



Food and Agriculture Organization  
of the United Nations

## **Annex 2**

# **Feasibility Study**

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*For the GCF-FAO Project “Forest Landscape Restoration for Climate Benefits and Resilience (Fiji FLR)”*

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### 3 PROJECT SUMMARY

#### a. Overview

1. The project “Forest Landscape Restoration for Climate Benefits and Resilience (Fiji FLR)” will substantially contribute to the GCF updated strategic plan 2024-2027 (USP) as it is expected to **increase the climate resilience of 196,877 of the most vulnerable people (~21 % of Fiji’s population) and indirectly benefit 149,715 people** (~16 % of the population) (USP targets 1-2-4-5-9-10) while enhancing the resilience of **80,737 ha** of forest and agricultural landscapes (USP target of 120 to 190 million hectares), contributing to the protection of over **90,000 ha<sup>1</sup>** of coastal and marine ecosystems, and increase carbon removal by **6 mln tCO<sub>2eq</sub> over 20 years**. Furthermore, the project will reduce the exposure of target areas to floods and flash floods of economic-related infrastructures. This is highly important for the well-being of the local population, given that the economic value associated with coral reefs in Fiji is estimated at 525.7 million constant 2017 US\$, mostly (90.3%) related to international holiday visitors. Finally, the project will enhance the knowledge and capacities of about 5,000 young foresters, agronomists, economists, and administrators in managing and mediating climate change-related issues and the complex interlinkages between ecosystems from ridge to reefs.
2. The objective is to enhance the overall resilience of Fiji’s forest landscapes and communities with a climate adaptive approach from ridge to reef (R2R)<sup>2</sup> by (I) addressing the policy and governance gaps currently preventing a paradigm shift and enhancing community participation in land management planning; (II) removing drivers of ecosystems degradation and ensuring sustainable forest landscape management investments; and (III) contributing to the enhancement and creation of economic and financial incentives and tools for promoting and overseeing public and private investments in sustainable natural resources management. This will allow addressing the main barriers to climate resilience and sustainable natural resources management in Fiji while enhancing carbon removals, low carbon and sustainable development pathways, and allowing stakeholders (e.g., communities, private sector operators, institutions) to benefit from sustainable natural resources management without externalizing adverse impacts and imposing their economic burden on the downstream population or the state.
3. The project will address bottlenecks to climate change adaptation and mitigation through three specific components: Component 1 - Strengthened regulatory framework for climate responsive and integrated landscape management (Ridge to Reef); Component 2 – Enhanced sustainable and resilient management of ecosystems and forests by stakeholders; and Component 3 - Strengthened financial mechanisms, incentives, and opportunities for sustainability and scaling up. Under the coordination of the NDA and the overall support of a joint (FDB<sup>3</sup>/WWF<sup>4</sup>/FAO) steering committee<sup>5</sup>, the project represents an effective example of national ownership and coordination of GCF projects through complementarity with the WWF Coral Reef Resilience Project (CRRP) and the FDB Climate-Smart Agriculture Guarantee (CSAG) that is a direct access entity for Fiji and that will also benefit from this proposal. Finally, the project will contribute to scaling up the Adaptation Fund as well as GEF investments in successful, innovative nature-based solutions aiming to catalyze ridge-to-reef ecosystem resilience for climate change adaptation, de-risking high-impact adaptation projects and aligning finance with sustainable development in the SIDs.

#### b. Adaptation Benefits

4. The adaptation investments will support Fiji in addressing the main climate stressors identified and in planning / executing new forestry and landscape investments considering the climate

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#### ENDNOTES

<sup>1</sup> Data Source: [Fiji Marine Atlas](#). The contribution of the project is based on calculations made via the project intervention targeting methodology presented in Annex 25b.

<sup>2</sup> “Ridge to Reef refers to integrated approaches to freshwater and coastal area management emphasizing the inter-connections between the natural and social systems from the mountain ‘ridges’ of volcanic islands, through coastal watersheds and habitats, and across coastal lagoons to the fringing ‘reef’ environments associated with most PSIDS.” For more information see: [What is Ridge to Reef? | SPC-R2R \(pacific-r2r.org\)](#)

<sup>3</sup> Fiji Climate-Smart Agriculture (CSA) Guarantee (GCF)

<sup>4</sup> Fiji Coral Reef Resilience Project”

<sup>5</sup> As determined and agreed during the first national engagement and coordination workshop held in Suva in September 2023.

change projection identified in the national communications, the national adaptation plan, and other related policy and scientific documents.

Table 1: Adaptation benefits

Project objective	Results	Beneficiaries
Adaptation investments will support modernizing the forestry sector to reduce its vulnerability to climate change, prepare forests to withstand forecasted changes, and enhance key ecosystem services while contributing to the resilience of coastal and marine ecosystems. At the same time, the project will promote sustainable livelihood activities to reduce the vulnerability of rural communities. Moreover, the project will reduce the exposure and vulnerability of the forestry private sector and contribute to the country's decarbonization efforts.	<p>By the end of the project:</p> <p>5. 80,737 ha of forests and agricultural landscapes are under climate-resilient practices</p> <p>6. 9 Public, 5 Private Nurseries, and 473 community nurseries will be able to provide over 20 climate-adapted species for forestry investments</p> <p>7. 72,944 community members and local institution staff were provided with knowledge and technology transfer to adopt improved approaches</p> <p>8. Transfer knowledge to 650 people directly involved in the NRM planning and management and to 4,367 students enrolled in technical schools and universities</p>	<p>The project will benefit 0.35 mln beneficiaries (the 37% of the population of Fiji, among them 0.18 mln women).</p> <p>The total number of direct beneficiaries (196,877) comprises those receiving high-intensity targeted support and achieving verified adaptation benefits across three strategic results areas: (i) the adoption of improved and new climate-resilient livelihood options (ARA 1 ), (ii) increased availability of forest ecosystem services functional to food security, water safety, and disaster risk reduction (ARA 2), and (iii) the improved ecological health and economic value of communal lands and ecosystems resulting from sustainable forestry investments and climate-responsive lease management (ARA 4). See Annex 25 for more details.</p>

### c. Mitigation Benefits

- Project activities will contribute significantly to achieving Fiji's national climate commitments and targets (established particularly within the NDCs and the Low Emission Development Strategy).

Table 2: Mitigation benefits

Project objective	Results	Beneficiaries
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The project will increase the capacity of forests to remove CO2 and reduce the negative impact of drivers of forest degradation.	It is estimated that -6 million tonnes of CO2eq will be avoided over 20 Years (equivalent to project duration and capitalization phase) due to forest restoration and conservation and agroforestry projects.	A total of 346,591 people will benefit, equating to 37% of the total population, of which 174,682 are women.
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#### d. Other Expected Co-Benefits

10. The project will benefit the environmental, economic, and social spheres, including gender. These can be summarized as follows:

Table 3: Additional co-benefits

<b>Environment</b>	Conservation of biodiversity Enhanced ecosystem services with benefits for soil quality, water availability, evapotranspiration and soil erosion Reduced sedimentation with less impact on downstream areas, including coastal and marine areas
<b>Social</b>	Improved quality of life of the poorer and most vulnerable communities due to protection of rural communities and infrastructures from natural disasters like flash floods, floods, and landslides Enhanced involvement of rural communities in decision-making processes for natural resource management Mitigation of rural-urban migration phenomena through increased development opportunities, in particular for the younger generation
<b>Economic</b>	Contribute to reducing poverty through enhanced economic opportunities through the sector's modernization. Enhanced availability and opportunities for the valorization of non-wood forest products Creation of Eco-tourism opportunities
<b>Gender</b>	Enhanced participation of women in local and national decision-making and planning

#### e. METHODOLOGY AND APPROACH

##### 1.1.1 Literature Review

11. As mandated by the NDA, the Food and Agriculture Organization of the United Nations (FAO), as Accredited Entity, approached the preparation of the proposed climate investment project by analyzing results deriving – among others - from the following primary sources:
12. Comprehensive literature review, including ongoing and past projects and national communications/policy papers. Of these, priority was given to (i) National Communications to UNFCCC, UNCCD, CBD, and others; (ii) national action/adaptation plans and strategies; (iii) national legal frameworks, (iv) UN assessments and reports; (v) publications from national institutions, academia (national and international) and CSO; and (vi) bilateral donors' reports/projects.
13. Data review with the Ministry of Fisheries and Forestry (MoFF).
14. Data collected at national and local levels to determine the current exposure of communities and understand vulnerability to CC. The following chapters will highlight and summarize the main findings at the national, regional, and target areas levels.

### 1.1.2 The selection of Beneficiaries, targeted areas, and activities methodology

15. Beneficiary selection: Traditionally, environmental and climate change projects in Fiji focused on terrestrial or marine ecosystems without duly considering the upstream and downstream impacts these systems have on each other. The project will promote a new holistic approach to tackling environmental land management issues and integrate lessons learned from all ecological initiatives. The project incorporates science-based decision-making around watershed and forest management and rehabilitation, participatory selection processes, and practical considerations about related projects, in the following steps. Step 1 - A multi-criteria analysis is conducted to identify priority watersheds based on forest and watershed conditions, carbon storage, resilience, and downstream effects. Step 2 - The initial prioritized watersheds were reviewed and shown to cover all the coastal WWF priority areas, aligning with a ridge-to-reef approach. Step 3 – The multicriteria mapping identified a longer prioritized set of watersheds critical to address the project's key objectives, also allowing further selection during the project start-up of watersheds to fit the target scope of the project. Step - 4 Further prioritization and selection during early implementation will consider practicality, local community decision-making, technical and feasibility criteria and data, and community willingness to participate, laying the groundwork for future scaling up of watershed management processes.
16. The selection criteria for targeted areas include vulnerability at the local catchments and of coastal ecosystems downstream. In this regard, indicators related to exposure, hazards, climate change impacts, and adaptive capacity are assessed. Criteria are reported in Annex 25. The selection criteria for investment activities in climate adaptive forest landscape restoration include the importance of ecosystem services, community and private sector agreement, and alignment with lease procedures and are reported in the Full Funding Proposal.

### 1.1.3 Economic and Financial analysis methodology

17. Traditional financial models are helpful but insufficient for measuring the achievement of the project's objective of mobilizing investments for climate-smart landscape restoration activities. Additional models were developed to quantify the financial and economic benefits, guide cost structures and co-financing requirements, determine investment-specific concessionally levels, and identify success factors and complementary actions.
18. The model parameters were based on information collected during the project design phase, including interviews, market analyses, data from relevant agencies and databases, and estimates from the design team. Conservative assumptions were made for inputs and outputs, considering potential risks and scenarios. A list of prices used in the analysis is available in the spreadsheet of the EFA document (Annex 3).
19. The models calculate aggregated benefit cash flows, taking into account variable adoption rates and success rates for firms. Conservative projections are made to include the financial and economic benefits, including carbon emissions.

### 1.1.4 Climate change analysis methodology

20. The FAO climate analyses were extracted or calculated based on the sources in the table below.

Table 4 Data sources utilized for the climate scenario

Data Source	Type	USED to calculate...	Definition
Ministry of Forestry of the Republic of Fiji	Historical	All historical variables except Recorded flood events, recorded cyclonic events, and Sea Level.	This report relies mainly on historical climatic data from the Ministry of Forestry of the Republic of Fiji. The data was provided in a disaggregated format, station by station. The report integrates information from 21 distinct stations, namely Ba, Labasa, Lakeba, Lautoka, Matei, Matuku, Monasavu, Nabouwalu, Nadi, Nausori, Ono-I-Lau, Rakiraki, Rotuma, Savusavu, Sigatoka, Suva, Udu, Viwa, Vunisea, Yasawa, and Vanuabalavu. The locations of most stations are visually represented in Figure 5.



<b>Risk Frontiers</b>	<i>Historical</i>	<i>Historical recorded flood events</i>	<i>The data was extracted from the report "Flooding in the Fiji Islands between 1840 and 2009" (Mcgree, Yeo, and Devi 2010), by Risk Frontiers.</i>
<b>Fiji Meteorological Service</b>	<i>Historical</i>	<i>Historical recorded cyclonic events</i>	<i>The data was extracted from the report "List of Tropical Cyclones Affecting Fiji Between 1969-70 to 2021-22 Seasons" by the Fiji Meteorological Service ('List of Tropical Cyclones Affecting Fiji Between 1969-70 to 2021-22 Seasons' 2022).</i>
<b>Commonwealth of Australia – Bureau of Meteorology</b>	<i>Historical</i>	<i>Historical Sea Level</i>	<i>The data was extracted from the website of the Commonwealth of Australia – Bureau of Meteorology: <a href="http://www.bom.gov.au/oceanography/projects/abslmp/data/index.shtml">http://www.bom.gov.au/oceanography/projects/abslmp/data/index.shtml</a> (Commonwealth of Australia – Bureau of Meteorology 2023)</i>
<b>NASA NEX-GDDP</b>	<i>Projected</i>	<i>All projected variable</i>	<i>The evaluation of future climatic conditions in the Republic of Fiji relied on the NASA (National Aeronautics and Space Administration) Earth Exchange - Global Daily Downscaled Climate Projections (NEX – GDDP) dataset. This dataset encompasses 28 downscaled climate models, derived from the General Circulation Model runs executed within the framework of the Coupled Model Intercomparison Project Phase 6 (CMIP6 (Thrasher et al. 2012). Both RCP 4.5 and RCP 8.5 scenarios were analyzed for each model. The geographic data was aggregated spatially over the emerged lands of the country and temporally by year and month.</i>

21. Data review with Institutional stakeholders: Data and analysis produced by FAO experts have been verified with the MoFF and relevant ministries, academia, and research centers that participated in the design process (Annex 7).
22. Ground-truthing: To ensure that the project design is responsive, relevant, as well as gender-sensitive, a number of consultations were held in the country. These consultations are part of the national engagement process (Annex 7) and national ownership, given the importance of local community participation in the project. In the stage of preparing the Concept Note and the full funding proposal of this project, consultations were organized with various stakeholders representing the Government, donors, private sector, as well as civil society organizations, including entities involved in rural development, forestry, and environmental sectors.

