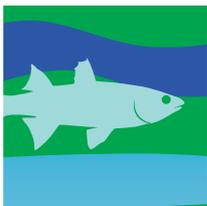
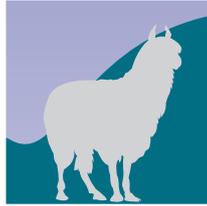


COUNTRY REPORTS



THE STATE OF **FIJI'S**  
BIODIVERSITY FOR FOOD AND  
AGRICULTURE

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# **The State of Biodiversity for Food and Agriculture**

## **Report for the Republic of Fiji**

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National Focal Point – Fiji  
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Ministry of Agriculture**

**July 2016**

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## Executive Summary

The 2<sup>nd</sup> report on the state of biodiversity for food and agriculture for Fiji is a consolidated effort of different sectors in assessing the state of biodiversity in the country that contributes to food security. The report addresses the way forward and addresses emerging challenges like climate change, food security and genetic erosion of Fiji's biodiversity for food and agriculture.

This report is structured based on the Food and Agriculture Organization (FAO) global template that allows standard reporting from members countries in assessing the state of biodiversity for food and agriculture and also other associated biodiversities. Important issues are addressed in three priority areas: Assessment and Monitoring of Biodiversities for Food and Agriculture; Sustainable Use & Conservation of Biodiversities for Food and Agriculture & Policies, Institutions & Capacity.

Consultations were carried out at national level by the national focal point with the following government departments; the Fisheries department, the CBD secretariat at the Department of Environment and the Forestry department. This was carried out as these sectors have contributed to the country's food security in terms of marine & terrestrial resources, wild plants and other associated biodiversities that either directly or indirectly contributes to food security.

Fiji will continue to address the importance of conservation and sustainable use of its plant genetic resources for food and agriculture, as they play an important role in the development of the crop sector and support farmers in the provision of germplasm materials. Government support has strengthened its financial and policy support at national level with the Fiji 2020 Agriculture Policy Agenda compliments the National Green Growth Framework by opening up to global innovations for climate smart agriculture that generate both adaptation and mitigation benefits.

Fiji has ratified the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) in 2008, the Convention on Biological Diversity (CBD) in 1992 and the Nagoya Protocol in 2014. These international instruments address the conservation and sustainable use of genetic resources, fair and equitable sharing and achieving sustainable development and food & genetic resources security.

The report will further strengthen the future interaction of stakeholders at national level in addressing issues in a more comprehensive and consolidated approach in addressing conservation and sustainable use of Fiji's genetic resources, food security and climate change.

.....  
**Mr. Jitendra Singh**  
**Permanent Secretary for Agriculture**  
**Fiji**

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# STATE OF KNOWLEDGE OF BIODIVERSITY FOR FOOD AND AGRICULTURE

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

### 1.1 General context<sup>1</sup>

The agricultural sector plays an important role in Fiji's economy. It offers both employment and opportunities for sustaining livelihoods, and there are strong linkages between the sector and the rest of the economy. The large subsistence production is the main strength in the sector sustaining food supply and probably explains why there have been no reports about household food shortage or food insufficiency.

Fiji is located in the heart of the Pacific Ocean midway between the equator and the South Pole and between longitudes 174°east and 178°West of Greenwich and latitudes 12° S and 22° south. Fiji's Exclusive Economic Zone contains approximately 330 islands of which about one-third are inhabited. It covers about 1.3 million square kilometers of the South Pacific Ocean. Fiji's total land area is 18 333 square kilometers. There are two major islands - Viti Levu that is 10 429 square kilometers and Vanua Levu 5 556 square kilometers. Other main islands are Taveuni (470 sq km), Kadavu (411 sq km), Gau (140 sq km) and Koro (104 sq km). 87.9% of land is owned by indigenous Fijians while 3.9% is State land. Freehold land comprises 7.9% and Rotuman land is 0.3%. The capital is Suva and it is one of two cities in Fiji. The other city is Lautoka and both are located on the island of Viti Levu.

Fiji experiences a distinct wet season from November to April and a dry season from May to October. The pattern is strongly affected by the relative positions of the South Pacific Convergence Zone, which is most intense during the wet season. The trade winds bring orographic rainfall to eastern parts of the country. In addition to seasonal variation, the country experiences high year-to-year variability associated with the El Niño Southern Oscillation (4 ENSO) phenomena. El Niño events tend to bring dry conditions over the country, while La Niña events are usually associated with wetter conditions. ENSO drives changes in rainfall, winds, sea surface temperatures, and regions of tropical cyclone formation. During an ENSO event, the dry season conditions are drier and cooler than normal, and wet season conditions are warmer whereby tropical cyclones are more likely<sup>2</sup>.

Fiji's latest population estimates from the Fiji Bureau of Statistics 2015:

- The population of Fiji was estimated to be 865,611 as at the end of 2014.
- There were 442,893 (51.2%) Males and 422,718 (48.8%) Females, which equates to a sex ratio of 105 meaning there were 105 Males to every 100 Females.
- In the 5-year age groups up to age 59, males on average accounted for 51.4% of the population. Females accounted for a higher proportion than males in the 5-year

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<sup>1</sup> Reference: questions 2, 3, 4, 5, 6 and 7 of country report guidelines.

<sup>2</sup> Country Partnership Strategy: Fiji, 2014-2018 (ADB)

age groups from age 60 and above, reaching a high of 59.8% in the age category of 75 and over.

- Slightly over a half (50.7%) of Fiji's population live in urban areas.
- A greater proportion of the age group 0 -14 resides in rural areas.
- There was a clear dominance of urban dwellers in the population aged 15 to 44.
- The Central Division had a population count of 365,638 of which 263,230 or 72% were urban dwellers.
- The Western Division had a population count of 327,637 of which 138,254 or 42.2% were urban dwellers.
- A quarter of the Northern Division's population of 132,502 lived in urban areas.
- Slightly less than a tenth of the Eastern Divisions population of 39,836 lived in the sole urban centre of Levuka.
- The urban-rural distribution is close to parity between the ages 45-49 while rural dwellers dominate the population aged 60 and over.

**a) Provide a brief account on the role of biodiversity for food and agriculture in your country.<sup>3</sup>**

The role of Fiji's biodiversity for food and agriculture (BFA) is to provide the necessary raw materials for agricultural development in terms of subsistence and commercial agriculture, food security and nutrition for the population. The threat of natural disasters like tropical cyclones and flooding in Fiji has increased likely as a result of climate change impacts. Fiji government has recognized the importance of BFA in addressing the challenges of sustainable food production and taken some positive steps in strengthening the conservation, management and utilization of BFA. These steps include funding, policy direction and administrative support to the conservation and use of PGRFAs.

Fiji has an extensive and high diversity of marine habitats including estuaries, mangrove wetlands, sea grass, macro algal assemblages, protected and exposed soft shores, lagoons, coral reefs and slopes. These support a rich biodiversity, and a major subsistence and moderate commercial fisheries. Sea grass beds have a very high biological productivity, are efficient recyclers of nutrients and support a large biomass of consumers, especially those of fisheries importance<sup>4</sup>.

Fiji has an estimated 1,129 km of coastline within the 1.3 million km<sup>2</sup> of its Exclusive Economic Zone. Offshore fisheries in this context make a significant contribution to the Fijian economy but concerns exist regarding the number of vessels operating, and the potential impacts on pelagic fisheries resources and nearshore coral reefs<sup>5</sup>. However, despite its subsistence, commercial and conservation value, Fiji's marine biodiversity is not well known. This is surprising considering the biogeographically strategic position Fiji has in the South Western Pacific, and the relatively large numbers of collections made by visiting scientists to the University of the South Pacific. However, Fiji's marine biodiversity is much better known than

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

<sup>4</sup> 4<sup>th</sup> National Report to the UN CBD, 2010

<sup>5</sup> Country Partnership Strategy: Fiji, 2014-2018 (ADB)

most island groups in the region. Zann *et. al* (1997) is the most recent review of Fiji's marine biodiversity.

Mangroves are very productive ecosystems which sustain coastal fisheries. 33 species are represented in Fiji's mangrove areas, including mangroves and important mangrove-associated species. Coastal villagers and fishermen rely on mangrove ecosystems for their livelihood. However, mangroves have been targeted often in the past for reclamation for sugar cane, rice and aquaculture. Large scale reclamation of mangroves has caused loss of fauna and flora and loss of biodiversity<sup>6</sup>.

Food production is the most easily identifiable ecosystem service. People in Fiji obtain significant quantities of edible plants and animals from all ecosystems, for example finfish and shellfish (there are more than 70 different edible species of shellfish in Fiji), crabs, fresh water mussels, eels, seaweed, ferns, nuts, fruits or wild yams. These products are harvested both commercially and at the subsistence level. The open sea supports an industrial tuna fishery which represents a significant source of paid employment and foreign exchange.

58% of Fiji's land mass is covered with Forests, consisting of 85.3% natural forests, 2.4% pine (*Pinus caribaea*) plantations and 5.0% of mahogany (*Sweitenia macrophylla*) plantations. Fiji's forests are home to at least 1,518 species of vascular plants, of which 50.1% are endemic and 9.9% of Fiji is protected under IUCN categories<sup>7</sup>. There are initiatives in the forestry sector in Fiji on enhancing the role of Fiji's forestry biodiversity. Due to increase in deforestation in the country related to agricultural development, housing and the expansion of urban areas in some areas has contributed to the decreasing in forest biodiversity. In relation to food security forest biodiversity plays an important role in the protection of ecosystem for all organisms, thus contributing to the protection of bird species, river and marine ecosystems.

Forest biodiversity if well protected will contribute to sustainable agricultural and fisheries development that will contribute to food security for all people.

