillage, pruning and direct sowing; where appropriate, use of pest resistant/tolerant cultivars, push-pull strategies and standard/certified seed and planting material; balanced soil fertility and water management, making optimum use of organic matter; prevent spreading of harmful organisms by field sanitation and hygiene measures; protection and enhancement of important beneficial organisms.
Pollination management	Practices that accomplish or enhance pollination of a crop, to improve yield or quality, by understanding of the particular crop's pollination needs, and by knowledgeable management of pollenizers, pollinators, and pollination conditions. Pollinator-friendly practices include minimizing the use of agrochemicals, integrated pest management and mixed cropping to include pollinator friendly crops, preserving wild habitats, maintaining flower-rich field margins, buffer zones and permanent hedgerows to ensure habitat and forage, cultivating shade trees, managing for bee nest sites, and establishing landscape configurations that favor pollination services.
Landscape management	Practices that support the maintenance of biodiversity friendly farming systems, or the diversity of landscape mosaics within and surrounding production systems over particular geographic areas. Examples include riparian corridors, hedges, margins, woodland patches, clearings in forests, ponds or other biodiversity friendly features characteristic of the production environment that may be the result of national or regional policies such as the EU set aside schemes.
Sustainable soil management practices	Management of soil biodiversity to enhance agricultural production by both direct and indirect means, including alteration of the abundance or activity of specific groups of organisms through inoculation and/or direct manipulation of soil biota. Indirect interventions may include manipulation of the factors that control biotic activity (habitat structure, microclimate, nutrients and energy resources) rather than the organisms themselves such as the

	<p>maintenance of soil cover with organic mulch including crop residues, green manure/cover crops including legumes, and compost to increase soil organic matter, irrigation and liming, as well as cropping system design and management.</p>
Conservation agriculture	<p>Conservation Agriculture (CA) aims to achieve sustainable and profitable agriculture and improve livelihoods of farmers through the application of the three CA principles: no or minimal soil disturbance through direct seeding into untilled soils, maintenance of permanent soil mulch cover, and crop diversification through rotations, associations and sequences.</p>
Water management practices, water harvesting	<p>Water harvesting and management through rain water retention or modification of the landscape (e.g., bunds, zais, terracing) for the restoration and improvement of degraded lands, and to allow cultivation of additional crops with higher water requirements, and improving water productivity of crops.</p>
Agroforestry	<p>Agroforestry is a collective name for land-use systems where woody perennials (trees, shrubs, palms, etc.) are integrated in the farming system.</p>
Organic agriculture	<p>Organic agriculture is a production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system.</p>
Low external input agriculture	<p>Production activity that uses synthetic fertilizers or pesticides below rates commonly recommended for intensive industrial tillage agriculture. It does not mean elimination of these materials. Yields are maintained through greater emphasis on agronomic practices, IPM, and utilization of on-farm resources (especially labor) and management.</p>
Home gardens	<p>An integrated system which comprises different components in a small area around the homestead, including staple crops, vegetables, fruits, medicinal plants, livestock and fish both for home consumption or use and for income. May include the family house, a living/playing area, a kitchen garden, a mixed garden, a fish pond, stores, an animal house, etc.</p>
Areas designated by virtue of production features and approaches	<p>These include areas recognized nationally or internationally by virtue of their landscape and agricultural features. In addition to Satoyama, GIAHS, national parks (IUCN categories), they also include areas recognized for specific agricultural products (e.g. DOP, IGP or Slow Food).</p>
Ecosystem approach in capture fisheries	<p>Approach promoting the diversity of the whole ecosystem in order to support the target species. Considerations include sustainable harvesting of the retained species (target and by-product species); managing the direct effects of fishing (especially on non-retained by-catch and habitat); and managing the indirect effects of the fishery on ecosystem structure and processes.</p>
Conservation hatcheries	<p>Hatcheries and production systems that optimize natural levels and organization of genetic diversity over production. Often for rebuilding depleted populations of commercially important species, (e.g. Atlantic and Pacific salmon).</p>
Reduced-impact logging	<p>A series of practices to improve logging practices such as vine removal, directional felling, limiting skid trails, logging roads and stumping grounds, restrictions on the size and number of trees felled, and post felling removal of waterway blockages, to reduce the residual damage, biodiversity loss and excess CO<sub>2</sub> emissions associated with conventional logging practices.</p>

## ANNEX 6: Diversity based interventions

**Table 1.** Diversity based practices and interventions

<b>Diversity based practices</b>	<b>Description/ examples of interventions</b>
Diversification	The introduction of new varieties, species, and groups of organisms (e.g., livestock, crops, trees, fish) into a production system or managed environment without replacement or abandonment of other groups, or the maintenance of already-existing diversity in the case of traditionally diverse production systems. May include introductions for restoration or IPM objectives, including fish introduced to control reproduction.
Base broadening	Increasing the amount of genetic diversity used to produce new varieties or breeds used in agricultural production.
Domestication	The development of new crop, aquatic, forest and animal species through deliberate breeding programmes or the continued selection and improvement of existing species from their wild progenitors. These activities may be carried out by national breeding programmes or by farmers and communities themselves.
Maintenance or conservation of landscape complexity	Maintenance or management of components of a landscape mosaic including hedges, waterways, road margins, corridors, windbreaks, living fences, native grasses wild patches of vegetation in the farming landscape, etc.
Restoration practices	Restoring functionality and productive capacity to ecosystems, forests, landscapes, waterways, grasslands and rangelands in order to provide food, fuel, and fiber, improve livelihoods, store carbon, improve adaptive capacity, conserve biodiversity, prevent erosion and improve water provisioning and quality.
Management of micro-organisms	The intentional incorporation, management or maintenance of microbes, fungi and other micro-organisms into a production system or organisms; e.g., inoculation of plants and seeds with arbuscular mycorrhizal fungi, the addition of probiotics in aquaculture and livestock, etc.
Polyculture/Aquaponics	Integrated multi-trophic aquaculture, utilization of different trophic and spatial niches of an aquaculture system in order to obtain maximum fish production per unit area, utilizing natural resource availability.
Swidden and shifting cultivation agriculture	Rotation of plots from intensive cultivation to extended fallow periods for the replenishment of soil fertility.
Enriched forests	Selective logging and enrichment planting to increase the abundance of useful species for food, medicine and timber, often a feature of traditional management practices.