## 4 BACKGROUND INFORMATION

23. Fiji has a relatively small economy and is classified as a middle-income country with an average per capita income of approximately USD 10,000 but with large income disparities, particularly across rural and urban areas. Around 42 percent of Fiji's population lives in rural areas, and over 75 percent participate in farming, livestock production, forestry, or fishing<sup>6</sup>. The country's main export products (mineral water, fish, wood, wood chips, and sugar) all depend on natural resources, climate, and healthy ecosystems (WITS, 2021). Similarly, the tourism, agriculture, fishery, and forestry sectors are large contributors to the economy - all of which depend on healthy ecosystems and a stable climate for their success. More than 60% of Fiji's commercial fish and 83% of subsistence fish species depend on mangrove areas for some phase of their life cycle (GoF and UNDP, 2014). Fiji has a total forest cover of 1.16M ha, covering 60 percent of the total land area and contributing to crucial ecosystems services corresponding to a value of FJD \$544 mln<sup>7</sup> (250 mln USD - approx. 6% of the GDP) annually). For more information on the importance of forests for the economy, see par. 85. The forests also have protective functions for the marine environment, in particular the Great Sea Reef (GSR). Approximately 10% of the population is directly dependent on the reefs for food and livelihoods, and the ecosystem services provided by coral reefs correspond to FJD 47.5 million annually (WWF, 2022). Further information of the economic importance of the reefs can be found in par. 86.

### a. Socio-economic and demographic background

#### Population Statistics at a Glance

24. The 2024 population of Fiji comprises 473,000 males and 470,000 females, or 50.14% males, compared to 49.86% of females in the population. Most of the population is under 30 (see figure

<sup>6</sup> UNCCD National Focal Point, 2007; GoF, 2015; Akram-Lodhi, 2016

<sup>7</sup> <https://www.investmentfiji.org.fj/sector-opportunities/forestry>

- 1), which reflects the trend of youth-heavy populations in other Pacific countries. Contemporary Fiji has a population living in urban areas along the coastal areas of the main islands.
25. According to the last Census in 2018, the iTaukei (Indigenous Fijians) population was about 57%, the Indo-Fijians at 37%, and the remainder comprising other ethnicities (i.e., Europeans, Chinese, and other Pacific Islanders). The average annual rate of population growth over the past decade up to September 2017 was 0.6% (Fiji Bureau of Statistics: Release 1, 2018). Population growth rate has been slowing down since the 1980s, mainly due to lower birth rates and migration out of Fiji.
  26. The rural population makes up 44.1% of the total and is of a median age of 27 years in both sexes. The rural populace is more juvenile than the urban, while in the most economically active age classes (20-40 yrs), the urban population is larger (Figure 1). Females who are younger than this (15-19) and older (40-49) reside more in urban areas than men. The rural population has grown in the Project's potential target provinces of Tailevu, Bua, and Kadavu, while urbanization has advanced in other provinces. In other potential project areas, the rural shares of the population are far greater (72.5%) than in the country as a whole (44.1%) (see Table 2).
  27. The 2023 global gender gap index for Fiji was 0.65, where 1 indicates no inequality and 0 indicates maximum inequality. Fiji's global gender gap index has fluctuated substantially in recent years, but in general, it has increased through 2012 - 2023 (World Bank Data Atlas, 2024).

Figure 1: Urban and Rural Population and Gender Breakdown (2017). Source: Fiji Bureau of Statistics: Release 1, 2018)

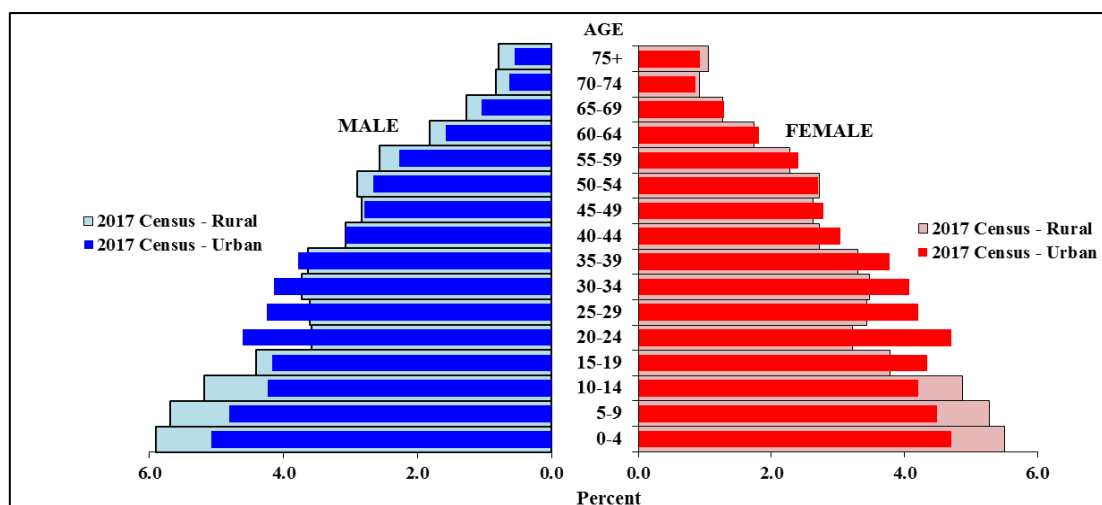


Figure 2. Rural Population Change in Project's Potential Target Provinces in Fiji (2007-2017)

Division	Potential Project Target Province	Population (2017)	of which rural (%)	% change in rural population 2007-17
Central	Tailevu	64,552	44,232 (68.5%)	+16.8%
Northern	Macuata	65,983	38,801 (58.8%)	-11.2%
	Bua	15,466	14,841 (96.0%)	+9.3%
Eastern	Kadavu	10,897	10,897 (100.0%)	+7.2%
	Lau	9,602	9,602 (100.0%)	-10.1%
	Lomaiviti (Gau, Ovalau)	15,657	11,407 (72.9%)	-5.4%
Western	Ra	30,432	24,445 (80.3%)	-0.3%
	<b>Project Sub-total</b>	<b>212,589</b>	<b>154,225 (72.5%)</b>	<b>n.a.</b>
	<b>Total in Fiji</b>	<b>884,887</b>	<b>390,635 (44.1%)</b>	<b>-5.3%</b>
	<b>Project target share</b>	<b>24.0%</b>	<b>39.5%</b>	

Source: Fiji Bureau of Statistics: Release 1, 2018)

Note: data on Yasawa and Mamanuca is not available

28. According to the International Monetary Fund (IMF), Fiji's GDP (current prices) was in the year 2023 USD 5.5 billion (per capita 5,992). The country is classified as an upper-middle-income economy. Fiji's economy experienced steady growth before the COVID-19 pandemic, with GDP growth averaging 3.10 percent between 2015 and 2019, recovering from the impact of the 2008 Global Financial Crisis<sup>8</sup>. In 2020, GDP growth declined by 17 percent but rebounded to 20 percent in 2022. The inflation rate in Fiji has varied significantly over the ten years (2014 to 2024), and low rates were observed, followed by a deflation of 2.7 % in 2020 attributed to the impact of the COVID-19. After there was a significant increase in inflation to 4.1 % in 2021 before decreasing slightly to 1.9 % in 2024.

#### b. Agricultural and Land Use Sectors Performance

29. In the past decade, the agriculture sector has had an average contribution of about 10% to the national GDP. Traditionally, subsistence agriculture and sugarcane production have been the two pillars of Fiji's agriculture sector. However, due to various reasons (e.g., natural disasters, difficulty in coping with agricultural commodity markets, production cost escalation), the performance of the sugar industry has turned into a permanent decline, and sugar farms have been left idle. The agriculture sector is generally broken down into five subsectors: crops (around

<sup>8</sup> International Monetary Fund Datamapper. Real GDP growth (%): 2020: -17%, 2019: -0.6%, 2018: 3.8%, 2017: 5.4%, 2016: 2.4%, 2015: 4.5%.

44 percent of 2015 agricultural GDP), sugar cane (9.4 percent), livestock (9.7 percent), fisheries (11.7 percent), and forests (8 percent).

30. Fiji has a relatively large subsistence and agriculture sector with a total land area of 194,768 hectares under agriculture, of which over 54% are operated under traditional ownership. Forest use and traditional subsistence farming dominated Fiji's landscapes for centuries and were the main drivers of deforestation and forest degradation. The traditional practices of shifting cultivation have gradually been replaced by commercial agriculture, and the significant expansion in commercial farmers of yaqona (kava), ginger, dalo, and cassava has added significant pressure to surrounding forests and landscapes. Altogether, a total of 92.2 percent of agricultural land is managed by 63,113 households, mostly smallholder farmers, on land parcels smaller than five hectares<sup>9</sup>. Amongst the key challenges in the rural sector, including agriculture, is the nonrenewal of expiring agricultural land leases, especially in the sugarcane areas, which has posed significant social challenges to communities that reside in leased agricultural areas. The decline in the agriculture sector is also due to other factors such as declining production in the sugar industry, and a declining interest amongst younger generations to take up farming.
31. Though subsistence agriculture still takes a central role in the sector, there has been an increased transformation to semi-commercial farming: mostly "other crops" subsector comprising root crops and horticulture. Major food exports include copra, fish, ginger, sugar, and other processed consumer foods. The livestock sector has generally been dominated by beef and dairy production, but both industries are in decline and rely on imports to meet domestic demand. Pork, poultry and goat production has been growing consistently. The other crops and livestock subsectors together contribute to about 6.8 % of the national GDP.
32. Low agricultural productivity hampers food security in Fiji (FAO CPF 2013-2017). This has a serious implication on the country's ability to produce enough food and thus leads to deeper food imports. The multiple direct and indirect roles played by forests in strengthening food security have been assessed by FAO in 2017. FAO concluded on major direct dietary supplements from non-wood forest products, especially in times of food scarcity (Strengthening sector policies for better food security and nutrition results. FAO, 2017).
33. Fiji's rural population's agriculture sector is fundamental in providing subsistence security and livelihood options. The high degree of dependence, however, makes the economy vulnerable to externally induced economic shocks, natural disasters, soil and freshwater degradation, and the impacts of climate change. Its geographical fragmentation and isolation, poor access to commercial and capital markets, poorly developed rural infrastructure, and limited institutional capacity hinder sustainable development (FAO CPF 2013-2017).
34. The government recognizes the need for a demand-driven approach both for maintaining the country competitive in exports and enabling substitution of imports. This will require greater commercialization of small farmers, strengthening of industry organizations and agri-business value chains, and promotion of young farmer training. Current policy prioritizes invigorating exports and effective implementation of import substitution to increase self-reliance. Key targets are to increase non-sugar agriculture exports and to reduce the value of fruit and vegetable imports .
35. **Sugar:** Sugarcane production is still one of the most dominant subsectors in agriculture, although its importance is declining and currently contributing 1% to Fiji's GDP. The sugar sector used to be the backbone of Fiji's economy; however, production declined by around 34% from a total of 4,064,320 tons in 1994 to 1,639,000 tons in 2022. The total area under sugarcane decreased at the same time from 74,388 hectares to 39,976 hectares (FAOSTAT). Idle sugarcane fields are an important land reserve for other productive uses, including agroforestry, indigenous trees, and fruits and potentially also Short Rotation Plantations.
36. Production has also been affected severely by floods, droughts, and inefficiencies in the sugar processing mills. These affected the sector negatively through increased amounts of unharvested cane and expiring land leases, which resulted in an increase in the number of

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<sup>9</sup> Fiji Agriculture Census, 2020

farmers leaving the industry. Turbulent commodity markets led to Fiji losing preferential access to higher-priced markets in the EU.

37. **Fruits and horticulture:** While the traditional commodity sectors – sugar and copra – struggle, horticultural exports have begun to perform better. This segment is entirely small and farm-based, and it includes ginger, tropical fruit, root crops, and vegetables. The core market opportunities for these products are provided by (i) exporting to the Indo-Fijian, Asian and Pacific Island communities in Australasia; (ii) enhancing household self-sufficiency; and (iii) supplying the expanding urban and tourism markets. These are readily obtainable markets for which a marketing structure and channels are already in place. The Chinese Aid projects in commercial agriculture are on the increase.
38. Pawpaw, pineapple, and banana are the major fruits in Fiji. The higher demand for pineapple in the local market has been influenced by the hotel industry, diversification of crops, and favorable market prices. The area planted with bananas increased because of high local demand, especially from the local hotel sector and from the exports (Agriculture Census).
39. Despite the successes in the horticultural sector, evidence points to life becoming more difficult for some rural communities as food resources become scarcer with declining soil fertility, soil erosion, the encroachment of pests and diseases, and the impacts of natural disasters. Protecting and enhancing the subsistence base of the economy through measures such as the protection of the environment, the re-planting of food and shade trees, and improving village farming systems remains an important priority. Improvements in adaptive research and extension can have high dividends, particularly in the management of pests and diseases and educating farmers on sustainable agricultural practices. With an aging farming population, ramping up the training of young farmers in good agricultural practices, including soil management (especially organic practices), integrated pest management, post-harvest handling, and food safety practices, along with skills in farming as a business, is a vital strategic focus. To achieve this, a “farmer field school” approach is currently being used successfully in some areas, but this needs to be extended further for a wider impact.
40. **Fisheries:** Fiji has a large and diverse fishery sector, encompassing many different resources and with significant onshore processing and value-adding. Consequently, fish and fishing are extremely important to the economy of Fiji. A large number of people are employed in the fisheries sector, and fish makes an important contribution to the diet of the local population. In relative terms, fisheries are the third largest food commodity resource, behind sugar and ‘other crops’ segment. The fisheries sector also has important linkages with Fiji’s substantial tourism industry both for food and amenity value. Fish, both local and imported, is an important element of food security in Fiji.
41. **Tourism:** Tourism has overtaken agriculture as the major foreign exchange earner; Fiji recently topped the world in being the most preferred favorite holiday destination for global travelers in 2016. Being a major ocean island tourism and ecotourism destination, Fiji needs to pay more attention to the sector’s sustainability. Forests have been degraded or cleared on many islands, and now there is an alarming need to restore ecosystems and establish forest-based payments for ecosystem services (PFES), along with natural capacity to refresh water supplies.
42. A particularly alarming issue on outer islands is the lack of a natural cycle of freshwater generation due to forest loss. The Yasawas and Mamanucas islands are very important to Fiji’s economy as they are home to many tourist resorts, from budget backpacker types to upscale high-market types. They have been severely degraded from long-term occupancy and fire, and many are almost entirely deforested. These islands face severe water shortages during drought, and the Fiji Government has spent exorbitant sums to deliver drinking water to them.
43. **Agroforestry** has an ancient history in Fiji. It has been a traditional form of small-scale agriculture and inter-cropping of trees and other crops since time immemorial. In modernizing today’s agroforestry systems in Fiji, the key challenges are:
  - Lack of land use plans and consensus
  - Uncoordinated infrastructure development

- Unsustainable agricultural practices (single-commodity model)
  - Unplanned, uncontrolled burning of agricultural lands
  - Market demand (of mono-cropped plants)
44. Conclusions: In spite of gradual urbanization, Fiji's key economic opportunities are still mostly rural based. The greatest potential for future development and prosperity is particularly in the tourism, mining, agriculture, forestry, and fisheries sectors. This underlines the importance of integrated land-use planning and a sustainable landscape management approach. But over recent years, the rate of growth in agricultural production has stagnated and failed to keep pace with the needs of a growing population, resulting in an increase in import bills and migration to cities.
45. Fiji has failed to fully eradicate rural poverty, and it is considered vulnerable to the adverse impacts of disasters and climate change on food systems. Rural native communities (iTaukei) and rural Indo-Fijians and their elderly, women, and children are the most vulnerable groups of the population. Around 80% of the Fijian rural households were engaged in agriculture in 2014, and the Indo-Fijians are responsible for a large share of sugarcane cultivation. Women play a major role in in-farm activities for food and cash crops but often lack knowledge of the best product and market opportunities and access to value chains.
46. Based on the observed challenges in agriculture, food, and water sectors, as well as wood fuels and household incomes, the multiple benefits of forests to food security may have been ignored in Fiji. According to the FAO (Committee on World Food Security, HLPE on Food Security and Nutrition, 2017), forests contribute to the resilience of food systems and food security in the following fronts:
- Provide direct complementary food supplies: e.g. bush meat, agroforestry crops and non-wood forest products.
  - Provides feed for livestock and grazing grounds.
  - Generate household income for purchasing local food from the market, and empower gender roles.
  - Offer local cooking energy for healthy and safe food preparation.
  - Provides healthy agro-ecosystem and environmental services (soil, water and nutrient circulation, pollination, etc.)