The REDD + Project in the forestry sector in Fiji not only contributes to CO<sub>2</sub> and O<sub>2</sub> level in the atmosphere and carbon trading for climate change projects, but plays a role in the protection of forest biodiversity that links to the good agricultural practices.

There other important projects that enhances the role of biodiversity for food and agriculture in Fiji. One of this is a GEF funded project, the Ridge to Reef concept implemented in Fiji with three thematic areas: Biodiversity, Land Degradation & Climate Change.

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<sup>6</sup> 4th National Report to the UN CBD, 2010

<sup>7</sup> The State of the World's Forest Genetic Resources, Fiji Country Report (2014)

b) Indicate which of the production systems listed in Table 1 below are found in your country<sup>8</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>9</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	Y	<p>Production system is common in the livestock industry in Fiji mostly at subsistence and commercial livestock farming</p> <ul style="list-style-type: none"> <li>• <i>Ranching</i> – dairy farming, beef farming, back yard livestock farming, free – range chicken farming, small scale sheep and goat farming</li> <li>• <i>Pastoralist</i> – Yaqara Pastoral Company for beef farming &amp; sheep farming; Yalavou beef pastoral farming has been neglected in Fiji for long.</li> </ul>
Livestock landless systems	Y	<ul style="list-style-type: none"> <li>• <i>Poultry</i> - In Fiji this system is common in poultry farming both for broiler and layer birds farming system</li> <li>• <i>Dairy</i> – common is zero grazing techniques, where animals are fed in feed lots, but is carried out on a very small scale. Grasses are cut and carried to animals with supplementary feeds.</li> <li>• <i>Piggery</i> – common in commercial and semi – commercial pig farming in Fiji. Pigs are raised indoors; feed is prepared and given to animals. Outdoor pen system it common in villagers and small holder farmers</li> </ul>
Naturally regenerated forests	Y	<p>This system is common in the Fiji forestry sector:</p> <ul style="list-style-type: none"> <li>• <i>Primary</i> – these are mostly protected areas and national reserves and can be either in Class VIII land in Fiji where none of the human interference occurs due to topography, government mandate for protection of habitats, etc e.g. REDD + sites, IBAs, Forestry Protected Areas with Native and endemic forest species.</li> <li>• <i>Modified Natural</i> – these are mostly present in Class V &amp; VI lands in Fiji, some logging takes place for economic purposes &amp; selected logging for the protection of biodiversity and soil erosion</li> <li>• <i>Semi – Natural</i> - this where most of the mahogany and pine trees are grown in Fiji and other economic forestry species are grown, some native species and normally infested with African Tulip species.</li> </ul>

<sup>8</sup> Reference: questions 4 and 5 of country report guidelines. For the purpose of this table, aggregated production systems are used (disregarding climatic zones).

<sup>9</sup> Reference: questions 5 and 7 (Table 3) of country report guidelines and FAOSTAT: <http://faostat3.fao.org/home/E>

Planted forests	Y	<ul style="list-style-type: none"> <li>• Mostly are grown with pine, mahogany, teak, sandalwood etc</li> </ul>
Self-recruiting capture fisheries	Y	<ul style="list-style-type: none"> <li>• Tilapia (<i>Oreochromis mossambicus</i>): Released into some of the major rivers in Fiji in the 1960s i (Sigatoka, Rewa, Navua and Labasa) to increase inland fisheries and provide a source of protein for inland communities.</li> </ul>
Culture-based fisheries	Y	<p>Giant clams: The species that are being cultured in the Makogai Mariculture Station are <i>Tridcna gigas</i>, <i>T.derasa</i>, <i>T.squamosa</i>, <i>T.maxima</i> and <i>Hippopus hippopus</i>. Juveniles are produced in the hatchery and then transferred to simple mesh cage in the ocean nursery awaiting request from communities and resorts on restocking into community based marine protected areas (MPA) and resorts MPA respectively. Before restocking wild population count is conducted to determine the current stock as well as for monitoring purposes. The main purpose of restocking is to strengthen food security and boost current stock in traditional demarcated fishing grounds (<i>I Qoliqoli</i>).</p> <p>Sandfish (<i>Holothuria scabra</i>): The species forms part of the Fijian traditional diets, so contributes to food security in addition to being a lucrative export commodity. <i>H. scabra</i> was banned to be exported in 1988 because of the importance of the species to local food items. Also the boom trade of sea cucumber in the 1970s and 1980s has led to the drastically decline of the <i>H.scabra</i> stock in traditional demarcated fishing grounds (<i>I Qoliqoli</i>).</p> <ul style="list-style-type: none"> <li>• Now the species is being cultured at Galoa Aquaculture Research Station. The brood stock used for culturing will be taken from the communities that requested the restocking. The juvenile produced in the hatchery is transferred to the <i>hapas</i> once it reached 6mm in size. The <i>hapas</i> are located in the earthen ponds. Once reached about 5 – 10 g in weight then it will be transferred back to the original area of the brood stock that have community based MPA for grow-out and restocking using sea ranching techniques.</li> </ul>
Fed aquaculture	Y	<ul style="list-style-type: none"> <li>• This is mostly for tilapia and prawn in Fiji, where they are fed with supplementary feeds.</li> <li>• Also some farms they use integrated farming system – raising chickens, ducks on fish ponds as source of algae and protein for fish and prawns</li> <li>• There in a farm in Navua that farm and raise crabs for local and export markets.</li> <li>• In this systems there can be a hatchery for raising and selection of stock for farming purposes</li> <li>• There is also a breeder stock &amp; also sourced from introduced species.</li> </ul>

Non-fed aquaculture		<ul style="list-style-type: none"> <li>• This are mostly village and back yard fish farming, stock are not fed and depend entirely on the environment</li> <li>• Can also applies to village taboo fish catchment areas where certain restriction are in place for certain time period by the government in consultation with the villagers for the purpose of regeneration, enhancing biodiversity and food security. Stock is dependent on environment for food. So once taboo is in place, there is abundance of food for the protected stock (fish, mollusks, etc etc). A good example is the tilapia in the Monasavu Dam, fingerlings are distributed and left in the pond and they feed on natural environment.</li> <li>• Sea weed and pearl under mariculture – they fed on natural environment e.g. Dawasamu, Serua, Yasawa, Rewa. Kuva are some for the examples where this production system takes place.</li> </ul>
Irrigated crops (rice)	Y	<ul style="list-style-type: none"> <li>• Located in central division, Dreketi &amp; Nasarawaqa in Vanua Levu, Navua, Koronivia, Lakena in Nausori. These are mostly rice irrigation schemes with irrigation system and well prepared rice paddy field for irrigated rice.</li> <li>• Water is provided either by bigger water pumps, gravity effect from dams, and siphon that channel water into irrigation systems into rice paddy fields</li> </ul>
Irrigated crops (other)	Y	<ul style="list-style-type: none"> <li>• Orchards – citrus provided with irrigation</li> <li>• Papaya - mostly bigger papaya farms for export have drip irrigation system in the Sigatoka Valley and Nadi</li> <li>• Vegetable – drip irrigation and sprinkler irrigation system in the Sigatoka Valley</li> <li>• Root Crops – sprinkler irrigation</li> <li>• Rice – in some cases flood irrigation is used by some farmers</li> </ul>
Rain fed crops	Y	<ul style="list-style-type: none"> <li>• This system is common in dryland rice cultivation in Fiji where Rice in dependant on rain for water. Most of the rain fed rice is found in Macuata, Vanua Levu where most cane farmers plant 1 – 2 acres of rain fed rice for food security.</li> <li>• Also common in cassava, taro, yams, ginger and other root crops farming</li> <li>• Very common in sugar cane farming in Fiji</li> </ul>

Mixed systems (livestock, crop, forest and/or aquatic and fisheries)	Y	<ul style="list-style-type: none"> <li>• This system is present in Fiji and it is widely practiced due to the capacity that exists as many farmers are subsistence farmers.</li> <li>• Mix farming includes root crops and pigs and chicken where animal waste is used as manure in farms</li> <li>• Yaqara pastoral company in Fiji ventures into beef – sheep – tree crops – maize and legumes</li> <li>• Agro – forestry system is widely used by traditional farmers e.g. kava farmers, cocoa farmers, taro and yam farmers in some areas. Legume trees are promoted in Fiji for Agro – Forestry system</li> <li>• There are some farmers who ventures into integrated farming e.g. Tilapia with Ducks and Chickens</li> <li>• Pigs farmers for bio - gass</li> </ul>
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## 1.2. State, trends and drivers of change of biodiversity for food and agriculture

a) Describe the main features of the state and trends<sup>10</sup> of and the main drivers of change<sup>11</sup> affecting plant, animal, forest and aquatic genetic resources in the country's production systems as identified in Table 1.

*Policies:* -

Policies have been revised and some new policies are in place to drive the main priority of the Fiji government which is to build a Modern Fiji.

- One of the main features for drivers of change in the Agriculture sector in Fiji is the new Agriculture Policy, which is called the Fiji 2020 Agriculture Policy Agenda 2014 that focus on the modernization of agriculture in Fiji.
- Fiji's Environment Management Act
- Fiji National Climate Change Policy 2012
- The revised Fiji Forestry Act
- The Fisheries CAP 158
- Fiji Biosecurity Promulgation 2008

Fiji also ratifies some of the important international Treaties and Conventions that addressed the conservation and sustainable use of Fiji's Biodiversities. And Fiji has actively participated in some international obligations.

- UN - Convention on Biological Diversity (CBD) in 1992

<sup>10</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>11</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; and (iii) questions 44, 45 and 55 of country report guidelines.

- International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) in July 2008
- Nagoya Protocol in 2014 on the ABS for the CBD
- UNCCD - Convention on Combating Desertification
- CODEX on food standards
- International Plant Protection Convention (IPPC)

### *Changes in Land Use:*

One of the drivers for change is the rapid changes in land use in Fiji

- More land has been opened up for development purposes (housing, tourism, increase boundaries for towns and cities), thus reducing marginal land for agricultural activities
- Increase in deforestation in Fiji has encouraged the growth and invasiveness of African Tulip & other unwanted plant species.
- Land degradation resulting in the loss of soil fertility
- Demand for coral – has resulted in the disturbances to marine ecosystems and its biodiversities
- Code of practice are not followed and not properly enforced resulting in changes in land use – logging practice, farming on steep slopes, farming 20m away from river banks, use of machineries for land preparation e.g. diggers and other heavy machineries that disturbed and sometimes destroys ecosystems and soil.
- M Major threats identified for Fiji's coastal resources are the overfishing of commercially important food fish, increased rates of coral bleaching from human induced stressors, increasing rates of coastal activities such as land reclamation, coral extraction, and river dredging, compounded by unregulated residential and tourism development.

### *Climate Change:*

Climate change is the single greatest threat to the livelihood, security and well being of the people in the Pacific including Fiji. Fiji is the 1<sup>st</sup> country in the world to ratify the Paris Agreement on Climate Change & government is taking a serious stance on this global issue.

- Increase loss of CO<sub>2</sub> to the atmosphere - Forestry has implemented the project on REDD + on reducing emissions and also for carbon trading
- Narrow gene pool of most of the Fiji's traditional staple food and they are vulnerable to climate change effects.
- Sea level rise and coastal erosion has increased and thus contributing to salt intrusion to lowland farming areas in Fiji. Coastal flooding has occurred on many occasions. Government has taken action on some villagers for re – location.
- Tropical cyclone – as Fiji is prone to tropical cyclone effects, predictions are that that frequency will reduced but more intense cyclones. The good example is the devastation of tropical cyclone Winston category 5 in February 2016, it has caused widespread damage to agriculture, forestry and fisheries and the environment. Storm surges flooded coastal villagers severely and changes the formation of some of the coral reefs in Fiji. Damage has been estimated to more than F\$2b.
- Rainfall intensities have increased and this has caused a lot of flooding in Fiji and has a drawback on agricultural development with a long recovery for Fiji. Floods are often associated with cyclones but can occur with tropical depressions such as in March 2012.

The floods killed four people and temporarily displaced 15,000 people, causing damages to infrastructure, schools, homes, businesses and agriculture.

- For tropical fruit trees fruiting season has changed or may have shifted due to climate changes effect e.g. mangoes, papaya, breadfruit, etc.
- The Forum Secretariat in Fiji has recently been accredited as an observer to the Green Climate Fund (GCF) Board Meeting. This complements the Regional Implementing Entity Status of the Secretariat of the Pacific Regional Environmental Program (SPREP) and other Multilateral Implementing entities such as UNDP, UNEP, IUCN, Conservation International, Asian Development Bank and World Bank. The Pacific Community (SPC) is also pursuing Regional Implementing Entity Status to the GCF. This will benefit Fiji and the Pacific in accessing finance to assist with mitigation, adaptation, capacity building and technology transfer, which is a key priority area in the region.

### ***Pest & Diseases:***

- 2014 – a suspected papaya crown rot in Fiji
- 2011 – 2013 work on a new strain of Chilli Anthracnose found in Fiji, believe to be from imported seeds, since it is a seed borne disease.
- Fiji still under threat from the Taro Leaf Blight to its Taro Industry.
- Taro beetle management in Fiji and very difficult to eradicate
- Pest & disease surveys are carried out on quarterly basis throughout Fiji
- For Fiji's export market to NZ, work continuing on the surveillance of Fruit Fly species of the *Bactrocera kirki* & the *Mediterranean fruit fly*.
- External and internal quarantine has strengthened in Fiji.
- *Mikania micrantha* (mile-a-minute), *Spathodea campanulata* (African Tulip Tree), *Merremia peltata* are all significant weeds in Fiji forests

### ***Market Trade and Investors:***

- Government has provided incentives to investors in the field of agriculture, fisheries and forest for investment in Fiji
- Tax free zones initiatives in developed places.
- Globalization and trade liberalization has affected Fiji competitiveness in international markets.
- EU – preferential price for the sugar sector will expire in 2017, Fiji has to compete in an open market for sugar, diversification is under way in the sugar industry to cushion this changes.
- Government has encouraged the participation of women in the primary sector.

### ***Over – exploitation and overharvesting:***

- Invertebrates which are widely overfished but not biologically threatened include the trochus, mud crabs and certain species of bech-de-mer. Some species which have been overfished and threatened include turtles, giant clams and coconut crabs. Overharvesting of commercially important food fish species for e.g : sea cucumbers, turtles, groupers, etc.
- There has been a noticeable reduction in numbers of native fish species in stream

networks where there is a well-established *Oreochromis* species population. The loss of these native species has meant a loss of food source for the local population.

- Overgrazing arises in the livestock sector e.g. beef, dairy industries
- Over – use of chemical fertilizers in Fiji by bigger farmers – lack of appropriate advice for farmers, lack of resources for Extension services
- Continuous mono – cropping of sugar cane has over exploited the soil in sugar cane belt areas, especially cultivation on sloping land

### ***Population growth & urbanization***

- Fiji population is one of the most urbanized in the Pacific resulting in more than 50% of the population now live in urban areas.
- Lack of incentives in villagers and rural setting increase the pull factor for the young population to bright lights and convenient life in towns and cities
- Farming in Fiji has a problem with age old farmers continuing the tradition of farming, there is lack of young farmers in the country.

### ***Changing economic, socio – political and cultural factors:***

- Fiji agricultural contribution to national GDP has decreased from 15% - 7.4 as of 2015 resulting in the increased in manufacturing, service sector, etc. Decrease in contribution from agriculture can also contribute to aging farmers, rural to urban drifts, frequencies of natural disasters such as floods, cyclones and drought has affected the agriculture sector in Fiji.
- Other sectors of the economy are becoming attractive to youths, thus farming is becoming less attractive. Government is modernizing agriculture in Fiji in an effort to make farming a business and more lucrative.
- The national foreign reserves is at all time high resulting in high liquidity in the economy
- Incentives in the primary industries sector to provide a conducive environment for investors to do business in Fiji.
- Government has encourage the PPP concept – Public Private Partnership in economic development
- Fiji now has three universities and technical colleges are located at rural setting to encourage drop outs to ventures into technical studies.
- National toppers scheme in place for the enhancement of education and capacity for future leaders in Fiji.
- Opening up of scholarships to Asian countries for further studies and improves the economic situation of Fiji.
- Tourism is the biggest income earner for the country – opening of new flight destinations for Fiji Airways to bring in needed tourism and foreign investment. Added new flights to Singapore, San Francisco, Hong Kong, Australia and New Zealand our traditional markets

**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>12</sup>**

Fiji has an Informal Database for PGRFAs where information of all conserved PGRFAs in the country are kept. Updating the database is a time consuming exercise.

There is a need to have a consolidated approach in Fiji to link the CBD and the ITPGRFA to its stakeholders. There is lack of discussion from the CBD secretariat in the department of environment to the ministry of agriculture on the ITPGRFA. There has been meeting and awareness but this to be strengthened at national level.

Once there is proper synergies between this organization at national level then the link to regional and international networks will be enhance. There will be a national information system in place for the associated biodiversities in Fiji that contribute to national food security.

**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>13</sup>

<b>Associated biodiversity species</b>	<b>Ecosystem functions and services provided by the species in the production system</b>
Mucuna	A legume identified in a recent research on Soil Health in Taveuni to be used as soil conditioner, fix nitrogen in the soil, reduce the infestation of taro corm rots. Use to suppress other unwanted weeds. Use as a fallow crop in Taro Production system in Taveuni
<i>Erythrina spp</i>	A Tree legume used in Agro forestry farming system, also fixes nitrogen in the soil, leaves & branches used as mulch
<i>Callindra spp</i>	Another tree legume used in Agro forestry systems, fix nitrogen, act as wind break, conserve soil from erosion and add organic matter to the soil. Leaves used a a mulch and branches a good source of firewood
Vermiculture	Use of a species of earthworms imported from Australia now used by Grace Road Company for organic rice production in Navua, Fiji. This Korean company is assisting Fiji agriculture sector in commercial rice farming & self sufficiency in rice production by 2020 and beyond.
<i>Ctenopharyngodon idelle</i> (Grass carp)	Introduced into Fiji for aquatic weed control. It is a sterile triploid fish and cannot produce viable offspring in the wild.
<i>Gambusia affinis</i> (Mosquitofish)	Introduced as a mosquito control agent. It is invasive in some of the waterways.

<sup>12</sup> Reference: questions 28 and 75 of country report guidelines.

<sup>13</sup> Reference: question 27 of country report guidelines.

- 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>14</sup>

Wild food species	Change in state (2,1,0,-1,-2, NK)
<b>Terrestrial species:</b>	
Wild yams – <i>Dioscorea nummularia</i>	1
Wild Yams – <i>Dioscorea bulbifera</i>	0
Edible fern (ota) - <i>Athyrium esculentum</i>	2
Traditional taro species – <i>Colocasia esculenta</i>	1
Giant swamp taro – <i>Cytosperma chammisonis</i>	0
Giant taro	0
Wild traditional nuts	0
Fei banana (Sei in Fiji)	0
Wild bush lemon	1
Wild water cress	1
Blackberry night shade – <i>Solannum nodiflorun</i>	0
Spleen amaranthus – <i>Amaranthus viridis</i>	1
Wild chili pepper – <i>Capsicum frutescens</i>	0
Wild cape gooseberry – <i>Physellius peruviana</i>	0
Kudzu root (Inoka) – <i>Pueraria lobota</i>	0
Wild fungi on trees	0
Swamp cabbage – <i>Ipomea aquatic</i>	1
Local guava – <i>Psidium guajava</i>	1
Tahitian chestnut – <i>Incarpus fagifer</i>	1
Dawa - <i>Pometia pinnata</i>	1
Malayan apple	0
Wild taro leaf (rourou ni wai) – <i>Colocasia esculenta</i>	0
Sukau – <i>Gnetum gnemon</i>	0
Sago palm – <i>Metroxylon vitiense</i>	1
Mountain banana (Sowaqa) – <i>Musa troglodytarum</i>	0
Pursalane pig weed – <i>Portulaca oleraceae</i>	0
Two palms (niu masei) – <i>Prichardia pacifica</i>	0
Niusawa – <i>Veitchia joannis</i>	0
<b>Marine Seaweed:</b>	
Sea grapes – <i>Caulerpa racemosa</i>	1
Codium – <i>Codium geppii</i>	0
Maiden hair – <i>Hypnea nidifica</i>	1

<sup>14</sup> Reference: question 34 of country report guidelines.