### c. Natural resources

47. Fiji harbours a broad range of ecosystems ranging from reefs, mangroves, coastal zones, to a gradually elevating topography from fertile lowlands to grasslands, rocky hills and volcanic mountains topped with unique Pacific rainforests. Fiji contains globally significant biodiversity on both land and sea and much of Fiji's flora and fauna are species found nowhere else in the world. In spite of this globally significant biodiversity, no comprehensive system of Protected Areas (PAs) exists in the country and PA legislation – which dates from colonial times – is inadequate. Fiji's network of protected areas currently covers less than 3% of Fiji's land area, and the PAs have not been selected on the basis of any ecological or biodiversity significance. There is a need for a policy and legal framework that would allow for innovative, community-based management of PAs and empower local people to participate and benefit from PA management.
48. Being a relatively remote archipelago Fiji's terrestrial flora and fauna is characterized by high endemism. Of the 1628 species of vascular plants approximately 50% are found only in Fiji, and many of these are single-island endemics with restricted ranges. The vertebrate fauna is relatively low in diversity, yet high in endemism: over one-third of Fiji's birds and reptiles are endemic, as well as 17% of its mammals. The study of terrestrial invertebrates is still in its early stages, but preliminary findings indicate similarly high levels of endemism. (H. Waqa-Sakiti: Overview of the Forestry Sector and Forest Management in Fiji, 2017).

49. The natural environment of Fiji is heavily influenced by human activities and forest degradation and deforestation in Fiji are mainly caused by (i) root crop production (taro<sup>10</sup> and kava<sup>11</sup>); (ii) poorly planned infrastructure development (e.g., roads, urban development, hydropower, and tourism development); (iii) conventional logging; (iv) some traditional forest uses, such as fire for hunting and land clearing; and (v) invasive species ([CI, 2020](#)). The upland cultivation of taro, in the pursuit of tilling fertile land, has led to extensive indiscriminate clearing of forests. While the taro market prices have been stable, increasing market demand and price for kava have also driven deforestation. The improved market access and global demand for kava and taro<sup>12</sup> have created important economic incentives to farmers of all types leading to forest encroachment from small farmers. The rate of degradation in forest peripheries also refers to the loss of vegetation cover in agroecosystems (including rangelands), and the continued loss of productivity in agricultural lands, which impacts livelihoods significantly (FAO, 2021). These activities exacerbate the effects of climate change leading to significant changes in coastal and marine ecosystems and ultimately affecting the livelihoods of the people. Approximately 40% of indigenous forests exhibit degradation, and mangroves have reduced 25% of their area from 2003 to 2013 ([WB, 2017](#)).

## 5 Climate change Sector

50. Fiji is a small island nation in the South Pacific Ocean with a population of about 900,000. The country has an area of 18,000 km<sup>2</sup> spread over 332 islands, which form a broad range of ecosystems from reefs, mangroves, and coastal wetlands to a gradually elevating topography from fertile lowlands to grasslands, rocky hills, and volcanic mountains topped with unique rainforests. About 110 islands are inhabited, but most of the population (87 percent of the total population) lives on the two largest islands, Viti Levu and Vanua Levu, which comprise 80 percent of Fiji's landmass. Around 88 percent of the land area is under communal village ownership, and customary law is at the base of natural resource management ([TLTB, 2018](#)). The share of the population living in urban areas increased by 18% over the last 20 years, reaching 58 percent in 2022<sup>13</sup>. Approximately 12% of the urban population and 6% of the rural inhabitants, totaling 143,000 individuals, reside within low-elevation coastal zones situated lower than 10 meters above sea level (a.s.l.) and 63,000 individuals live lower than 5 meters a.s.l.<sup>14</sup>, making them particularly exposed to rising sea levels, connected natural hazards as well as to the externalities of unsustainable natural resources management practices of upstream watersheds ([WB, 2017](#)).

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10 *Colocasia esculenta* (L.) Schott is an important staple food for the population of Fiji and in general in the Pacific region. The starch rich corms are the main product, but the leaves can also be eaten ([MoAW, 2006](#)).

11 *Piper methysticum* G. Forst. is a native herb to the South Pacific islands, and root decoctions are consumed in South Pacific ceremonies.

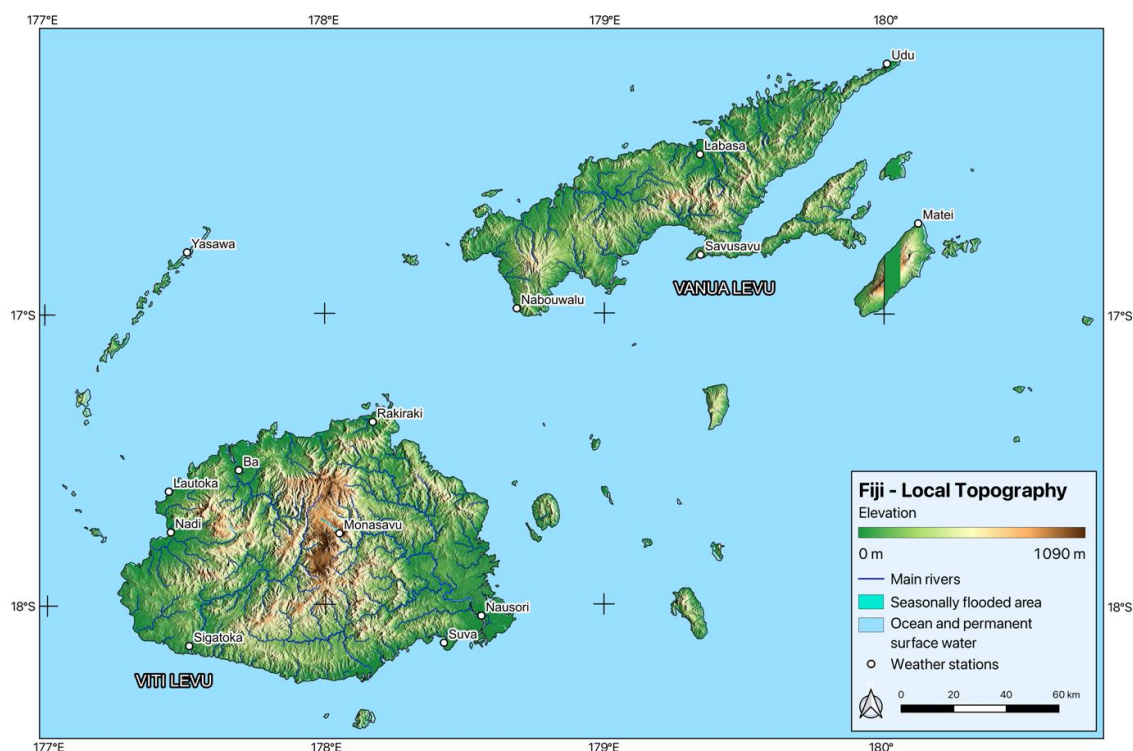
12 Taro is an important staple food and export product in Fiji's economy with about 37,000 estimated farms and an average annual export (e.g. New Zealand, Australia, USA, Canada, Kiribati and Tuvalu) volume of approximately 10,000 tons valued at around \$F21million over the past five years ([PHAMA, 2022](#)).

13 [World Bank Open Data](#)

14 Geospatial analysis carried out by FAO, based on data extracted from WorldPop, 2020, NASA Shuttle Radar Topography Mission (SRTM) and FAO GAUL (Global Administrative Unit Layers) 2014.



Figure 3 Topography of Fiji Data Source: NASA / USGS / JPL-Caltech (Farr et al. 2007), JRC Yearly Water Classification History (Pekel et al. 2016), WWF HydroSHEDS Free Flowing Rivers Network v1 (Lehner, Verdin, and Jarvis 2008; Grill et



al. 2019)

#### a. Climate Change Scenario

51. The current climate in Fiji is classified as a tropical monsoon climate (Am) according to the Köppen-Geiger classification (Beck et al. 2018). The dry season lasts from May to October and the rainy season from November to April (PACCSAP, 2015). The climate is strongly affected by the ocean temperature surrounding the islands. Mean annual Surface Sea Temperatures ranges from approximately 24°C in the south to almost 30°C in the north, with up to 2.5°C variation in the south and less than 1°C in the north throughout the year (MACBIO, 2019). The annual average inland temperature ranges from 25°C on the highlands of Mount Monasavu and the southeast coast of Viti Levu to 27°C on Vanua Levu and the northwest coast of Viti Levu. Temperature changes from season to season are relatively small, though its climate varies considerably from year to year due to the El Niño Southern Oscillation (ENSO). Fiji is located in the South Pacific Convergence Zone, a band of low-level convergence, cloudiness and precipitation that is known to influence the formation and distribution of tropical cyclones in the southwest Pacific, with tropical cyclone genesis and subsequent storm movement in particular during the cyclone season (between November and April) (Harvey et al, 2019). River flooding is common in the wet season and during the dry season La Niña events, while droughts are associated with the El Niño events (PACCSAP, 2015).
52. Historical trends (1980-2022) show a clear increase in average, maximum and minimum temperatures (+0.27°C, +0.29°C, +0.33°C per decade respectively) (Annex 24, p29-33). Moreover, the country receives a substantial and increasing volume of rainfall annually, with a rising frequency of extreme precipitation events. Over the last 40 years, its already high annual accumulated precipitation increased at a rate of +81 mm/year per decade, reaching a current average of ±2300 mm/year (Annex 24, p15). The frequency of wet and extremely wet days has also increased, at a rate of +3.20 days/year per decade and +0.65 days/year per decade, currently reaching 140 days and 20 days per year respectively (Annex 24, p21-23). While the average annual maximum one day precipitation didn't change over the last 40 years, it remained very high, 155 mm in a single day, with values above 300 mm in a single day being often recorded. During the same period, the country experienced an increase +0.15 dry months per



year/decade (Annex 24, p.41), of +3.2 wet days/decade (Annex 24, p.21) and a large variability in precipitation levels from one year to the next year, ranging from 1307 mm (in 1998) to 3315 mm (in 1999). This variability can be linked to the influence of the El Niño effect, contributing to lower precipitation values, and the La Niña effect, associated with higher precipitation values. The major increase in precipitation is also accompanied by a rise in the annual frequency of extreme precipitation events, marked by an increase of +2.01 flood events/year from 1980 to 2009 (Annex 24, p.27). Although the average and maximum wind speed during the last 40 years and the number of cyclonic events (Gale and Storms) affecting Fiji stayed constant, the number of events classified as Hurricanes (cyclonic events featuring wind speeds greater than 117 km/hour (64 knots)) has increased, at a rate of +0.30 hurricanes/year per decade (Annex 24, p.31).

53. During the last 30 years, the sea level rose consistently in Fiji, to a rate of +5 cm per decade in Lautoka, and +10 cm in Suva, both increase being higher than the global average (+4.5 cm per decade for the period 2013-2021 (World Meteorological Organization 2021)). This rise in sea level contribute to floods exposure as extremely high tides accompanied by strong winds and increased runoff due to land use changes and forest degradation can lead to coastal flooding with adverse impacts on both coastal and marine ecosystems and livelihood. The increase in accumulated rainfall, wet days and very wet days and hurricane paths are mainly observed along the coastal lowlands of Viti Levu<sup>15</sup>.
54. Future climate projections: The analysis of the 4.5 and 8.5 Representative Concentration Pathways (RCP) scenarios until 2055 leads to the conclusion that observed climate trends will worsen in the future: Average, minimum and maximum temperature are expected to increase, to a rate of +0.35°C, 0+.4°C and +0.42°C per decade respectively during the period 2023-2055. The amount of accumulated degree days is expected to increase up to +128°days/year per decade during the period 2023-2055. At the same time, dry months are likely to increase up to +0.71 months/year/decade and the climatic water balance is expected to decrease to –184 mm/year per decade, reducing the availability of water for plants and therefore potentially negatively affecting vegetation health in both natural and anthropic environments. An increase in wet days can be expected under the mitigation scenario (RCP4.5), to a rate of +7.97 days/year per decade, while an increase in extremely wet days can be expected under the business-as-usual scenario (RCP8.5) at a rate of +1.84 days/year per decade. Annual accumulated precipitations are projected to further increase up to 264 mm per decade and maximum one day precipitation is expected to increase up to +14.42 mm per decade (FAO, 2023). These phenomena are likely to lead to further water management challenges, in particular related to increased erosion and more intense flooding events.
55. Exposure and Susceptibility: Climate Change has already exacerbated Fiji's already high level of exposure to multiple natural hazards. Between 1970 and 2016, the equivalent of more than three million people was affected by climate hazards (more than three times the actual population of Fiji). Of those affected, 57 percent were impacted by 66 cyclones, 16 percent were affected by 44 floods and 27 percent were affected by just 6 droughts events (TNC, 2020). The average asset losses due to tropical cyclones and floods are estimated at more than F\$500 million per year, representing more than 5 percent of the GDP. While there is high confidence that the frequency of tropical cyclones will remain stable, there is a projected increase in average cyclone intensity and number of coastal floods due to storm surges and the combined impacts of climate change, forest degradation and land use changes (WB, 2017; TNC, 2020). Sea level rise between approximately 0.09-0.17m by 2030 is projected for RCP 4.5 and coastal erosion will worsen, impacting in particular the population living at elevations lower than 5 meters (corresponding to 630 square kilometers, or 3.4% of Fijis land) (FAO, 2023). These low-lying areas, primarily situated near the seaboard and close to population centers, face a direct and imminent threat from the rise in sea levels. They furthermore face an increased likelihood of floods, as more frequent and intense rainstorms might rapidly overwhelm Fiji's river network. Flood is also expected to increase due to the worsening conditions of forests and riparian ecosystems, leading to large and growing economic losses, with a pessimistic scenario for floods leading to an increase in river discharge of 23 percent and 36 percent for 2050 and 2100

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<sup>15</sup> More details on the most exposed area in section 16

respectively, with an increase in risks, especially for low-magnitude, high-frequency floods (WB, 2017).

56. **Climate Change impact and vulnerability:** Fiji currently ranks 77<sup>th</sup> out of 185 countries on the [ND-Gain index](#), indicating that the country makes progress towards “responding effectively to climate change, but the adaptation needs and urgency to act are greater.” The Third National Communications to the UNFCCC ([TNC, 2020](#)) and the National Adaptation Plan ([NAP, 2018](#)) identified the natural environment as one of the most vulnerable priority sectors that are at the same time vital to the resilience of the population and to sustaining livelihoods. Terrestrial ecosystems are already impacted by Climate Change: forests are sensitive to high temperatures making them more vulnerable to fires. Combined high temperatures and changes in rainfall patterns lead to increased occurrence of invasive species and pests, cause shifts in habitats and boundaries of certain tree species, pollinators and seed dispersers, and even affect the flowering behavior of certain tree species ([WB, 2017](#)). A decrease in climate resilience of tropical forests, such as those found in Fiji, has also been highlighted by a recent study conducted by [Forzieri et al. \(2022\)](#)<sup>16</sup>. Given their current state, forests in Fiji are likely to degrade further under future climate scenarios: increased temperatures and dry months, a decrease in climatic water balance, possible heavy precipitation events and intensified cyclones might in fact lead to even more weakened forest systems. In addition, fragmented forest ecosystems, due to human driven degradation frequently present in Fiji, have altered microclimates, reduced connectivity, and increased vulnerability to disturbances, further exacerbating the impacts of climate change ([Gillespie et al. 2014](#)). The FAO analysis of the impacts of climate variability on forests in Fiji suggests that an increase in monthly temperatures is linked to a decrease in canopy and tree cover, while an impact of rainfall variations on the same forest characteristics is less likely occurring (FAO, 2023). Climate change-related stress is also impacting mangrove forests, particularly the rise in relative mean sea level ([Gilman et al. 2006](#)). Changes in rainfall patterns and increased frequency and intensity of torrential rains are expected to increase waterlogging, erosion, and landslides, damaging riparian tree cover, as well as reduce accessibility to sites. Moreover, increased periods of dry spells are expected to have impacts on water storage and availability ([TNC, 2020](#)), increasing the risk of wildfires, altered growth patterns and possible shift ranges of species. These impacts significantly affect both forest-dwelling communities and forest ecosystems and reduce revenues in the forestry sector.
57. Climate change, particularly increased climate hazards, also severely impacts agriculture in Fiji, causing loss of arable land and reduced agricultural outputs, threatening food security and livelihoods of rural communities. Smallholders (farmers, semi-commercial and commercial operations) are highly vulnerable due to their limited adaptive capacity. The reduction of one per cent in agricultural income can result in 1,000 additional people being pushed into poverty and increased stress for those already under poverty in Fiji. Crop losses due to storm damage are an important factor in Fiji and increased average temperatures and temperature variability including warmer wet season and cooler dry season have already led to the reduction of the agricultural growing period, increase of pests and diseases. Heat and water stresses, and particularly droughts, worsened by increased evapotranspiration, affect the yield, nutritional value, and in the case of cassava, lead to increased foliage and tubular toxicity ([NAP, 2018](#)). With reduced productivity and stable markets and increased food prices, the demand for additional agricultural land increases in order to expand production. These impacts are expected to further aggravate, increasing the vulnerability of communities and the pressure for new agricultural land ([NAP, 2018](#)), thus further driving deforestation and landscape degradation. Burning of grasslands, sugar cane plantations, and forest margins is a significant source of GHG emissions. Wildfires are common, especially on the dry leeward side of both islands in the May to October dry season, with increased risk in ENSO periods while the plantation companies’ choice of an exotic *Pinus* spp. (mainly *P. caribaea*), which is highly fire sensitive, adds to the risk of frequent fires (TNC, 2020).

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<sup>16</sup> the study concluded that “tropical, temperate and arid forests underwent a decline in resilience probably related to the concomitant increase in water limitations and climate variability”.

Table 5 - Trends in key precipitation, winds, and sea variables in Fiji

































Variable	Aggregation period	Trend	Variation rate	Details on page of Annex 24
<b>Accumulated precipitation</b>	<i>Historical</i> (1980-2022)		+81 mm/year per decade	15
	<i>Projected</i> (2023-2055)		+227 mm/year per decade under RCP4.5 (2 models) +264 mm/year per decade under RCP8.5 (2 models)	
<b>Maximum one day precipitation</b>	<i>Historical</i> (1980-2022)		No statistically significant trend.	17
	<i>Projected</i> (2023-2055)		+14.42 mm per decade under RCP4.5 (1 models) +12.87 mm per decade under RCP8.5 (1 models)	
<b>Precipitation variability</b>	<i>Historical</i> (1980-2022)		+0.35 mm per decade	19
	<i>Projected</i> (2023-2055)		Conflicting trends: -1.13 mm per decade under RCP4.5 (1 models) +1.28 mm per decade under RCP8.5 (2 models)	
<b>Wet days</b>	<i>Historical</i> (1980-2022)		+3.20 days/year per decade	21
	<i>Projected</i> (2023-2055)		+7.97 days/year per decade under RCP4.5 (1 models) No statistically significant trend under RCP8.5.	
<b>Extremely wet days</b> ( $P \geq 35$ mm/day)	<i>Historical</i> (1980-2022)		+0.65 days/year per decade	23
	<i>Projected</i> (2023-2055)		Conflicting trends under RCP4.5. (1 model vs. 1 model) +1.84 days/year per decade under RCP8.5 (1 models)	
<b>Average wind speed</b>	<i>Historical</i> (1980-2022)		No statistically significant trend.	25
	<i>Projected</i> (2023-2055)		No statistically significant trend.	
<b>Maximum wind speed</b>	<i>Historical</i> (1980-2022)		No statistically significant trend.	26
	<i>Projected</i> (2023-2055)	-	No projected model could be validated for maximum wind speed.	
<b>Recorded flood events</b>	<i>Historical</i> (1980-2009)		+2.01 recorded floods/year per decade	27
<b>Recorded Cyclonic events</b>	<i>Historical</i> (1990-202)		+0.30 recorded hurricanes/year per decade	27
<b>Sea level</b>	<i>Historical</i> (1998-2022)		+5 cm per decade in Lautoka +10 cm per decade in Suva	28

Table 6 - Trends in key temperature variables in Fiji

Variable	Aggregation period	Trend	Variation rate	Details on page of Annex 24
<b>Average Temperature</b>	<i>Historical</i> (1980-2022)		+0.27°C per decade.	
	<i>Projected</i> (2023-2055)		+0.23°C per decade under RCP4.5 (23 models). +0.34°C per decade under RCP8.5 (23 models).	29
<b>Minimum Temperature</b>	<i>Historical</i> (1980-2022)		+0.29°C per decade.	
	<i>Projected</i> (2023-2055)		No statistically significant trend under RCP4.5. +0.40°C per decade under RCP8.5 (1 model).	31
<b>Maximum Temperature</b>	<i>Historical</i> (1980-2022)		+0.33°C per decade.	
	<i>Projected</i> (2023-2055)		+0.30°C per decade under RCP4.5 (11 models). +0.42°C per decade under RCP8.5 (13 models).	33
<b>Degree Days</b>	<i>Historical</i> (1980-2022)		No statistically significant trend.	
	<i>Projected</i> (2023-2055)		+86°days per decade under RCP4.5 (11 models). +128°days per decade under RCP8.5 (11 models).	35
<b>Reference Evapotranspiration</b>	<i>Historical</i> (1980-2022)		-26 mm/year per decade.	
	<i>Projected</i> (2023-2055)		No statistically significant trend under RCP4.5. +0.31 mm/year per decade under RCP8.5 (1 model).	37
<b>Climatic Water Balance</b>	<i>Historical</i> (1980-2022)		+102 mm/year per decade.	
	<i>Projected</i> (2023-2055)		+245 mm/year per decade under RCP4.5 (1 model). +315mm/year per decade under RCP8.5 (1 model).	39
<b>Number of Dry Months</b>	<i>Historical</i> (1980-2022)		+0.15 months/year per decade.	
	<i>Projected</i> (2023-2055)		+0.54 months/year per decade under RCP4.5 (1 model). + 0.71 months/year per decade under RCP8.5 (3 model).	41
<b>Number of Wet Months</b>	<i>Historical</i> (1980-2022)		-0.17 months/year per decade.	
	<i>Projected</i> (2023-2055)		No statistically significant trend.	43

#### b. Institutional set-up and policy framework of the climate change sector

58. In 2009, Fiji noted the potential role of forests in addressing climate change-related issues, including the possible economic benefit available through a global carbon market and the potential for Fiji to participate in that market. Starting in 2009, the Ministry of Forestry participates in the UNFCCC COP meetings, including all other pre-COP meetings, intersession meetings,

and workshops to follow the REDD+ discussions. From late 2009 to early 2010 the Ministry of Forestry started to work on a Fiji REDD+ policy, which was endorsed by government in late 2010. The purpose of the Fiji REDD+ Policy is to set the necessary institutions and groundwork in order to prepare Fiji to participate in a future global carbon market.

59. Fiji is committed to actions designed to reduce emissions through the design and implementation of mitigation and adaptation programs. Fiji ratified the United Nations Framework Convention on Climate Change in 1993, and its commitment to this convention is outlined in the National Climate Change Policy 2012. It has further illustrated its commitment to addressing the cause and effects of climate change as the first country in the world to ratify the climate change accord that was adopted at the Paris Conference (COP21) in December 2015.
60. The Fiji REDD+ Policy 2010 is a great step by the Ministry of Forests in strengthening the recognition of Fiji's forest ecosystem services, but it is mainly driven by the opportunity created under the UNFCCC, which puts an economic value on forest carbon and the development of the international carbon market. The FSOS 2020 again stresses the increasing pressure from the international community in this regard, and the need to take advantage of the opportunity when it arises. The Fiji REDD+ policy 2010 was to put in place the necessary frameworks that will prepare Fiji to trade its forest carbon under an international carbon market. Legislations under the Fiji Climate Change Act 2021, and the revised Forest Act establishes the legal guidelines for the implementation of REDD+ activities, the transfer of forest carbon rights, and the equitable sharing of carbon benefits. Although, much of government initiatives that set the framework for environmental sustainability, and addressing climate change challenges comes later in the process; the REDD+ policy is already an early mover in this direction. The REDD+ Policy 2010 is being reviewed to put in place the necessary mechanisms to enable carbon trading to take place.
61. The Fiji Emissions Reduction Programme (ERP) is implemented under the Fiji REDD+ Policy. By 2016 a total forest area of 6,809 hectares has been leased for the piloting of REDD+ activities and payments of ecosystem services to the landowners. Fiji signed its ERP with the Forest Carbon Partnership Facility in 2020, for the implementation of a 5 year ERP. The ERP consists of a combination of activities across Agriculture, Forestry, and Land use planning, implemented under a highly inclusive governance structure. The ERP will reduce Fiji carbon emissions by 3.5 million tons CO<sub>2e</sub> within the five years' timeframe 2020-2024. This represents a 43 percent reduction in carbon emissions compared to the Fiji Business as Usual in the forestry sector between 2006 to 2016 as stated within the Fiji reference level assessment report. A key activity under the ERP is the development of integrated land use plans. The iTLTB had already started work on preparing district land use plans for 20 identified districts in Viti Levu, Vanua Levu and Taveuni with a total budget of 399,000 FJ\$.
62. The National Climate Change Policy (NCCP) 2018-2030 and Climate Change Act 2021: Two of the objectives of the NCCP have direct implications on land use:
  - Objective 3.2: To increase ecosystem protection, natural resources redundancy, and environmental resilience through nature-based solutions, and
  - Objective 4.3 To preserve and enhance Fiji's natural *carbon sink and reservoirs*.
63. The Climate Change Act includes the legal process for allocating forest carbon sequestration property rights, and the establishment of a national carbon registry, including the process for the transfer of carbon rights<sup>17</sup>. The Forest Bill 2016 under the Ministry of Forestry includes the process and procedures for the approval and registration of REDD+ projects<sup>18</sup>. The Climate Change Act requires a land lease title for any land to be considered for a result-based payments under a REDD+ Project.
64. The climate change policy specifies the commitments and puts the implementation to each responsible ministry. The Climate Change Act sets the framework for the trading of forest related carbon, and encourages forest and land use related activities in rural areas. The requirement for a land lease title for carbon projects will be a challenge given the small average sizes of leases

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<sup>17</sup> GoF, 2020

<sup>18</sup> GoF, 2016

of agriculture land leases, the average size of the leases needed to ensure attractive economic return, and the conditions for the sharing of the benefits with landowners from the leases.