<b>Wild Terrestrial Animal Food:</b>	
Longhorn beetle grub (yavato) – <i>Olethrius tyrannus</i>	0
Green katydid – <i>Othoptera spp</i>	0
Black duck – <i>Anas superciliosa</i>	-1
White throated pigeon – <i>Columba vitiense</i>	-1
Jungle fowl (wild chicken) – <i>Gallus gallus</i>	0
<b>Mammals:</b>	
Bat – <i>Emballonura semicaudata</i>	0
Small Indian mongoose	-1
Feral pig or wild pig – <i>Sus scrofa</i>	1

**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>15</sup>**

Wild food consumption in Fiji is mostly concentrated in rural areas and very little in urban areas. Wild foods are only found in municipal markets on Thursday and Fridays when rural farmers comes to urban areas and sell their produce.

In most villagers in Naitasiri, Namosi, Tailevu, Navosa, Ba, Bua and the interiors of Fiji, wild pigs' consumption is very common. Traditional hunters can hunt anytime of the week when the need arises for consumption. This is also possible with traditional knowledge on pig hunting and normally this tradition is passing down to generations.

Consumption of wild marine sea weeds is very common in Fiji and majority of the population eats the sea grapes, maiden hair "lumi" and other edible sea weeds. Edible fern or "Ota" in Fiji is a delicacy to more than 50% of the population and this is evident in the amount sold in municipal markets. Consumption is on a daily basis compared to Friday and Saturdays previously. Some of this edible fern is exported to overseas market as vacuum packed and demand is high from Fiji national residing in overseas countries such as New Zealand, Australia, Canada, USA and some Pacific Island Countries.

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<sup>15</sup> Reference: question 59 of country report guidelines.

- f) Briefly summarize the state and trends<sup>16</sup> of and the drivers of change<sup>17</sup> affecting:
- Associated biodiversity<sup>18</sup>: micro-organisms, invertebrates, vertebrates, plants
  - Ecosystem services<sup>19</sup>: regulating, supporting
  - Wild food resources<sup>20</sup>

#### **Policies:**

- Policies in Agriculture development encompasses the protection and sustainable use of traditional cultivars for adaptations, food security, crop improvement
- Domestication of some of these traditional cultivars based on the demand for food security, medicinal value, etc
- The ITPGRFA and the CBD encourage the conservation of terrestrial and marine genetic resources with their wild relatives. In the CBD it has implemented the Marine Protected Areas, Important Bird Areas through various national programs such as the FLAMMA with Fisheries, IBA with Bird Life Fiji. Also the Wildlife Conservation Society (WCS) and NGO have other projects in Fiji on the conservation of national biodiversity.
- Climate change has impacted Fiji's biodiversity, government directed climate change division to move from environment to foreign affairs so that it can use overseas missions and the foreign affairs office to coordinate the implementation of climate change activities in Fiji.
- Land degradation – changes in land use and unsustainable agricultural production, over exploiting our forest resources has results in degradation of land and leading to the loss of biodiversities (associated, wild plants/crops, changes in ecosystem functions
- Fiji Rural Land Use Policy 2006 – land and water legislation, good and bad land use practices, issues and impact, participatory process of land use planning, the availability of information on land resources and the need to request external assistance to implement new projects proposals and need to address important issues before the plan is drawn up.

#### **Changes in Consumer Demand:**

- The rapid changes in consumer demand in Fiji have caused the decrease in demand for traditional/wild food. Younger generation now prefer fast food.
- The power of advertisement of junk food in TV, radios and newspapers is some of the main driver for changes in the consumption pattern in Fiji.

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<sup>16</sup> Reference: questions 21, 22, 23, 24, 29, 34 and 35 of country report guidelines.

<sup>17</sup> Reference: Annex 3 and questions 9, 10, 12, 14, 44, 45 and 55 of country report guidelines.

<sup>18</sup> Annex 1 of the country report guidelines provides a definition of associated biodiversity.

<sup>19</sup> Annex 4 of the country report guidelines provides a definition of ecosystem services.

<sup>20</sup> Reference: question 34 of country report guidelines.

**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>21</sup>**

The management of inshore fisheries is supported by initiatives such as the Yau Bula Conservation Initiative and the Fiji Locally Managed Marine Area (Fiji LMMA) network which focus on creating community awareness of environmental issues, particularly in the area of marine conservation. The Fiji LMMA network is a non-profit and charitable association of over 400 communities and some 25 NGOs, government departments and academic institutions, working together to promote and encourage the preservation, protection and sustainable use of marine resources, by the owners. To date, the network covers 10,745 square kilometres equivalent to more than 25% of Fiji's inshore area. Locally Managed Marine Areas have been established in 143 of Fiji's 410 i-qoliqoli areas (fishing boundaries for landowners), with 415 tabu (no-take) areas covering over 960 square kilometres.

The first LMMA site in Fiji was established in 1997 in Ucunivanua Village, Verata-Tailevu. A protection area covering 24 hectares was set aside there for Clams (Kaikoso). The administrative and operation costs over the first 5 years were \$20,000. The 2005 socio-economic impact study reported a 130% increase in household income for 600 people. In 2002 the Ucunivanua LMMA project was awarded the internationally renowned Equator Prize which recognizes sustainable development solutions and resilient communities.

### **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>22</sup>**

- The main need and priorities in Fiji is the protection, conservation and use of these traditional/wild cultivars of crops and marine species. This is highlighted in the Fiji 2020 Agriculture Policy Agenda, the NBSAP document for the implantation of the CBD obligations.
- Improved monitoring: In order to outline any changes in components of associated biodiversity within production systems baseline data of associated biodiversity for each production system is required and from this baseline continuous or systematic monitoring of the levels of associated biodiversity for each production system, as coded, is necessary in order to detect changes. At present, the existence of such data is virtually non-existent and can only be assumed in terms of 'healthy or not' on the basis of the general ecosystem health, assuming that is subject to some assessment.
- Improved recognition at the policy and Action Plan levels of the contribution of BFA to sustainable agriculture and a healthy environment

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<sup>21</sup> Reference: question 19 of country report guidelines.

<sup>22</sup> Reference: questions 28, 48 and 49 of country report guidelines.

## 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 4.0 Management<sup>23</sup> and diversity based<sup>24</sup> practices that support the maintenance and use of biodiversity for food and agriculture in production systems.

Production system	Management/ diversity based practice <sup>25</sup>	Trends in the application of the practice over the past ten years
Taro	Diversification: Taro is planted with other crops such as kava and other vegetables crops. Common farming system in Fiji is taro under coconuts; taro with kava, taro inter – cropped with vegetables and pulses.	This was the practice more than 10 years ago but changes occurred when Fiji started to increase the taro export to overseas market. Mono – cropping of taro have become significant in main taro producing areas due to its demand, while smallholder farmers practiced mixed cropping also source of supply to export markets.
Ginger production system	Ginger follows a rotational system in Fiji; ginger – taro – cassava – fallow - ginger	Has been the trend for the last 10 years and researchers are revising the practice to more convenient and profitable for farmers.
Tilapia integrated system	Tilapia is raised in fish pond with chicken and ducks as source of algae and protein for the fish	Currently practice in Fiji in most aquaculture farms and has been practiced in Fiji for the last 10 years and more.
Rice integrated production system	Rice in planted in wetland with tilapia	Not very common but on very small scale by only few farmers
Pigs free range system	In some villagers – a big free range fence is built using fencing wires, stone walls, trees as fence line. A range of pigs are reared with so many types, domesticated and traditional breeds. Purpose is to maintain traditional breeds, food security, nutrition, and produces new breeds through uncontrolled	System is very common in villagers and outer islands e.g. Lau group, Rotuma island and the interior of Viti Levu and Vanua Levu. This is one of the old practices in pig farming in Fiji.

<sup>23</sup> Annex 5 of the country report guidelines describes a list of management practices supporting the use and conservation of biodiversity for food and agriculture.

<sup>24</sup> Annex 6 of the country report guidelines describes a list of diversity based interventions supporting the use and conservation of biodiversity for food and agriculture.

<sup>25</sup> Reference: questions 52, 53 and 56 of country report guidelines.

	breeding.	
Soil Health Project on Taveuni Island	Soil management practices	Increasing because of more awareness regarding declining soil fertility <sup>26</sup> as the island is the main source of supply to the taro export market
Crops being organic certified are spices such as vanilla, nutmeg, ginger, cardamom, pepper, tumeric, and fruits such as bananas, guavas and mangoes, and virgin coconut oil. <sup>27</sup>	Organics:	Increasing trend?

**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>28</sup>**

Tei Tei Taveuni (TTT) is located on Fiji's 3rd largest island of Taveuni. The island produces 60-70% of Fiji's taro for export. Smallholders producing taro and kava together with tourism have replaced the old coconut estates as drivers of the economy on the island. The last 15-20 years has seen farmers move from subsistence towards semi-commercial farming and with it adverse effects to the environment – having the highest rate of deforestation in Fiji, unsustainable land use, decline in soil fertility, high use of chemical sprays and conventional fertilizers, water catchment problems. The farmer organization, TTT was formed in 2009 in response to these problems that threatened the livelihoods of farmers.

**Activities include:**

**Soil Schools**

Conducted soil schools for farmers to educate them in the Biological Approach to farming, with the aid of the UNDP GEF program. Currently working with the ACIAR Soil Health project on Taveuni where its farmers are providing the practical component of the team's findings and trials.

**Sustainable farming**

Currently working with 40 farm groups to further their knowledge and practice of sustainable farming with the assistance of an AusAid sponsored Australian agronomist.

**Lime production**

Initiated a task force in conjunction with the Ministry of Agriculture to look into the feasibility of producing lime locally, as the vital nutrient was lacking in most of the soils throughout the country.

<sup>26</sup> <http://fijisun.com.fj/2015/09/10/unsustainable-practices-causing-drop-in-soil-quality/>

<sup>27</sup> [http://www.ifoam.bio/sites/default/files/page/files/oa\\_pacific\\_web.pdf](http://www.ifoam.bio/sites/default/files/page/files/oa_pacific_web.pdf)

<sup>28</sup> Reference: question 54 of country report guidelines.

**b) Provide examples whereby the diversity *per se*,<sup>29</sup> or its lack,<sup>30</sup> had a direct effect on productivity; food security and nutrition; rural livelihoods; ecosystem services; sustainability; resilience; or sustainable intensification.**

With the increase in demand for exports, the number of taro growers increased over the years. In 1994 there were 900 growers but as we moved along the numbers have grown to 3600. The traditional shifting cultivation practices changed to more intensive mono-cropping systems favouring a single variety of taro for the specialised market. The traditional slash and burn system gave way to systemic herbicide-based land clearing. In order to meet food demands and income for the growing population, fertilizer use was inevitable with limited agricultural land area.

In 1994, the arable land in Taveuni was 23,000 ha and it still remains the same but the number of growers has increased forcing them to grow in the same piece of land year after year. With the same piece of land being continuously cultivated, nutrient loss through crop harvest and topsoil erosion has led to significant yield losses. The export industry requires taro corms to be between 1-3 kg but currently about 40% of the produce is below minimum standard.

**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 5.0** 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>31</sup>	<ul style="list-style-type: none"> <li>• Collection and multiplication of <i>Xanthosoma spp</i> in Fiji for adapting to climate change food security issues</li> <li>• Reviving of traditional varieties e.g. taro, wild yams spp, giant swamp taro, that are resilient and adaptable to climatic changes.</li> <li>• Introduction of climate ready crops through tissue culture – drought tolerant, saline tolerant, disease resistant/tolerant e.g. rice, sweet potatoes, cassava, taro</li> <li>• Selection of yams for crop improvement programs e.g. producing new resilient varieties.</li> <li>• Introduction of rice varieties from IRRI &amp; India that is tolerant to saline condition and drought.</li> <li>• Rice project with Fiji National University on the characterization of rice varieties in the germplasm and selects suitable traits that are adaptable and higher yield.</li> <li>• Selection and evaluation of the Fiji coconut tall populations and selects varieties that can adapt to changing weather patterns</li> </ul>

<http://www.pacificfarmers.com/wp-content/uploads/2015/11/Pacific-Soil-Learning-Exchange-Booklet.pdf>

<sup>29</sup> Reference: question 58 of country report guidelines.

<sup>30</sup> Reference: question 57 of country report guidelines.

<sup>31</sup> Reference: question 69 of country report guidelines.

Use of BFA to manage the spread of/control invasive alien species <sup>32</sup>	<ul style="list-style-type: none"> <li>• Selection of chili varieties that are resistant/ tolerant to the new chili anthracnose disease found in Fiji.</li> <li>• Use of mucuna to control the invasive of <i>Meremia peltata</i> a creeping invasive weed.</li> <li>• Use of a pasture species in Fiji (Setaria )to control the invasiveness of a common sedge (Navua sedge)</li> <li>• Introduction of grass carp in Fiji to control the invasive of an introduced river weeds</li> </ul>
Use of BFA to prevent natural or human-made disasters and/or reduce their effects on livelihoods, food security and nutrition <sup>33</sup>	Mangrove protection - Mangrove Ecosystems for Climate Change Adaptation & Livelihoods (MESCAL) Project (IUCN) - promoting an adaptive co-management approach as well as the restoration of mangrove ecosystems.

**d) List and briefly describe ecosystem/landscape/seascape approaches<sup>34</sup> that have improved the management and use of BFA in the country.<sup>35</sup>**

**Locally-Managed Marine Areas**

- Marine protected areas - introduced to manage, revive, protect and sustain the selected marine protected areas. The community of Ucuivanua on the eastern coast of Fiji's largest island was the site of the first locally managed marine area (LMMA) in Fiji in 1997. Scientists from the University of the South Pacific supported environmentalists and local villagers in declaring a ban on harvesting within a stretch of inshore waters for three years, building on the tradition of taboo prohibitions for certain species. After seven years of local management, the clam populations had rebounded and village incomes had risen significantly with increased harvests. The success of the Ucuivanua LMMA spread rapidly, and a support network – the Fiji Locally Managed Marine Area Network – grew from this. By 2009, the network had increased to include some 250 LMMAs, covering some 10,745 square kilometers of coastal fisheries, or more than 25% of Fiji's inshore area. The network has also inspired replication in countries across the Pacific<sup>36</sup>
- Fiji Ridge-to-Reef; Implementing a R2R approach to preserve Ecosystem Services, Sequester Carbon, Improve Climate Resilience and Sustain Livelihoods in Fiji (UNDP). The objective of the project is to preserve biodiversity, ecosystem services, sequester carbon, improve climate resilience and sustain livelihoods through a R2R management of priority watersheds in the 2 main islands of Fiji.

<sup>32</sup> Reference: question 46 of country report guidelines.

<sup>33</sup> Reference: question 43 of country report guidelines.

<sup>34</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>35</sup> Reference: questions 60, 61 and 80 of country report guidelines.

<sup>36</sup> <https://www.cbd.int/undb/countries/un/undb-undp-eqi-fiji.pdf>

**e) Provide examples of activities undertaken to maintain and use traditional knowledge of associated biodiversity and wild foods.<sup>37</sup>**

- Documentation of traditional knowledge by the Taukei Affairs Board and National Archives
- Passing of traditional knowledge in village system on various ways of use and knowledge of traditional food use e.g. hunting for wild pigs, use of traditional yams and root crops, and vegetables.
- Documentation of traditional farming system by the Ministry of Agriculture and Ministry of Information.
- Publication of findings
- Use of the mass media - mostly TV programs on the use of traditional knowledge in food systems in Fiji e.g. is the Business Talk Program on Fiji TV, TV talk back show on Agriculture, Fiji Farmers Leaflets published by the Ministry of Agriculture.

**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.**

Certification systems, such as organic certification, that encourage sustainable practices in production systems - market creation for products or services provided by ecological agriculture may be important in ensuring long-term adoption of sustainable practices, substituting public financial support after an initial phase.

Increased awareness and education for all stakeholders including decision-makers, researchers, producers and consumers is needed to highlight the multi-functionality of agriculture and the interconnectedness of biodiversity, ecosystem functioning and human health.

National policies and strategies in place to support sustainable use of BFA – especially for agriculture and fisheries, for example, land management policies that permit or limit production practice.

## **2.2. CONSERVATION**

**a) Describe the status of *in situ* conservation of associated biodiversity and wild food species in your country<sup>38</sup>:**

**1. List and describe any existing national *in situ* conservation initiative(s).**

- A wild yam species (*Dioscorea bulbifera*) called 'Bulou' in Fiji was found in a settlement in Seaqaqa, Macuata called Korolevu settlement. Farmers are conserving this wild species in its natural habitat. They collect and dig out tubers as a substitute for potatoes. This may not be a national *in situ* activity, but efforts are in place to conserve this species due to its importance in food security & diversity.

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<sup>37</sup>Reference: questions 32, 33, 38 and 39 of country report guidelines.

<sup>38</sup>Reference: questions 31 (Table 13) and 37 (Table 17) of country report guidelines.

- In – situ/on – farm conservation of Fiji Dwarf coconuts or 'Niu Leka' at Nabeka in Taveuni
- Edible fern *in – situ* conservation – common in Wainibuka, Tailevu areas where this fern is maintain in its original habitat. Efforts have been made to domesticate this fern, but not possible to its adaptability to its original habitat.

**2. Indicate which species/groups of species are being conserved and with what objective(s).**

- A unique selection of Fiji Tall population was found in Cicia Island, objective of the conservation is to protect this tall population with its characteristics. Used as a breeding stock for coconuts in Fiji
- The breadfruit in Natewa has 22 accessions and they fruit all year round with very good eating qualities. Resources are used as stocks for vegetative propagation (marcotting) for multiplication and distribution to other parts of the country.
- Niu leka dwarf variety is unique to Fiji with its characteristics: - dwarf, high bearing capability, good nut components, resilient to wind damage and it's maintained for breeding purposes with other hybrids and tall varieties.
- Edible fern or 'Ota' (*Diplazium esculentum*) & (*Diplazium proliferum*) are two known varieties in Fiji – conserve due to its demand for local consumption and its becoming a delicacy in the Fijian diet. It's very nutritious, it grows wild and regenerates very fast and a good source of income for farmers, especially women who sells them at the local markets daily.