#### c. Carbon financing and access to finance for decarbonization investment

65. Carbon financing in Fiji is an essential component of the country's efforts to combat climate change and build a resilient economy. The Fijian government has taken significant steps to establish a comprehensive National Climate Finance Strategy, which outlines an economy-wide blueprint for transitioning to a net-zero, climate-resilient future. This strategy is aligned with Fiji's Climate Change Act, which declares a climate emergency and commits the country to decarbonize by 2050. Fiji's National Climate Finance Strategy is designed to attract financial resources from international funders, with more than 40% of the country's climate spending coming from these sources. The strategy includes many common high-level climate goals, such as decarbonizing transport, achieving 100% renewable energy generation, and rehabilitating vital ecosystems.
66. To facilitate Fiji's engagement with international carbon markets, the Fijian government has put in place a legal framework through the Climate Change Act (2021), which includes provisions to regulate and oversee the country's participation in these markets. The Act outlines Fiji's intention to use voluntary cooperation through markets to facilitate technology development and transfer, capacity building, and access to financial resources for low carbon and climate-resilient efforts. The Fijian government is also preparing a National Carbon Market Strategy Roadmap (currently under draft) to guide the development of priorities and objectives that will shape the country's engagement with carbon markets.
67. The project will support the execution of the national strategy and other regulations currently being developed by the Office of Climate Change, exploring carbon trading markets in collaboration with line ministries, community organizations and other concerned agencies, promoting investments in ecosystem restoration in Fiji. This activity will allow the diversification of revenue streams for FLR and SFM interventions after the completion of the project, further contributing to the bankability of such interventions. Additionally, the project will support the iTLTB in including potential benefits deriving from carbon credits in the landscape plans and to support the MoFF to include the payment of missed carbon and adaptation benefits in the price of log and other forest-derived goods. Vice versa, in the case of FLR and SFM, the same will add to the royalties due to landowning communities and actors. Successful access to carbon trading markets will further contribute to scaling up and replicating project interventions. In this regard, the potential of several carbon finance trading schemes will be explored in alignment with Article 6 of the Paris Agreement and through an inclusive national consultative process.

#### d. National policies, laws, strategies of the carbon finance sector

68. At the national level, the government has announced several policies and strategic documents to address climate change. These policies are at varying levels of implementation. Their contents as they relate to carbon finance are summarized below.
69. The National Climate Finance Strategy (NCFS) plays a key role in shaping carbon finance in Fiji by outlining where investments should focus for climate adaptation and mitigation in sectors like forestry and transportation, essential for carbon finance projects integration, with Fiji's overall development plan and climate policies to effectively draw and oversee climate funding resources through a cohesive framework. By establishing priorities and processes, for funding climate initiatives effectively improves Fiji's capability to tap into sources of carbon finance like the Green Climate Fund while also backing the execution of Fiji's Nationally Determined Contribution (NDC) involving the examination of international market driven collaboration, for carbon trade. The NCFS plays a role, in Fiji's efforts to take advantage of carbon finance opportunities. It helps connect climate policymakers and investors while assisting the country in transitioning to a carbon and climate resilient economy.
70. The ongoing creation of the National Carbon Market Strategy Roadmap, in Fiji is intended to steer the country's focus and goals regarding participation in carbon markets. It is structured around foundations such, as:
  - Boosting preparedness, for the market



- Enhancing structures and overseeing compliance
  - Ensuring the well-being of the community. Protecting the rights of landowners
  - Raising awareness. Engaging the public actively
  - Fostering collaborations. Expanding operations
71. The National Carbon Market Strategy Roadmap plays a role in improving carbon financing in Fiji by providing a plan for engaging with international carbon markets under the guidance of Fiji's Climate Change Division and with support from the Australian Government. The roadmap outlines priorities and objectives to establish a framework for Fiji's carbon market and create Fijian Mitigation Outcome Units that are tradable, under Article 6 of the Paris Agreement. The plan guarantees that various opinions, from groups are included by organizing discussions nationwide and training sessions to enhance skills; it promotes projects with strong ethical standards that help both local societies and environments thrive. This thought-out strategy aims to draw in funding from climate initiatives and help Fiji achieve its set climate goals while also contributing to the efforts of other nations in reaching their climate targets.
  72. The NDC of Fiji acknowledges the importance of market-based collaboration in promoting carbon development. It expresses Fiji's plans to investigate market mechanisms at multilateral levels to aid in achieving NDC goals. Determined Contribution (NDC), the nation's climate financing strategy relies heavily on it. Sets ambitious objectives such as aiming for almost entirely renewable energy by 2030 and attaining net zero greenhouse gas emissions by 2050. To achieve these objectives in Fiji effectively and efficiently. The country has crafted an NDC Investment Plan that acts as a link between policymakers addressing climate issues and potential investors. This plan details targeted projects and financial requirements in sectors with an emphasis placed upon transportation and energy efficiency. These sectors are contributors to emissions in the island nation. The NDC, alongside its corresponding investment strategy, aims to encourage increased support for implementing measures to reduce emissions and attract partners for climate funding purposes. Considering Fiji's susceptibility to the impacts of climate change and its constrained local resources, the NDC framework plays a role in securing climate funding to aid in both reducing emissions and adapting to changing conditions within the nation.
  73. The Fiji Climate Change Act of 2021 sets out a plan, for managing climate funds within the country's borders. Section 14 of the Act focuses on promoting financing for climate initiatives to improve Fiji's capacity to secure and utilize funding for climate-related projects. The legislation grants authority to the Minister of Finance to oversee funding from channels such as the Green Climate Fund and international development banks ensuring that these financial resources align, with Fiji's National Climate Change Policy. The Act also enables the establishment of rewards and tools to aid in mitigating and adapting to climate change impacts. It also requires the formulation of strategies and frameworks, for climate finance to enhance Fiji's preparedness for such funding by implementing suitable governance structures and transparency measures. This legal strategy showcases Fiji's dedication to bridging its substantial climate finance deficit and reaching its climate change goals through a systematic and collaborative approach, in obtaining external financial assistance.

#### e. Carbon finance opportunities from compliance and voluntary carbon markets

74. Carbon finance opportunities for Fiji's forestry and agriculture sectors exist in the international voluntary carbon markets. may grow in the context of Art.6 mechanisms under the Paris Agreement and can be enhanced through the creation of domestic offset schemes.
75. Voluntary Carbon Markets (VCMs) are substantial and growing, offering considerable opportunities for carbon finance in agriculture and forestry. The voluntary carbon market has grown significantly over the last few years, reaching approximately USD 2 billion in 2022<sup>19</sup>. Expectations for further growth remain, with projections ranging from US \$5 billion to US \$30

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<sup>19</sup> <https://www.bbc.com/worklife/article/20231110-the-tough-truth-behind-corporate-net-zero-sustainability-targets>

billion by 2030<sup>20</sup>. The key driver of this growth continues to be the increase in corporate commitments to net zero emissions<sup>21</sup>. While regulatory and reputational uncertainties around carbon credits and their legitimacy in corporate net zero commitments led to some market fluctuations, emerging quality reference frameworks are expected to support renewed growth. Nature-based solutions are gaining prominence in the VCM, with carbon removal credits from activities like reforestation or agroforestry showing stronger buyer interest compared to carbon avoidance credits, such as those from REDD+ projects<sup>22</sup>.

76. Implementing Article 6 mechanisms will offer further carbon finance opportunities, but the market architecture is still being defined. Article 6 of the Paris Agreement, of which Fiji is a signatory, recognizes the voluntary use of "internationally transferred mitigation outcomes to achieve nationally determined contributions". Article 6 aims to facilitate collaboration through carbon trading, lowering costs and ideally raising global ambition, while generating a source of additional revenue for countries to help channel funds towards adaptation and cover administrative expenses. While progress has been made on the rulebook for bilateral country-to-country exchanges under Article 6.2, it is not yet fully finalized. Discussions are ongoing on technical elements like authorization of international transfers, reporting, and registry issues. The centralized mechanism under UNFCCC for exchanges through Article 6.4, in which project-generated credits can be traded for market and non-market purposes, is still under development. The Supervisory Body has recommended methodology guidance and greenhouse gas removals, but full operationalization has not yet occurred. The timeline for trades starting in 2024, pending COP28 approval, appears no longer accurate. COP28 did not fully resolve all outstanding issues, and many decisions have been postponed to future meetings, including COP29 in November 2024. While some methodologies may be adapted from the Clean Development Mechanism, the exact process for methodology development and approval under Article 6.4 is still being worked out.<sup>23</sup>
77. Fiji has made progress in engaging with VCMs, currently hosting three registered projects: two cookstove initiatives and one REDD+ project in the Drawa rainforest. These projects have positioned Fiji as a leader in Pacific VCMs, accounting for nearly three-quarters of total carbon credits issued in the region<sup>24</sup>. The Drawa project, Fiji's first verified forest carbon credit project, has been selling credits on the voluntary market since 2018, providing income to Indigenous landowners in exchange for forest conservation.<sup>25</sup> In November 2021, Fiji signed furthermore an agreement with Australia under the Indo-Pacific Carbon Offsets Scheme to build capacity for international carbon market cooperation under Article 6 of the Paris Agreement.
78. Lack of clarity around rules for voluntary markets and article 6.4. and challenges in monitoring and verifying offsets remain so far key barriers to Fiji increasing its participation in voluntary markets. Difficulties in monitoring and verifying the emissions reductions or carbon sequestration achieved by a project present a key barrier to effectively utilizing carbon offsets. Despite ongoing efforts to develop a National Carbon Market Strategy Roadmap, Fiji still has limited capacity and lacks comprehensive systematic approaches to monitoring and verifying mitigation outcomes from projects, including forestry or agriculture, which could facilitate companies' participation in the voluntary carbon market. Strong MRV systems are essential to capture whether emission reductions or removals and related carbon credits are additional, as well as their quality and verifiability, the time horizon at which they are generated, and their durability. The government's active engagement in addressing these challenges, as evidenced by recent consultation workshops, indicates a commitment to overcoming these obstacles.
79. Domestic offset mechanisms can generate additional carbon finance opportunities for forestry and agriculture. Compliance markets, in which companies that face emission reduction targets can trade carbon allowances (a permit to pollute rather than a reduction credit) at a market size of nearly USD 900 billion, are infinitely greater than the voluntary carbon market. In some

<sup>20</sup> [https://www.ey.com/en\\_pl/law/voluntary-carbon-market](https://www.ey.com/en_pl/law/voluntary-carbon-market)

<sup>21</sup> <https://zerotracker.net/analysis/new-analysis-half-of-worlds-largest-companies-are-committed-to-net-zero>

<sup>22</sup> [https://www.ey.com/en\\_pl/law/voluntary-carbon-market](https://www.ey.com/en_pl/law/voluntary-carbon-market)

<sup>23</sup> [https://www.nature.org/content/dam/tnc/nature/en/documents/TNC\\_Article\\_6\\_Explainer\\_260523.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_Article_6_Explainer_260523.pdf)

<sup>24</sup> [https://assets.wwf.org.au/image/upload/f\\_pdf/CRxN\\_the\\_state\\_of\\_voluntary\\_carbon\\_markets\\_in\\_the\\_Pacific](https://assets.wwf.org.au/image/upload/f_pdf/CRxN_the_state_of_voluntary_carbon_markets_in_the_Pacific)

<sup>25</sup> <https://news.mongabay.com/2023/09/photos-fijis-first-indigenous-owned-carbon-credit-project/>



countries, offsets have been linked to carbon tax regimes, with entities allowed to offset parts of all of their carbon tax liabilities through the purchase of credits. In Colombia 100 percent of tax liabilities were eligible to be offset with credits generated within Colombia, mostly from REDD+. Globally, there is an increasing interest in integrating GHG removals through offsets, including from, to help reach net zero. Offsets from afforestation and reforestation are already allowed in some schemes in California, China, Korea and New Zealand. The EU has been developing a voluntary carbon removals certification framework, but there are no plans to link this to the EU-ETS, rather financing for removals will come from other financing sources, including the Common Agricultural Policy.<sup>26</sup> The sector is also evolving in Fiji and potential domestic compliance markets could potentially involve: (i) A carbon pricing mechanism in the form of a national ETS or a carbon tax, where domestic entities would be required to reduce their emissions or purchase allowances/offsets. (ii) Fijian Mitigation Outcome Units: The Climate Change Act supports the creation of 'Fijian Mitigation Outcome Units' that could be traded domestically or internationally under Article 6 of the Paris Agreement (iii) Sectoral coverage: The market could cover sectors not currently included in international trading mechanisms, such as agriculture and forestry. This aligns with Fiji's focus on forest carbon credit projects and the Emission Reductions Program (ERP).

#### f. Overview of Fiji Development Bank Programmes and Financial Mechanisms

80. This chapter provides a snapshot of existing financial instruments of the Fiji Development Bank (FDB) – a Direct (National) Access Entity (DAE) of the Green Climate Fund (GCF) that will play an important role for both Fiji FLR and WWF-CRRP projects. It also provides some examples of Financial Facility/Fund created in Fiji to support community-based natural resources management and climate change adaptation.
81. The FDB was established under the Fiji Development Bank Act 1966 on 1 July 1967, sixteen years after development banking started in Fiji with the Agricultural and Industrial Loans Board. It is an autonomous statutory body, the operations of which are controlled by a Board of Directors appointed, by the Minister for Economy. FDB remains Fiji's only national development finance institution to date with unique mandate to "facilitate and stimulate the promotion and development of natural resources, transportation and other industries and enterprises in Fiji and in the discharge of these functions, the Bank shall give special consideration and priority to the economic development of the rural and agricultural sectors of the economy of Fiji". This mandate clearly distinguishes the Bank from commercial financial institutions for the following broad reasons.
82. Strong Development Mandate: The Bank is committed to its mission of delivering on objectives that support the economic development of Fiji, and in particular, in the sustainable development of the agriculture (including forestry and fisheries); manufacturing; wholesale and retail; professional and business services; building and construction; sustainable mining and quarrying; real estate (development); tourism; transportation, communication technology, storage; and the renewable energy sectors. Its core business is initiating and delivering on financial solutions. This strong development mandate is balanced with generating financial returns that are necessary in ensuring the Bank is able to remain commercially viable. The Bank also aims to be financially sustainable in the long term to allow it to deliver consistently on its development mandate. This focus on overall financial sustainability rather than profitability allows FDB to fund areas that are riskier, but emerging, innovative, and technologically advanced. Such lending involves some degree of risk that commercial lenders may not be willing to take on.
83. Targeting Development Impact Finance: As a DFI, the Bank is in a position to finance directly those sectors of the economy that contribute towards achieving the national development goals, National Budget initiatives and the Sustainable Development Goals (SDGs). It further adds value by targeting strategic sectors of the economy and supporting those projects that have the highest multiplier effect, both economically and socially. FDB targets local communities and vulnerable groups, including women, youths, cooperatives and Small and Medium Enterprises (SMEs) that are unlikely to be supported by traditional financial institutions in their initial development,

<sup>26</sup> [https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/carbon-removal-certification\\_en](https://climate.ec.europa.eu/eu-action/sustainable-carbon-cycles/carbon-removal-certification_en)

providing them with access to finance and investing in improving their skill sets through training and financial literacy programs