**3. Describe any existing sub - regional/regional *in situ* conservation initiative(s) the country is involved in.**

- For the fisheries is the marine protected areas e.g Kubulau, Bua; Nasavusavu, Cakaudrove; Natewa, Tunuloa; Saqani, Vaturova & Waielvu are some of the examples of the marine protected areas in Fiji.
- The Framework for Nature Conservation and Protected Areas in the Pacific Islands region, 2014-2020 will provide guidance for the region on key priorities for biodiversity conservation and ecosystem management with clear linkages to NBSAPs and the Aichi Biodiversity targets. Strategic goal C is 'to improve the status of biodiversity by safeguarding ecosystems, species and diversity
- The Bird Life Pacific Partnership has started a new four-year European Union funded regional Invasive Species programme which seeks to reduce the spread and the environmental and socio-economic impact of invasive alien species by supporting the eradication and control of invasive alien species and also enhancing biosecurity. As well as Fiji, other countries involved in this partnership are Cook Islands, Palau, Samoa, French Polynesia and New Caledonia.

**b) Describe the status of *ex situ* conservation<sup>39</sup> of associated biodiversity and wild food species in your country:**

**1. List and describe any existing national *ex situ* conservation initiative(s).**

- Traditional nuts –these is a wild species of nuts in Fiji called ‘Vutu’, seeds have been collected and seedlings raised for *ex – situ* conservation
- Wild yams – *Dioscorea nummularia* (Tivoli) & *Dioscorea bulbifera* (Bulou) are now maintained in the *ex – situ* conservation at Koronivia, Seaqaqa & Wainigata.
- Efforts are now underway in Fiji for the *ex –situ* conservation of feral pigs and wild chickens due to the adaptabilities, resilience and food security and breeding purposes.

**2. Indicate which species/groups of species are being conserved and with what objective(s).**

Species/Groups	Ex – situ Type	Location	Objectives/Purpose
Yams – <i>Dioscorea bulbifera</i> & <i>D.nummularia</i>	Field	Seaqaqa, Wainigata,	<ul style="list-style-type: none"> <li>• Food security &amp; nutrition</li> <li>• Characterization &amp; evaluation</li> </ul>
Traditional nut – ‘Vutu’	Field	Naduruloulou Doblevu	<ul style="list-style-type: none"> <li>• Food security &amp; nutrition</li> <li>• Characterization &amp;</li> </ul>
Feral pigs	Field	Koronivia Pig Research Unit	<ul style="list-style-type: none"> <li>• Breeding and improvement</li> <li>• Food security</li> <li>• Resilience</li> </ul>

Other *ex – situ* conservation activities is undertaken by the Ministry of Agriculture, Research Division, where it maintains a large collection of cultivated species of PGRFAs. These are conserved at 8 research stations in Fiji using different ecological zones. These collections are maintained in field, tissue culture, cool storage and nurseries.

**3. Describe any existing sub regional/regional *ex situ* conservation initiative(s) the country is involved in.**

- The Royal Botanic Gardens (RBG) Kew has signed a 10-year agreement to work with the SPC in supporting and implementing plant conservation activities in the Pacific region. Initially Kew will cooperate with SPC’s Pacific Island Tree Seed Centre (PITSC) to conduct seed conservation activities in Fiji. Fiji is part of the Polynesia-Micronesia biodiversity hotspot, one of 34 global Biodiversity Hotspots with exceptional level of plant endemism and serious level of habitat loss. For example, tropical dry forests in Fiji are among the most threatened ecosystems on a global scale.
- The SPC Centre for Pacific Crops and Trees can support SPC member countries in conserving agricultural biodiversity.

<sup>39</sup>Reference: questions 30 (Table 12) and 36 (Table 16) of country report guidelines.

The Fiji Herbarium at the University of the South Pacific houses more than 50,000 vascular plant specimens in the main collection. It also has a wet collection of plant parts, bryophytes and algae from the Pacific region. The Herbarium serves as a very important resource in matters pertaining to the taxonomy, conservation and ecology of plants, forestry, land use planning, economic plants and weed problems in the region

**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.**

- Improved cross-sectoral collaboration between agriculture and the environment to ensure that any planned expansion in agriculture does not impact negatively on sensitive habitats.
- Improved monitoring and data gathering is needed including mapping data to enable future assessment of the environmental impacts of agriculture on the environment.
- Increased awareness and education for all stakeholders including decision-makers, researchers, producers and consumers is needed to highlight the multi-functionality of agriculture and the interconnectedness of biodiversity, ecosystem functioning and human health.
- Capacity building/supplementation is needed either at the national, sub-regional or regional level to support both development of conservation strategies, including prioritization and development of technologies.
- Strengthening the capacity of communities so that they become informed partners in land use planning, which will help in the conservation of BFA
- Increased use of ridge-to-reef, landscape and ecosystem approaches, including payment for ecosystem services and similar initiatives.

## 2.3 Access and exchange<sup>40</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 6.0 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>41</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</i>		
PGRFA	<b>National level:</b> Conservation, management and use of PGRFA  International and Regional level	<ul style="list-style-type: none"> <li>• PGRFAs are conserved and made available to farmers at a subsidize price, MOA monitor the system</li> <li>• Farmers share the benefits back to the Ministry as the custodian of these PGRFAs</li> <li>• There is no law in Fiji that regulates the equitable sharing of these resources within.</li> <li>• Biosecurity laws does not encourage PGRFAs to be made available to outer islands due to pest and disease restrictions</li> </ul> <p>Fiji has ratified the ITPGRFA</p>
AnGR	<b>National Level:</b> Conservation, management and use of AnGR  Regional and International Level	<ul style="list-style-type: none"> <li>• Ministry of Agriculture maintains this AnGR and made available to farmers at a subsidies price</li> <li>• There some regulation on the equitable sharing of AnGR in Fiji, this is due to the restriction on animal diseases such as TB, Brucellosis, etc</li> </ul> <p>Fiji acceded to the Nagoya Protocol in 2014</p>
FGR		<ul style="list-style-type: none"> <li>• Fiji acceded to the Nagoya Protocol in 2014; Fiji has signed the MTA with SPC regarding access to and exchange of FGR material (seeds)</li> </ul>
AqGR		<ul style="list-style-type: none"> <li>• Fiji acceded to the Nagoya Protocol in 2014</li> </ul>
<i>Associated biodiversity</i>		<ul style="list-style-type: none"> <li>• Fiji accessing the earthworms species from Australia to be used for the organic rice production in Navua by Grace Road Comapny</li> </ul>
Micro-organisms (including marine organisms)		<ul style="list-style-type: none"> <li>• Fiji government, USP and Smith Kline Beecham have established bioprospecting agreements for marine organisms<sup>42</sup></li> </ul>
Invertebrates		<ul style="list-style-type: none"> <li>• The Fiji Fisheries Act defines three main stakeholders which are the</li> </ul>

<sup>40</sup> Reference: questions 72 and 73 of country report guidelines.

<sup>41</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.

<sup>42</sup> <https://www.cbd.int/doc/case-studies/abs/cs-abs-fj.pdf>

	<p>Customary Fishing Right Owners (CFROs), commercial fishermen and the State. Hence the traditional demarcated fishing ground (I Qoliqoli) is co-owned by the state and the CFROs. The CFROs have the right to use the I <i>Qoliqoli</i> for subsistence purposes only but if they want to sell the fisheries product they need to obtain a fishing license from the State. For non CFROs a written consent has to be obtained from the CFROs in order to get a permit and fishing license from the State.</p>
Vertebrates	<ul style="list-style-type: none"> <li>• The Fiji Fisheries Act defines three main stakeholders which are the Customary Fishing Right Owners (CFROs), commercial fishermen and the State. Hence the traditional demarcated fishing ground (I Qoliqoli) is co-owned by the state and the CFROs. The CFROs have the right to use the I <i>Qoliqoli</i> for subsistence purposes only but if they want to sell the fisheries product they need to obtain a fishing license from the State. For non CFROs a written consent has to be obtained from the CFROs in order to get a permit and fishing license from the State.</li> </ul>

**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 food and agriculture, and in particular of associated biodiversity.**

- Improved awareness for all stakeholders on the implications of the international treaties, especially the Nagoya Protocol
- There is a need to localize the provisions of CBD and ITPGRFA in national policies and plans supported with suitable legal framework to address local farmers access, exchange and sharing of genetic resources and its use and management, farmer rights, IP etc.

### III. Policies, institutions and capacity

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

a) Describe relevant policies and programmers 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>43</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>44</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>45</sup>

#### a) Agriculture Policy Directions in Fiji:

The new Agriculture Policy document - Fiji 2020 Agriculture Policy Agenda is addressing the conservation and sustainable use of these biodiversities. Five thematic areas in the Agriculture Policy in Fiji:

#### Fiji Agriculture 2020 POLICY AGENDA Thematic Areas:

- Impact -A sustainable community livelihood through competitive exports & food security
- Outcome - A diversify economically and environmentally sustainable agriculture sector
- Output -
  - (i) MOA completely reorganized
  - (ii) Rural Transformation Centers 's & Farmers Field Schools established
  - (iii) Infrastructure established
  - (iv) Industry Plan implemented – conservation & sustainable use of PGRFAs are included in all Crops Industry Plans

#### The Green Growth Framework Thematic Areas:

The Green Growth Framework for Fiji: Restoring the Balance in Development that is Sustainable for Our Future is a 'living document' which was developed in early 2014. This Framework is

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<sup>43</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>44</sup> The relevant policies and programmes should have an explicit reference to associated biodiversity and/or wild foods.

<sup>45</sup> Reference: question 67 of country report guidelines.

intended to support and complement the Peoples Charter for Change, Peace and Progress and the 2010-2014 Roadmap for Democracy and Sustainable Socio-Economic Development and its successor national development documents: The Roadmap and this Green Growth Framework therefore share the same vision: A Better Fiji for All.

Pillars (10 thematic areas) of which the environment and social pillars are specifically relevant for BFA

(i) Environment Pillar

- Building Resilience to Climate Change & Disaster
- Waste Management
- Sustainable Island & Ocean Resources

(ii) Social Pillar

- Food Security
- Freshwater resources and sanitation management

(iii) Economic Pillar

- Technology & Innovation

**b) Forestry Policy in Fiji**

The Fiji Forest Policy Statement (2007) was developed to promote the shift to a sustainable forest management regime from a previous focus on commercial exploitation of timber resources. It was developed to reflect the multiple uses and purposes of forest management that have evolved over the years, to increase the environmental, social and economic opportunities of the sector. This includes sustainable forest management, conservation, and the use of forests as carbon sinks. The policy recognizes the economic potential of the sector as a major source of foreign exchange and aims to develop the sector in a way to ensure this is maintained.

The new policy promotes conservation, rehabilitation and sustainable forest management in line with the Rural Land Use Policy (2006) and stresses the social role of forestry in creating a sustainable rural environment, employment and income opportunities. It recognizes the need to engage and involve local stakeholders and landowners in the sustainable management, protection, and rehabilitation of resources.

REDD+: The national framework for REDD+ is being developed within the context of climate change adaptation and long-term national goals for sustainable development in the forestry sector. In 2009 Fiji started developing its national REDD+ programme. One of the first achievements of the national REDD+ process was the development of a national REDD+ Policy

in 2010, and in November 2013 Fiji submitted a Readiness Preparation Proposal (R-PP) to the Forest Carbon Partnership Facility (FCPF). In December that same year Fiji received a readiness grant of US\$ 3.8 million to implement the R-PP and develop a REDD+ strategy. The readiness grant will fund the implementation of the R-PP, which will start in 2014 and is expected to last until 2017 (4 years). REDD+ readiness in Fiji will follow a hybrid approach, which means that REDD+ will start from the subnational level through pilot projects that will later be nested into a national programme. A national REDD+ pilot project is underway in Emalu, Navosa province on Viti Levu, and in Vinuvia on Vanua Levu. Additionally, a community reforestation project is being implemented by Conservation International on Viti Levu, Ra province, and another community forest management project is being implemented by Live and Learn on Drawa, Vanua Levu Island. These are expected to inform the development of the national REDD+ Strategy.

### **c) Fisheries Policy Direction:**

The statutory Roles and functions of the Department Fisheries are clearly articulated in the following;

- Fisheries Act Cap 158
- Marine Spaces Act Cap 158A
- Fisheries Offshore Decree

With this the department of Fisheries is responsible for the formulation and implementation of policies that promote best practice (equating conservation and utilization), that will ensure a prosperous and enhanced Fisheries sector. The department drives this through coordination, consultation and in partnership with resource owners, communities, private sector, government agencies, Non-Governmental Organisations, Regional and International Agencies.

In doing so, the department will ensure that the environment is conducive to private sector investment and growth, community participation, creating jobs opportunities which therefore increase Fisheries sector contribution to the national GDP.

The department, mindful of the emerging issues such as carbon trading, forest and tuna certification and potential growth within the sector, is committed to ensuring that the organisation structure is appropriate and there is on-going capacity building to accommodate the changes and efficiently support the expected growth in this resource based sector.

**b) Provide a short analysis of the strengths and weaknesses of the policies and programmes mentioned above and indicate their level of implementation.<sup>46</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>47</sup>***

Delivering Sustainable Forest Management for Fiji's People and Wildlife: At the end of the project, a minimum total area of 26,000 ha of natural forest in Fiji will be designated as Permanent Forest Estates – consisting of Protected Areas and Sustainably Managed Forests - under the terms of Fiji's Forest Policy. At these designated sites, there will be measurable improvements in the sustainability of livelihoods for participating forest-owning Mataqali, from the harvesting of forest products, coupled with reduced pressure on the forest ecosystems.<sup>48</sup>

In December 2003, over 80 local and overseas stakeholders with knowledge and experience of the Fiji Islands Marine Ecoregion<sup>1</sup> (FIME) were convened by WWF to discuss the importance of and gather information on the biodiversity and associated threats to Fiji's marine environment. Thirty-five Priority Conservation Areas (PCAs) were identified and agreed by stakeholders. Five areas were ranked to be globally important due to their uniqueness, endemism and high levels of diversity. Fifteen areas were considered to be of national importance and 15 of sub-regional importance. These 35 areas capture the full range of marine biodiversity that makes FIME unique and that if conserved will contribute to the maintenance of integrity of Fiji's marine systems.

LMMA: Approximately 130 kilometres west of Suva, the Korolevu-i-wai district qoliqoli spans six sq. km and encompasses four adjacent villages, with a tourism resort situated in the middle. The Korolevu-i-wai qoliqoli includes mangroves, seagrass beds and coral reefs, and is home to mangrove crabs, clams, octopuses, lobsters, sea urchins, trochus, and reef fish such as emperors, parrotfish, grouper, and mullet. The Korolevu-i-wai community has established a mutually beneficial relationship with the owners of a beach tourist resort whereby, in return for making the fishing ground available to the resort for low-impact tourism activities, the community receives substantial financial and technical assistance. The LMMA management committee launched a coral farming project along reefs adjacent to the resort, at Tagaqe village. The resort hired a marine biologist to help establish the coral farming programme and to train hotel staff. Visitors to the resort can now take part in a 'reef walk' (a tour along a carefully marked path through the reef) to appreciate the marine environment and to view the coral racks.

**c) Provide examples of successful inter ministerial cooperation in the area of conservation and sustainable use of biodiversity for food and agriculture and describe the relevant collaboration mechanisms.<sup>49</sup>**

<sup>46</sup> Reference: questions 66 and 67 of country report guidelines.

<sup>47</sup> Reference: question 77 of country report guidelines.

<sup>48</sup> <http://www.birdlife.org/pacific/projects/delivering-sustainable-forest-management-fiji%E2%80%99s-people-and-wildlife>

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

- Nagoya Protocol project implementation in Fiji
- GEF 5 STAR project on the Ridge to Reef Project – Land Degradation, Climate Change & Biodiversity (Ministry of Environment, Min of Agriculture, Min of Fisheries & Forest, Min of ITaukei Affairs, USP, FNU, NGOs, Ministry of Lands, Ministry of Education, etc).

**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>**

Across all sectors, the lack of quantitative data and analysis is a major hindrance to developing effective policies and monitoring any effects that management programs may produce. Without more and better data and data analysis, agencies are severely limited in their ability to design, implement, and monitor the effectiveness of environmental policies. Anecdotal observations made by individuals with regular interaction with the environment provide valuable information for shaping policy decisions, but systematic, quantitative data is necessary to improve the quality of environmental management. Some progress has been made in filling in some data gaps through research supported by partnerships between government, NGOs and the private sector. However, considerable capacity development is needed in order to establish and maintain ongoing data collection, monitoring, reporting and analysis systems.

There is a need to develop an overarching national biodiversity and genetic resource policy, which should link with agriculture, forestry, fisheries, environment and climate change policies on biodiversity and genetic resources. This national policy should also establish the management, implementation and coordination mechanism of the policy.

### **3.2 Capacity**

**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>**

#### **Training priorities:**

- Understanding the role of associated biodiversities in food security
- Conservation strategies and types of gene banks management
- Understanding the ITPGRFAs and its role and linkages to the CBD
- Awareness and training for communities and their roles in conservation and sustainable use
- Improved capacity in assessment, identification and monitoring of components of biodiversity
- General training across the sectors as to how BFA is important to the major development sectors, and not just environment

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

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

**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>**

**Research needs:**

- Short term consultancies on research for wild food and ecosystems services – do not have adequate capacities to study wild food relatives, University of Hawaii is starting a project in Fiji with USP and Min of Agriculture on Agro forestry & Traditional Crops Research.
- One possible research area would also include identification of best practices for conservation and sustainable use of BFA

**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 programs	Description
<p>FAO International Treaty on Plant Genetic Resources for Food and Agriculture. Focal point is the Ministry of Agriculture</p> <p>1. FAO Benefit Sharing Project – <i>Strengthening the resilience of Pacific agricultural systems to climate change through enhancing access to and use of diversity</i> supports objectives of the Treaty and supports conservation and utilization of crop diversity</p>	<p>Fiji is a contracting party and works closely with SPC and FAO (Samoa and Rome) on the Treaty and also current recipient of the FAO Benefit Sharing Project.</p> <p>The International Treaty on Plant Genetic Resources for Food and Agriculture was negotiated in order to address the special problems associated with PGRFA. It was negotiated within the framework of FAO, was adopted by the FAO Conference in November 2001, and came into force on 29 June 2004. The Treaty is in harmony with the Convention on Biological Diversity.</p> <p>The objectives of the Treaty are defined in Article 1 as being <i>“the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of benefits arising out of their use, in harmony with the Convention on Biological Diversity,</i></p>