84. **Filling the Credit Supply Gap:** FDB contributes towards building a robust financial sector in Fiji by stepping in to fill gaps in credit supply, allowing it to lend to businesses and projects that cannot normally access finance from commercial banks. FDB manages and mitigates risks of lending to such businesses and projects. The Asian Development Bank (ADB) in its 2019 publication *Finding Balance* Study confirmed this 'additionality' provided by development banks.
85. **Supporting Economic Stability:** The Bank is also an instrument in promoting economic stability by playing a counter cyclical role during financial and economic downturns when the commercial financial sector may be in distress, by maintaining supply of financing.
86. **Social and Environmental Safeguards:** As a DFI, the Bank has the responsibility of improving standards by incorporating social and environmental safeguards in its operations and of those it finances. This is not only critical in terms of maximizing the development impact of activities and minimizing negative impacts but helps improve investments and promotes long term sustainable project outcomes. The Bank is also one of the first local financial institutions to develop a Gender Equity and Social Inclusion (GESI) Policy.
87. **FDB current loan product** comprises of 42 lending facilities, with about half of them supporting agriculture, mainly crop farming. While there is a specific credit line each for livestock and fisheries that is not yet available for forestry. Specific credit lines in support of SMEs are available such as SME Business Loan and SME Sustainability Package. See Appendix 11 for a summary of FDB current lending facilities, with relevance to the proposed GCF Fiji FLR project. FDB also manages a number of Government facilities – See Appendix 12.
88. **Other Existing Financial Mechanisms.** Climate Adaptation Levy (ECAL) is a consortium of taxes on prescribed services, items and income. ECAL is collected by the Fiji Revenue and Customs Services (FRCS) and administered by the Ministry of Economy in accordance with the Finance Management Act 2004 and the Financial Instructions 2010. Proceeds from ECAL are used to finance selected projects programmed in the National Budget. Since its introduction in the 2017-2018 financial year, the Environment and Climate Adaptation Ley has collected FJ \$270.2 million in proceeds of which FJ \$255.9 has been used to finance 102 projects to date programmed in the National Budget to address climate change and environmental conservation. This innovative fiscal financing tool has helped raise unprecedented levels of public finance to support climate change and environmental conservation programmes.
89. **To enhance community level actions to manage the impacts of climate change,** the Fijian Government will soon allocate a certain percentage of ECAL proceeds into a Climate Change Relocation Trust Fund to help raise bilateral and multilateral donor funding to relocate low lying vulnerable coastal communities facing the brunt of climate change.
90. **Sovi Basin Trust Fund :** The Sovi Basin Trust Fund was established as an endowment fund to provide financial sustainability of the Sovi Basin Protected Area in the Naitasiri and Namosi provinces of Viti Levu over the long term. The total amount targeted for the capitalisation of the Trust Fund is USD4.25 million (National Trust of Fiji 2013). The Trust Agreement was signed in 2010 with an initial endowment of USD3.627 (from contributions from Fiji Water and Conservation International's Global Conservation Fund (Yap et al).
91. **The funds are invested in an offshore account – HSBC Trustee (Singapore) Ltd.** The GEF4 (PAS4: Forest Conservation and Protected Area Management Project in Fiji) is also contributing USD0.25m into the Sovi Basin Trust Fund. The first set of dividends from the Trust was paid to the communities in 2015 (Susana Waqainabete-Tuisese, CI, pers. comm., 29 June 2016). The fund supports 3 areas:
92. **Annual royalty and lease payments to Sovi Basin Protected Area landowners.** This includes an annual lease fee and an annual timber royalty (for standing trees) in lieu of timber harvest. This lease amount is determined by the iTaukei Land Trust Board (TLTB).
93. **Annual contributions to a Community Conservation and Development Fund.** The Fund's purpose is to provide benefits to the six-landowning village communities. Not all members of the

landowning villages are landowners, so to ensure that all village members have an incentive to protect the area, the fund has been set up to finance community projects. Depending on the accrued interest of the Trust Fund, an equal amount is disbursed annually to all communities.

94. Management budget for the National Trust of Fiji which manages the protected area (National Trust of Fiji 2013).

## **The need for more innovative financial products including for Forestry**

95. Bank's lending policies align loan purpose to loan tenure and has a mixture of short-term loans with low risks, and, long-term loans with high risks. Insurance is usually available for plant & machinery. Common challenges related to forestry investments that would need to be addressed by national financing institutions, include:
  - the high upfront costs of preparing investment projects in the forest sector;
  - the relatively high level of administrative costs for small enterprises including significant induced transaction costs;
  - the non-acceptance of forests (or standing trees) as collateral;
  - the unavailability of insurance cover on forests (or standing trees);
  - underdeveloped forest products market and value chain; and long term maturity of forests with no alternate source of income to support repayment and forester's livelihood.
96. On the other hand, the biggest challenges for financial institutions are:
  - the quality of the funding proposals they receive because local forestry businesses and enterprises and smallholders rarely have technical experience in developing bankable projects,
  - related to management skills contributed by the lack of business acumen<sup>27</sup>;
  - the lack of bankable projects; and
  - limited re-saleability of collateral offered as security (as a second way out for Banks) unless the Banks engage a willing partner to harvest the trees.
97. These investments are also of high-risk nature and reliance on single product<sup>28</sup>, raising concerns on ability to repay. Thus, forest smallholders and Small and Medium Forest Enterprises (SMFEs) are unable to capitalize sufficiently to achieve financial sustainability, and they are left to focus on agriculture or fishery or seeking employment. In some instances, business partnerships entered into that usually do not last long causing more financial burden leading to social problems.
98. Increasing access by forest smallholders and SMFEs to credit will enable them to undertake productive activities and ride out short-term adverse conditions. To fully tap the investment potential, rural forestry clients need, above all, access to the full range of financial services, including insurance, securitization and leasing. Addressing financial challenges requires not only devising new and innovative financial products, but also better delivery mechanisms (e.g. mobile telephony) to ensure low-cost, convenient access as well as business and financial acumen upskilling.
99. Insurance against various kinds of risk is of great importance in forestry investment, especially for investors willing to invest in developing countries, because it offers a degree of security. New approaches could help address the problem of insurance for smallholder forestry. In area-based index insurance, for example, instead of insuring a farmer's crop and its performance, insurance is issued for more readily measured, objectively verifiable indices (e.g. area rainfall), which substantially reduce the problems of moral hazard and adverse selection. Such approaches need testing, however. Agriculture lending innovations would include the following:

Innovation	Constraints targeted	Applicability
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<sup>27</sup> Financial acumen is often lacking as reflected in the weak business structure.

<sup>28</sup> Lack of diversification such as those available through agroforestry leading to susceptibility in market movements, climate change and other disasters.

Value-chain finance, including contract financing and out grower schemes	Delivery cost Farm practices Banking technology Collateral Exogenous price risk Weak farmer organizations	Relatively long and complex value chains, such as for speciality crops with quality requirements  Can be integrated into broader value-chain development actions
Warehouse receipt finance <sup>29</sup>	Farm practices Banking technology Collateral Exogenous price risk	Working capital to buy agricultural produce  Capital or term loans for investment in storage facilities, transportation equipment or testing/certification equipment  Insurance
Credit guarantees	Collateral	All types of agriculture; supplement for other instruments
Insurance (index) to support credit	Delivery cost Collateral Exogenous risks	Crops (index)
Price smoothing	Exogenous price risk	Export crops
Technology: mobile banking (cell phone, mobile van); biometrics	Delivery cost, proximity Banking technology	Rural households

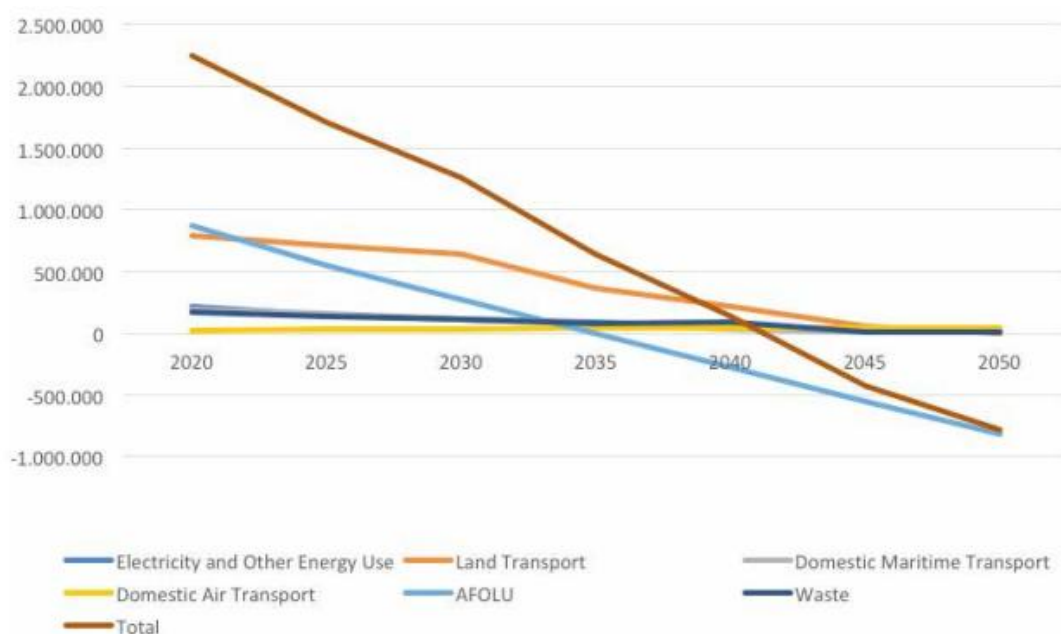
#### g. Greenhouse Gas Emissions and related mitigation strategies

100. Fiji's CO<sub>2</sub>eq annual emissions were estimated to be 3.2 MtCO<sub>2</sub>eq in 2019<sup>30</sup> (GoF, 2023), which corresponds to an average of 3.5 tCO<sub>2</sub>eq per person and per year against a world average of 6.6 MtCO<sub>2</sub>eq per person and per year, i.e. less than one tenth of one percent of the world average. The energy sector is the highest emitter with 67 percent followed by agriculture with 17 percent, Waste with 12 percent and industrial processes with 4 percent. Carbon sinks of the Forestry and Land Use sector corresponded in 2019 to -0.85 MtCO<sub>2</sub>eq which means that there has been an increase in carbon removal and decreased deforestation occurring since 2013 when the sector was considered a net emitter with a slight contribution of 0.02 MtCO<sub>2</sub>eq. Fiji's Ministry of Forestry (MoF) undertook a preliminary National Forest Carbon Stock Assessment in 2011: Total carbon stock for the national forest estate in the current datasets is 199 mln tCO<sub>2</sub>eq divided further between indigenous forests (157 mln tCO<sub>2</sub>eq); pine forests (28 mln tCO<sub>2</sub>eq); and mahogany forests (14 mln tCO<sub>2</sub>eq). The current GHG inventory shows that initiatives in the forestry sector have been successful in reducing carbon stocks depletion (See table 6).
101. The forestry sector (as part of the AFOLU sector) assumes also a fundamental part of the LEDS as can be seen in figure 4. In the Very High Ambition Scenario (VHA) of the LEDS that is the only scenario in which Fiji can reach target of net zero by 2050, AFOLU is the sector with the highest changes in carbon emissions (becoming a sink over time). Without significant investments in the sector, it is therefore very unlikely that the country will achieve its net zero objectives.

<sup>29</sup> The FDB had considered this when designing Agri Value Chain Lending Platform and decided not to introduce it as it was too intensive and required a dedicated team to manage it.

<sup>30</sup> Without LULUCF

Figure 4 Very High Ambition Scenario of the Low Emission Development Scenario of Fiji (metric tonnes CO2e)



### 1.1.5 Relevant Projects (past and ongoing) in the Climate Change sector

102. Table 5 presents a selection of essential projects in the climate change sector (information available from the NDA homepage). For Climate change projects related to forestry and energy, refer to the corresponding chapters below.

Table 6: A selection of essential projects in the Climate Change sector

Project/programme	Brief description	Period
Enhancing Direct Access to Climate Finance in Fiji- Phase 2	Building on the first GCF Readiness Project on Enhancing Direct Access to Climate Finance, this project (Phase 2) will take the following steps necessary to support the Ministry of Economy in its accreditation to the GCF, including Stage 2 submission, development of a project pipeline, and concept notes. It will also include continued support to the other DAE in Fiji, the Fiji Development Bank to upgrade their accreditation to Cat B, Small Size projects and also to the NDA, to fully utilise its stakeholder engagement platform, including digital engagement and improve and refine its procedures	2022-2024
Mainstreaming Adaptation Planning at the Local Level in Fiji	Fiji developed its National Adaptation Plan in 2018. The Fiji government would now like to integrate adaptation at the local level: in the town development planning and investment plans. This project aims to support mainstreaming the National Adaptation Plan at the local level through various actions including supporting local adaptation planning, investment mobilisation and capacity building.	2022-2024
Global Fund for Coral Reefs Investment Window	The project will create a private equity fund to encourage investments in the blue economy, protecting coral reefs. Targeting 17 countries in Africa, the Asia-Pacific, Latin America and the Caribbean it aims to address critical financing and private investment barriers centred around the blue economy.	2021 start date
Supporting the Development of the Monitoring/Measuring, Reviewing and Verification Systems in the Transport Sector	The NDC Hub is supporting Fiji to align its revised Forest Bill with its draft Climate Change Bill. A comprehensive and specific set of recommendations to better align the two Bills will be developed ensuring consistency of definitions, processes, institutional arrangements, and responsibility. Integrating climate change adaptation strategies in urban planning	21-22
Climate Change Bill implementation support		21-23

Fiji Recovery and Resilience First Development Policy Operation with a Catastrophe-Deferred Drawdown Option	The development objective is to: i) promote private sector-led economic recovery; ii) enhance climate, disaster and social resilience e; and iii) strengthen debt and public financial management.	2021-2024
Fiji Social Protection COVID-19 Response and System Development Project	To mitigate the impact of the COVID-19 crisis on the income of the unemployed and underemployed, and to increase efficiency and adaptability of the social protection system.	21-24
Global Subnational Climate Fund (SnCF Global) – Equity	The goal of the Sub-national Climate Fund Global (SnCF Global or the “Fund”) is to catalyze long-term climate investment at the sub-national level for mitigation and adaptation solutions through a transformative financing model.	20-33
Global Subnational Climate Fund (SnCF Global) – Technical Assistance (TA) Facility	The goal of the Sub-national Climate Fund Global (SnCF Global or the “Fund”) is to catalyze long-term climate investment at the sub-national level for mitigation and adaptation solutions through a transformative financing model.	20-28
Preparing the Nadi Flood Alleviation Project	The project will involve a combination of structural and non-structural measures to achieve, in a cost effective manner, a level of flood hazard protection for the Nadi town and the lower Nadi river floodplain that is desired and accepted by stakeholders	2019-2022
	Increasing the resilience of informal urban settlements in Fiji that are highly vulnerable to climate change and disaster risks	2018-2023
Climate Change Implementation	The EU has provided direct funding to the Government of Fiji through the Ministry of Finance to implement certain initiatives in the Climate Change Act. One such initiative is related to the introduction and integration of climate and disaster risk in the recently revised Public Sector Investment Programme Guidelines (PSIP). Following the recent endorsement by cabinet of the PSIP, the target will be working with the pilot ministries to begin screening for climate and disaster risks in at least two public investment programmes of the ministry.	
Fiji Urban Water Supply and Wastewater Management Investment Program	The impact of the proposed investment program will ensure future growth in the greater Suva area (GSA) is sustainable and will improve public health. The outcome will be improved access to sustainable water supply and sewerage services in the GSA	16-28
Fiji Urban Water Supply and Wastewater Management Project	Building and renovating infrastructure to improve access to safe water and sewerage systems in the greater Suva area of Fiji. Creating a new river water intake station on the River Rewa and improving the Kinoya wastewater treatment plant and associated sewer coverage.	15-25
The Global Climate Change Alliance Plus Scaling up Pacific Adaptation (GCCA+ SUPA)	The GCCA+ SUPA project scales up climate change adaptation measures in specific sectors supported by knowledge management and capacity building. The project is undertaken to enhance climate change adaptation and resilience within ten Pacific island countries. The objective is to strengthen the implementation of sector-based, but integrated, climate change and disaster risk management strategies and plans.	18-23
Introduction of Climate Risk Disclosure in Fiji	The NDC Hub is supporting the Government of Fiji through the Climate Change Division in implementing Part 15 Section 93-100 on the introduction of climate risk disclosure in Fiji. The aim of the first phase of this project is to introduce the concept of 'climate risk and opportunity' to our companies, licensed financial institutions, managed investment schemes, RBF and FNPF, and develop guidance materials that can be used by these target groups to adopt this type of reporting in Fiji.	
Capacity Building Initiative for Transparency (CBIT)	The CBIT Project is funded by the Global Environment Facility (GEF). UN Environment Program (UNEP) as the GEF Agency is administering the CBIT project in Fiji. The project is co-executed by the Climate Change Division and the Global Green Growth Institute (GGGI). The CBIT project looks at strengthening the institutional arrangements for the Enhanced Transparency	

	Framework, develop a online national greenhouse gas inventory system, develop monitoring, reporting and verification (MRV) curriculum and an NDC implementation and tracking system for Fiji	
ICAT Phase II	The ICAT Project will strengthen the implementation of a robust MRV system by building capacity in the agriculture sector and aligning it with international transparency standards. The project extends to address GHG emissions from refrigerants, improve GHG data collection in agriculture, enhance livestock emissions reporting, and optimize solid waste management while promoting methane recovery.	
Project on supporting Greenhouse Gas Inventories and livestock data development in Fiji	This project is focused on developing Tier 2 EF for livestock particularly for dairy and beef cattle looking at the institutional arrangements and governance process required to develop the Tier 2 EF. The EFs will be determined using experimental methods to capture more country and animal breed specific data. Country specific data will enable Fiji to produce more accurate GHG inventories and propose more nationally suitable climate mitigation strategies for the livestock subsector.	
Carbon Market Roadmap Strategy	This is technical assistance for developing the National Carbon Market Strategy Roadmap (Strategy Roadmap). The Strategy Roadmap will navigate the range of opportunities, mechanisms, and bilateral agreements that Fiji has potential to access. This process is led by the Climate Change Division of the Office of the Prime Minister (CCD).	
Regulations under Part 10 of the Climate Change Act	This is a soft project in form of technical assistance to develop subsequent regulation for PART 10 of the CCA on Carbon Markets.	
Enhancing Access to Climate Finance in Fiji	The project supports Fiji's NDA, and two key entities in the climate finance space to strengthen their internal processes, external consultations and partnerships, and capacities to identify, select and develop project pipelines. The Ministry of Economy (MoE) and the Fiji Development Bank (FDB) are the two key entities. Recognising that these two institutions must work closely together to mobilise both the small and large investments needed and create an enabling environment for private sector to participate in mitigation and adaptation actions, the project will work with both entities to strengthen their ability to access climate finance and to create coordination mechanisms.	19-22
Sustained Private Sector-Led Growth Reform Program (Subprogram 2)	The proposed subprogram two will support the government in creating an environment in which the private sector can develop and better drive national economic growth through investment by improving the management of public finances, strengthening the performance of state-owned enterprises (SOEs), and opening opportunities for private investment; and enhancing the policy, legislative, and regulatory environment in which businesses operate.	19-20
Supporting Public Financial Management Reform	The Government of Fiji recognizes that strong public financial management (PFM) is vital to macroeconomic stability and poverty reduction. The proposed knowledge and support technical assistance (TA) will support the implementation of Fiji's Public Financial Management Improvement Programme (PFMIP) 2016 2019 by improving institutional capacity for reform and reform coordination. Implementing the PFMIP will help promote fiscal discipline, the strategic allocation of resources, and efficient service delivery	17-22
Strengthening Capacities in the use of Geospatial Information for Improved Resilience in Asia-Pacific and Africa	The project strengthens capacities in using geospatial information technologies in Fiji for improved resilience. This three year project builds on previous experiences from the CommonSensing initiative by providing integrated geospatial solutions that support climate finance access.	21-24
Fiji: FCPF REDD+ Readiness Preparation Proposal Readiness Fund	The development objective of the Grant is to assist Fiji in carry out the Readiness Preparation Activities by supporting the preparation of its REDD+ strategy through a participatory and inclusive process, the establishment of a national MRY system,	Pipeline

	and by producing technical work and policy advice to help strengthen sustainable land and forest management practices.	
Vanua Levu Tourism Development Project	To increase the contribution of tourism to the local economy of Vanua Levu through improved planning and infrastructure services.	Pipeline
Multi-year Readiness Support Programme	The Green Climate Fund will be revising its current Readiness Support Program to a 'multi-year' approach whereby the readiness support usually provided every year will be given for a full four years. In addition to addressing efficiency, this recent reform also ensures that the readiness timeline aligns with the replenishment period of the fund. The Climate Change Division will partner with the Global Green Growth Institute as its Delivery Partner to apply the multi-year readiness beginning in 2024.	Pipeline 24-27
Fiji Sustained Private Sector-Led Growth Reform Program	The Program supports the Government of Fiji (GOF) public finance for public health containment and treatment measures and a fiscal stimulus focusing on social and economic protection.	Proposed
Flexible Climate Finance Program	The government of NZ will be providing direct climate finance of NZD 20m to the government of Fiji for the first time. The funding will be used to directly finance government projects and programs that contribute to climate action in line with national plans and strategies.	Recently approved

103. The success of the project depends on new and highly innovative mechanisms to manage natural resources and reward ecosystem services mentioned in this section, which will require major changes in the practices of both public sector institutions and private sector operators. The following presents and overview on initiatives evidencing (i) government commitment to implement this challenging agenda; and (ii) examples of recent successes in other ecosystem services-based initiatives in Fiji involving both changes in government rules and regulations and private sector investment.

104. **A. Nature-Based Solutions (NBS).** The RESCCUE project in Fiji has successfully implemented several Nature-Based Solutions involving private sector participation: (i) Mangrove replanting: Private nurseries and local businesses have been involved in supplying mangrove seedlings and providing logistical support for replanting efforts (ii) Reforestation: Private landowners and agricultural businesses have participated in reforestation initiatives, particularly in areas affected by erosion or deforestation. (iii) Agroforestry pilot farms Local farmers and agricultural companies have collaborated with the project to develop agroforestry pilot farms, demonstrating sustainable land use practices.<sup>31</sup>

105. **B. Integrated Watershed Management.** The government's promotion of integrated watershed management has involved private sector stakeholders in several ways: (i) Agricultural practices: Private farmers and agricultural companies have been engaged to implement sustainable farming practices that reduce soil erosion and chemical runoff. (ii) Forestry management: Private forestry companies have been involved in sustainable logging practices and reforestation efforts in upper watershed areas. (iii) Water resource management: Private water users, including industries and commercial farms, have been included in watershed management planning to ensure sustainable water use.<sup>32</sup>

106. **C. Sustainable Financing Mechanisms:** Fiji has demonstrated strong commitment to adopting innovative financing mechanisms for climate action and sustainable development. The government's leadership in this area was highlighted during Fiji's presidency of COP23 in 2017. Fiji has actively pursued partnerships with international organizations like the World Bank, IFC, and UNDP to develop and implement innovative financial tools. The country's long-term vision, including its commitment to achieving net-zero emissions by 2050, drives its pursuit of novel financing solutions. Fiji has shown adaptability in its approach, moving from direct environmental taxation to market-based mechanisms. The government has also been proactive in creating

<sup>31</sup> <https://ocean-climate.org/en/resccue-project-ecological-restoration-and-erosion-control-in-fiji/>

<sup>32</sup> [https://www.pacific-r2r.org/sites/default/files/2022-01/MISC\\_FJ\\_01\\_WAIMANU%20RIVER%20CATCHMENT%20INTEGRATED%20MANAGEMENT%20PLAN%20high%20res\\_0.pdf](https://www.pacific-r2r.org/sites/default/files/2022-01/MISC_FJ_01_WAIMANU%20RIVER%20CATCHMENT%20INTEGRATED%20MANAGEMENT%20PLAN%20high%20res_0.pdf)



regulatory frameworks and taxonomies to support sustainable finance, indicating a clear willingness to foster an enabling environment for innovative financial instruments.

107. Fiji's history of environmental taxation began with the introduction of the Environment and Climate Adaptation Levy (ECAL) in 2017. This 10% levy was applied to prescribed services, goods, and personal income, specifically designed to fund climate change adaptation and mitigation projects. Between 2017 and 2022, ECAL successfully raised significant funds. However, in April 2022, the government decided to remove ECAL as part of a broader tax restructuring. To compensate for ECAL's removal, the Social Responsibility Tax (SRT) rate was increased by 5%. Subsequently, in January 2024, SRT was incorporated into the Pay-As-You-Earn (PAYE) tax system. While the shift represents momentarily a move away from dedicated environmental levies towards a simplified overall tax structure, it shows nonetheless that the country is open to innovative mechanisms and that its experience can help adjusting future implementation of environmental levies.
108. Fiji has pioneered several innovative financing mechanisms for environmental and climate initiatives. In 2017, Fiji became the first emerging market globally to issue a sovereign green bond, raising FJD 100 million for climate resilience and adaptation projects. In 2022, Fiji launched the Fijian Sustainable Bond Framework at COP27, creating a comprehensive taxonomy for green, blue, and social projects. In 2023, the Reserve Bank of Fiji partnered with the International Finance Corporation to develop a green finance taxonomy, aiming to encourage more climate-friendly investments. Fiji also issued its first sovereign blue bond in early 2023, further expanding its portfolio of innovative ocean-related financing. These initiatives demonstrate Fiji's ongoing commitment to exploring and implementing cutting-edge financial instruments to support its environmental and climate goals.

### 1.1.6 SWOT Analysis of the Climate Change Sector

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>Strong policy framework, including the Climate Change Act enacted in 2021</li> <li>commitment from the government to adaptation and decarbonization processes.</li> <li>Experience accessing climate finance through various projects and initiatives</li> <li>Domestic revenue generation through measures like carbon credits</li> <li>Innovative approaches like the Drua Incubator to develop new financial products</li> <li>High awareness of climate risks and vulnerabilities as a small island nation</li> </ul>	<ul style="list-style-type: none"> <li>Limited technical expertise in preparing bankable climate project proposals</li> <li>Lack of data on greenhouse gas emissions and economic impacts of climate change</li> <li>Limited public financial management capacity</li> <li>High dependence on external climate finance</li> <li>Underdeveloped local private sector</li> <li>low public awareness, trust, and limited private sector involvement pose additional challenges.</li> <li>Lack of clarity around rules for voluntary markets and article 6.4. (global weaknes)</li> <li>Challenges in monitoring and verifying offsets</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>Access to international climate funds like the Green Climate Fund and strong interest in the sector from the donor community</li> <li>Potential for nature-based solutions to flood prevention, e.g., enhanced forest ecosystems</li> <li>Emerging financial instruments like parametric insurance and green bonds</li> <li>Renewable energy transition to reduce dependence on fossil fuels</li> <li>Ecosystem protection projects with multiple co-benefits</li> </ul>	<ul style="list-style-type: none"> <li>Limited technical expertise in preparing bankable climate project proposals</li> <li>Lack of data on greenhouse gas emissions and economic impacts of climate change</li> <li>Limited public financial management capacity</li> <li>High dependence on external climate finance</li> <li>Underdeveloped local private sector and service providers for low-carbon development</li> </ul>

- decarbonization can be part of the strategy to improve the competitiveness of the private sector.