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

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

<p>2. Global Crop Diversity Trust Global Regeneration Project through the Pacific Community (SPC) Centre for Pacific Crops and Trees</p> <p>3. Global crop Diversity Trust - Long term "conservation forever" for SPC CePaCT</p>	<p><i>for sustainable agriculture and food security."</i></p> <p>Fiji through Ministry of Agriculture is part of the Pacific Agricultural Plant Genetic Resources Network which also provides material to SPC CePaCT for conservation and utilization.</p> <p>This supports regeneration of crop diversity from the region including outside of the Pacific. Fiji traditional crop collections (root crops and tree) are conserved at SPC CePaCT.</p>
<p>Convention on Biological Diversity</p>	<p>Convention born out to support growing need for sustainable development. CBD was opened for signature in June 1992 and entered into force in December 1993 and has 3 objectives:</p> <ol style="list-style-type: none"> <li>1. Conservation of biological diversity</li> <li>2. Sustainable use of its components</li> <li>3. Fair and equitable sharing of benefits arising from utilization of genetic resource</li> </ol> <p>Fiji is a party to CBD - ratified in 1992</p>
<p>CBD Nagoya Protocol – focal point is the Ministry of Environment</p>	<p>Fiji has ratified the CBD Nagoya protocol in 2013. It is implemented in harmony with the FAO Treaty (ITPGRFA). This covers genetic resources that are not covered under FAO Treaty Fiji also attends workshops that covers CBD issues</p> <p>A supplementary agreement to the Convention on Biological Diversity (CBD), providing an international and transparent legal framework for the effective implementation of the third objective of the CBD. The Nagoya Protocol is expected to enter into force in 2014. Once operational, the Nagoya Protocol will generate significant benefits for biodiversity conservation in States that make the genetic resources over which they hold sovereign rights available. The Protocol rests on three main pillars:</p> <ul style="list-style-type: none"> <li>• Access - Establish more predictable conditions for access to genetic resources.</li> <li>• Benefit-sharing - Ensure benefit-sharing between users and providers of genetic resources.</li> <li>• Compliance – Ensure that only legally acquired genetic resources are used.</li> </ul> <p>The objective of this Protocol is the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account</p>

	all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components. (CBD Nagoya Protocol <a href="https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf">https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf</a> )
Pacific Regional Food Security Policy Framework (SPC)	Refer attachment for more details
PAPP project and which is a member	 <p><b>Pacific Agriculture Policy Project</b>  PAPP enhances the Regional (Pacific) and Inter-regional capabilities of agricultural sectors in eradicating poverty. Specifically the program works towards increasing the capability of Regional Agricultural Development Organizations of the Pacific region to address the development needs of smallholder agriculture by improving the linkages between small-holder farmers, Micro, Small and Medium Enterprises (MSMEs) and markets.</p> <p><a href="http://www.spc.int/papp">www.spc.int/papp</a></p>
Pacific Plan	Pacific Forum leaders agreed to the development of a 'Pacific Plan' with the goal to "Enhance and stimulate economic growth, sustainable development, good governance and security for Pacific countries through regionalism. The Plan has reference to 'Improved Natural Resource Management and Environmental Management' in the plans Strategic Objective no. 5, with initiatives being promoted in: sustainable development, fisheries, forestry, coastal waters, waste management, energy, freshwater management, biodiversity and climate change.
The Framework for Nature Conservation and Protected Areas in the Pacific Islands region, 2014-2020	The Framework will provide guidance for the region on key priorities for biodiversity conservation and ecosystem management with clear linkages to NBSAPs and the Aichi Biodiversity targets. Strategic goal C is 'to improve the status of biodiversity by safeguarding ecosystems, species and diversity
Pacific Islands Regional Marine Species Programme 2013-2017	A regional strategy for cooperative conservation and management of dugongs, marine turtles, whales and dolphins in the Pacific Region. Other marine species of conservation concern will be added as the need arise.
A New Song for Coastal Fisheries: Pathways to Change	In March 2015, regional Pacific stakeholders and Governments engaged in collaborative planning to

	<p>establish a new direction in the management of Coastal Fisheries. A New Song for Coastal Fisheries: Pathways to Change calls for a "...new and innovative approach to dealing with declines in coastal fisheries resources and related ecosystems". The paper makes five recommendations designed to strengthen community-based ecosystem approaches to fisheries management (CEAFM) across the region by adopting a capacity development approach as an integrated strategy, to develop capacity in CEAFM in information, management, monitoring and enforcement functions, from community to national government.</p>
<p>Framework for Integrated Strategic Action (PIROP)</p>	<p>The Pacific Islands Regional Ocean Policy is a policy for all the islands of the Pacific: it has been adopted by the leaders of all Pacific Island countries through the Pacific Islands Forum and is additionally supported by all Pacific Island territories. The Policy underscores the continuing importance of ocean and coastal resources and environments to the region's nations, communities and individuals. Central to the policy is the belief that ocean, coastal and island ecosystems contain high biological diversity that has sustained the lives of Pacific Island communities since first settlement and that it is vital to reduce the negative impacts of human activities and implement measures that protect and conserve biodiversity. It is important that biodiversity protection be pursued in a way that is compatible with community control of resources, and not unduly restrictive of social and traditional obligations.</p>
<p>Economic development, particularly at the community level</p>	
<p>Regional Strategic Plan on the Conservation, Management and Sustainable Utilization of Forests and Trees Genetic Resources in the Pacific</p>	<p>Regional Strategic Plan on the Conservation, Management and Sustainable Utilization of Forests and Trees Genetic Resources in the Pacific approved in 2008 by Ministers and Heads of Agriculture and Forestry - serves as the framework for planning and implementing the conservation, management and sustainable use of forest and tree genetic resources with the PICT. One major recommendation from that Regional Strategy and Action Plan is the establishment of the regional tree seed centre</p>

## 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.

- Better use of regional and international programmes for capacity building
- Better use of regional and international for a for highlighting cross-sectoral issues such as BFA
- Analysis of national, regional and international initiatives to ensure national needs in BFA is being met.

## V. Synthesis of needs and priorities and the possible way forward

Countries may wish to use Table 8 to summarize their needs and priorities, and possible actions to be undertaken, with respect to the four priority areas of the guidelines.<sup>54</sup>

**Table 8** List of the country's needs and priorities, and possible actions to be undertaken, to conserve and use biodiversity for food and agriculture.

Priority areas	Needs and priorities	Possible actions to be undertaken <sup>55</sup>
1. Assessment and monitoring	Identification of responsibilities for monitoring and assessing biodiversity for food and agriculture	Mandate a national agency with the role of data collecting, monitoring and assessing biodiversity for food and agriculture (e.g. agriculture or environment or both)
	Identification of clear goals for monitoring and assessing biodiversity for food and agriculture	Integrate assessment and monitoring of biodiversity for food and agriculture into national strategic plan
	Monitoring of established or newly introduced species specifically for pests (weeds, pathogens, invertebrates)	Establish monitoring and effective emergency response systems
	Monitoring of effectiveness of management decisions on biodiversity for food and agriculture, at national and regional levels	Identify risks and threats in the country, and promote collaboration and effective early warning systems  Design/adopt systems to monitor the impacts of management

<sup>54</sup> See sections 1.3 (a), 2.1 (f), 2.2 (c), 2.3 (b), 3.1 (d), 3.2, 4.2 (a) of the present guidelines.

<sup>55</sup> Reference: questions 92, 93, 94, 95, 96 and 97 of country report guidelines.

	To know the status of the highly commercial fisheries product.	<p>decisions on biodiversity for food and agriculture</p> <p>Stock assessment Value chain analysis Market Research Formulation of management plans and policies.</p>
2. Conservation and Sustainable use	<p>Knowledge on the linkage between production, conservation and ecosystem services</p> <p>Understanding of how ecosystem approaches can contribute to the conservation of biodiversity for food and agriculture</p> <p>Access to information on the sustainable conservation of biodiversity for food and agriculture</p> <p>Knowledge on conservation techniques (<i>in situ</i> and <i>ex situ</i>) with emphasis on <i>in situ</i> BFA</p> <p>Conservation strategies</p> <p>Policy support for the conservation of biodiversity for food and agriculture</p> <p>Policy support for the sustainable use of biodiversity for food and agriculture</p>	<p>Explore opportunities for using native species to strengthen ecosystem service and biodiversity for food and agriculture</p> <p>Evaluate ecosystem approaches and engage existing projects to contribute to information pool</p> <p>Develop/adapt knowledge management systems at national level</p> <p>Collate knowledge on both <i>in situ</i> and <i>ex situ</i> conservation practices, and address capacity needs</p> <p>Conduct community training and awareness-raising regarding value of biodiversity for food and agriculture</p> <p>Develop a rational conservation strategy for BFA addressing resource constraints, in particular funding and capacity of existing facilities</p> <p>Strengthen conservation capacity of the government national tissue culture lab, private tissue culture lab &amp; other conservation methods in Fiji on PGRFAs</p> <p>Review existing policies, including their implementation, as to their coverage of and possible (negative or positive) impact on conservation of biodiversity for</p>

	<p>Use of local/traditional foods to support linkage of BFA with nutrition and health</p> <p>Use of traditional knowledge supporting the sustainable use of BFA</p> <p>Strengthen information sharing between key stakeholders</p> <p>Species of special interest and threatened species</p>	<p>food and agriculture</p> <p>Review existing policies, including their implementation, as to their coverage of and possible (negative or positive) impact on sustainable use of biodiversity for food and agriculture</p> <p>Strengthen public awareness building on the lessons learnt of the 'Go Local' campaign, including coverage in the school curriculum</p> <p>Promote the use of traditional knowledge through documentation and sharing of the knowledge between relevant stakeholders</p> <p>Explore mechanisms at the national and regional levels for strengthening collaboration, including more effective information sharing</p> <p>Establishment of MPA Species Management Plans Stock assessment of SSI and threatened species</p>
3. Policies, institutions and capacity	<p>Policy support</p> <p>Strengthen the collaboration at national level e.g. agriculture, environment, fisheries and forest</p> <p>Synergies between ITPGRFA &amp; the CBD at national level</p> <p>Review of current legislations and policies in Fisheries. Upgrading of laboratory and hatchery. Capacity building for technical staffs</p>	<p>Review existing policies and proper alignment to national strategies.</p> <p>Promotes active collaboration between agencies on national projects and implementations. Strengthen the interaction of these agencies.</p> <p>Active participation in national initiatives/projects – workshops/meetings/awareness, etc</p> <p>Engagement of consultant Funding Collaboration with overseas institutions.</p>
4. Regional and international cooperation	Support to regional organization on PGRFAs	Ensure support is from decision making level on regional

	<p>conservation and use</p> <p>Regional programs on PGRFAs</p> <p>Management of highly migratory species e.g Turtles, Tuna, Mobula rays</p>	<p>conservation programs</p> <p>Participate and share information in the region &amp; international level</p> <p>Information sharing Collaborative research</p>
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