## 6 Forestry Sector

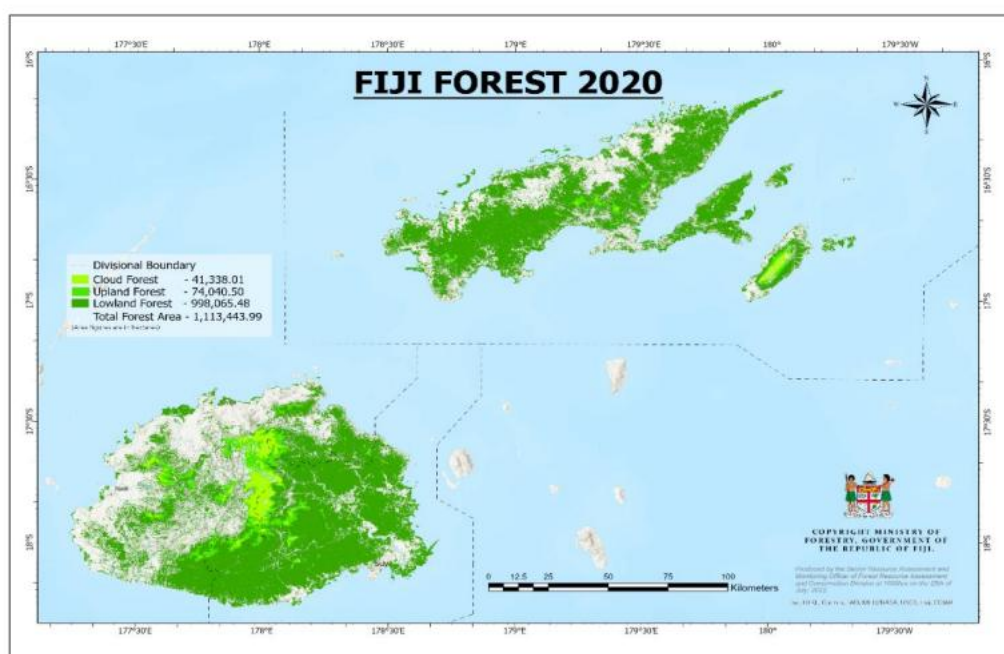
109. Fiji is a Small Island Developing State (SIDS) in the Southwest Pacific, geographically located at 18°S 179°E, consisting of 332 islands, of which 110 are inhabited. It has a total land area of 18,725 square kilometers, of which around 57.7<sup>33</sup> Percent is under forest cover, 87 percent located on the two main islands, Viti Levu and Vanua Levu. These forested areas can be grouped into three main classes: natural forests, planted forests, and mangroves. The natural forests constitute about 82.3% of all forests, softwood plantations account for 7.4%, hardwood plantations account for 6.2%, and mangrove forests account for 4.1%<sup>34</sup>.

110. The average forest area per capita is 1.3 ha, nearly three times the global average. Forest areas have increased in proportion to total land area, from 55.09% in 2000 to 57.7% in 2020.

Table 7: Fiji forest cover in 2020 (These figures include mangroves, plantation forests, and native forests.) Source: MoFF Annual Report 2021-2022

Forest Type	Total Area	Percent
Lowland Forest	998,065.01	89.64%
Upland Forest	74,040.51	6.65%
Cloud Forest	41,338.01	3.71%
<b>Total</b>	<b>1,113,443.53</b>	<b>100.00%</b>

Figure 5 Fiji Forest cover map 2020 (Source: MoF Annual report 2021-2022)



111. Historically, forest governance in Fiji has exploited the native forest. Unregulated timber extraction and limited enforcement of and compliance with national forest policy have resulted in degradation, soil erosion, and reduced productivity. Timber production leases on customary

33 [Nair, C.T.S., Matta, R., Kumar, R., Lee, S. & Thomson, L. 2023. Pacific Forest Sector Outlook Study 2023. Apia, FAO.](#)

34 [MoF Annual report 2021-2022](#)

lands have historically resulted in uncontrolled short-term income and degradation cycles. The role of natural forests in the log production of sawn timber, veneer, and plywood has steadily declined over the last decade.

112. Fiji's remaining native forest is now mainly confined to areas of high rainfall (> 2,500 mm), high elevation (> 500 m), and steep slopes (> 15%), with much of the accessible lowland forest cleared by loggers and later converted into plantations, agriculture or settlements.
113. The natural forest cover comprises 57.6% closed forests and 52.5 % open forests (including secondary forests). During recent years, there has been a decrease in closed forests and an increase in open forests, mainly attributed to cyclone disturbance and forest degradation due to logging. The increase in open forests is partly attributed to the opening of closed forests.
114. Fiji's native forests are increasingly being used for protection and conservation: the production of timber from native forests is gradually becoming less important as these forests are located in more challenging terrain. Instead, plantation forests are now dominating the wood supply. The growing concern for protecting the environment, with increasing appreciation of the relationship between climate change and forests, and the need to protect forests are slowly getting traction within the thinking of the iTaukei landowners who own almost all of Fiji's native forest resources. The Prime Minister of Fiji declared at the UNFCCC COP 26 meeting in Glasgow that logging in Fiji's natural forests will be completely banned by 2030.
115. Much of Fiji's forest biodiversity is unique; there are 1,769 recorded native vascular plant species in Fiji, of which 50% are endemic. Current best estimates suggest that Fijian flora consists of 310 pteridophytes (ferns and their allies) and 2,225 seed plants (monocotyledons and dicotyledons). Over 90 percent of some insect groups, such as cicadas and marine insects, are endemic. Out of a total of 27 reptile species, 12 are endemic<sup>35</sup>. Protecting its forests is thus crucial for global biodiversity, and about 5% of Fiji's forested area is under long-term conservation. Under the Fiji National Development Plan, Fiji targets to protect 16 percent.<sup>36</sup> Of its native forests by 2030. (MoF Strategic Development Plan 2017-2030). As of date, Fiji has 16 Forest Reserves (22,214 ha)<sup>37</sup>, 6 Nature Reserves (5,373 ha) and 15 Parks (16,912 ha). Forest conservation activities include forest areas that are legislated and conserved under law and non-legislated conservation areas managed by other agencies, such as the Sovi Basin, which is co-managed by the National Trust of Fiji and the Sovi Landowners Committee. Fiji National Environment Strategy (NES) provides a list of 140 Sites of National Significance with recommendations that a formal legislative process be established to afford them more excellent protection.
116. They are critical for the economic stability of the country and its communities, including the regulation of water flows and water quality and the protection against landslides, flood risks and downstream coral reef ecosystems ([Klein et al, 2013](#)). Mangroves, furthermore, offer protection of coastlines mitigating the vulnerability to tropical storm surges and sea level rise ([Cameron, 2021](#)). Much of the local forest biodiversity is unique, there are 1,769 recorded native vascular plant species in Fiji, of which 50% are endemic ([MoF, 2016](#)). Native forests cover, largely on Viti Levu and Vanua Levu islands, collectively contribute to 87 percent of total forest area in Fiji, and include mangrove forests, lowland rainforests, upland rainforest, cloud forests, and dry forests. Dry forests are already extinct in much of their natural range, while cloud forests are greatly threatened by climate change as their natural range decreases due to rising temperatures. The management of the 150,800 ha productive plantations and their extension has a significant potential for high-value timber supply and rural development. Not counting the above-mentioned forest ecosystem services values, the forest sector accounts for an average 1.2 percent of GDP and 4.1 percent of export earnings ([MoF, 2020](#)). While sawn timber for construction and flooring is the main product, wood chips have been the biggest export item, which underlines the low value-added captured by the industry. Forest owning communities rely on timber for construction, fuelwood ([MoF, 2019](#)), as well as on non-timber forest products ([Mangubhai and Lumelume, 2019](#)). The latter are important for household consumption and/or sale in the markets

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<sup>35</sup> MoF, 2019a

<sup>36</sup> MoF, 2019b

<sup>37</sup> MoF, 2019a

both for iTaukei and non-iTaukei population ([MoF, 2019](#)), while agroforestry systems provide food security and income, improve the microclimate for crops and livestock, and enhance water security.

117. Approximately 10% of the population is directly dependent on the reefs for food and livelihoods, and the ecosystem services provided by coral reefs correspond to FJD 47.5 million annually ([WWF, 2022](#)). Coral reefs are furthermore essential for the fishery sector that contributes approximately 1.8 percent to the GDP and constitutes 7 percent of total export earnings and for the tourism sector accounting for 39% of the GDP prior to the onset of the COVID-19 pandemic and 35.5 percent of employment ([Shiiba et al, 2023](#)). The total annual economic value associated to the coral reef in Fiji is estimated at 525.7 million constant 2017 US\$, mostly (90.3%) related to international holiday visitors. The residual value is associated to coastal protection (6.3%) and inshore fishery (3.4%) (FAO, 2024; see Appendix 10). Last, but not least, Fiji, together with 6 other countries<sup>38</sup> hosts 70% of the regeneration potential for the world's reefs. These coral populations are therefore of global importance for biodiversity conservation and could play a crucial role in replenishing and restoring more vulnerable coral reefs once ocean surface temperatures stabilize in the future ([Beyer et al, 2018](#)), provided that their exposure to additional stressors like storms and sedimentation from erosion has been minimized.

#### a. Planted forest industry

118. The planted forest industry in Fiji has resulted in the development of two significant plantation resources based on pine and mahogany, making up 2.8 and 7.1 percent of the total forest area, respectively<sup>39</sup>.
119. Large-scale pine (*Pinus caribaea*) and mahogany (*Swietenia macrophylla*) plantations were established in the mid to late 1900s. Pine plantations mainly were over dry grassland hills in the Western Division. In contrast, mahogany plantations were established in logged-over native forests, mainly on the eastern and central parts of the larger islands. By 1975, the then Fiji Pine Scheme had a total pine estate of around 77,500 ha<sup>40</sup> Around 21,000 ha are stocked with pine, and by 2020, its total estate had increased to 83,367 ha, with 29,749 ha stocked with pine. As for mahogany, high-value timber plantations of mahogany began in the 1960s, gathering momentum in the 1970s-80s; by 2006, Fiji Hardwood Corporation Limited (FHCL) had a total area of 43,068 ha planted with mahogany, and by 2020, it had a total leased area of 75,277 ha of which 41,426 ha are stocked with mahogany, the balance consists of mixed hardwood species and nature reserves. The current harvesting of mahogany requires a license and the ability to process and export to the international market. This is challenging, given the significant reduction in hardwood timber mills. The small size of domestic markets, the high cost of processing, and the absence of conducive policy environments constrain investment in wood processing.
120. Coconut planting focuses on communally owned land, mostly in outer islands and coastal regions of the main islands, mainly in the southern coasts of Vanua Levu. Fiji still has around 10 million coconut trees scattered over 65,000 ha of land, mostly owned by small-holder farmers; almost 70% of these are in the Northern Division<sup>41</sup>.
121. The development of sugarcane farms has a long history dating to the late 1800s; land area cultivated under sugarcane increased from 56,000 ha in 1964 to 94,000 ha in 1987<sup>42</sup>, it then declined to 65,000 ha in 1999 and further declined to 39,300 ha in 2015<sup>43</sup>.
122. Fiji's major forest commodities include mahogany, pine and woodchips, sandalwood, and teak. There has been an observed trend in reducing the total plantation areas. Due to the increasing demand from buyers for certified forest products, Fiji Pine Limited (FPL) and FHCL continued to strengthen their forest certification compliance, mainly for the pine chip market in Japan and the mahogany-sawn timber market in the USA, respectively.

<sup>38</sup> The other countries are Solomons Islands, Madagascar, Tanzania, the Philippines, Indonesia, and Cuba

<sup>39</sup> Pacific Forest Outlook 2023, FAO

<sup>40</sup> Ratubalavu, U., 2021

<sup>41</sup> The Fijian Government, 2019

<sup>42</sup> Raheed, A. Ali & Narayan, Jai. P., 1989

<sup>43</sup> Singh, A., 2020

123. In recent times, the role of Fiji's forests has evolved from timber production towards sustainable forest management, environmental protection, forest ecosystem services, forest conservation, carbon sequestration, supporting livelihoods, and ensuring food security. These changes are associated with declining log production from natural forests, increasing global commitments of Fiji related to the ecosystem services of natural forests, and rising affluence and changing attitudes in the Fijian community.

#### b. Non-timber forest products value chains in Fiji

124. The Government of Fiji recognizes the potential of non-timber forest products. A vital part of the Government's National Development Plan focuses on assisting Micro, Small, and Medium Enterprises (SMMEs) and identifying alternative livelihood schemes to increase profit margins for small income generation further. This vision is shared by the Ministry of Forestry and highlighted as a Strategic Goal under its 13-year Strategic Plan to "Improve the socio-economic impact of the forest and its People." The outcome/impact of this strategic goal is the Ministry's support in managing sustainable forest-based economic activity with forest-based industries, increased participation of small forest enterprises, and the empowerment of local communities to create employment opportunities. The Forest Sector in Fiji contributed 1.9% to GDP in 2021-2022 (MoF, 2022. b), of which 0.4% is attributed to NTFP. Limited data about all NTFPs in Fiji is available, and there is no registry of all NTFP operators.

125. The Ministry of Forest, Production and Marketing Manager is reported to claim that the cottage industry poses a multi-million-dollar opportunity where locals produce high-quality furniture (Fiji Times April 22, 2014) using waste wood from logging operations. Other non-timber forest products with a market share include Dilo Oil, Virgin Coconut Oil, coconut plywood or coco-veneer, candlenut (Lauci), sandalwood (Yasi), and others.

126. In the frame of value chain assessments (Appendix 6 and 7), Local experts assisted in identifying a non-exhaustive list of non-timber forest products in Fiji. Six broad categories were identified: handicraft, medicine, food, perfume and oil, restoration, and landscape-agroforestry. The categorization of NTFP follows the following rationale:

127. Handicraft: The handicraft sector has a long traditional history but remains a young industry (Huffer, 2020) with significant potential to provide diverse and sustainable livelihoods for our Pacific communities through production and sale. Handicrafts are essential for most of their local and traditional functions, hence the dominance of regional markets. The potential for co-production ventures for handicraft producers across Fiji is a possible avenue for producers. However, this is impossible as the sector has low protection and high exploitation, and producers struggle to effectively supply even their local markets while competing against mass imports. Application of Shackleton and Pandey's (2014) pathway to integrate NTFP into the development agenda indicates progress in incorporating handicrafts into policies such as the Ministry of Women and Culture Trade Show that aims to safeguard local livelihood needs. There is an urgent need to understand and appreciate the available resource stocks, assess the drivers of unsustainable use, and target research to further develop sustainable co-management in land management and trade-off decisions.

128. Medicine: Traditional medicine is sourced from forests using particular species and parts of the tree, such as seeds, flowers, leaves, bark, and roots, to cure various ailments. Until recently, traditional medicine was never sold. Traditional knowledge of medicine is often passed down family lines. Common medicines such as Kura (Nonu drink) have been produced commercially. There is a vibrant local medicinal market but incomplete information on the variety of available traditional medications. The most popular and internationally exposed local medicine is Kura Juice. The application of Shackleton and Pandey's (2014) pathway to integrate NTFP into the development agenda shows progress in messaging for NTFP commodity marketing. There is an urgent need to understand the appropriate available level of resources in the wild, understand drivers of unsustainable use and design, and plan restocking and cultivation as part of the more comprehensive land use plan and design.



Figure 6: Non-exhaustive list of Non Timber Forest Products in Fiji

<b><u>Handicraft</u></b>			<b><u>Medicine</u></b>	
Soga	Bamboo	Makadre	Charcoal	
Dyes	<b><u>Masi</u></b>	<b><u>Magimagi</u></b>	<b><u>Kura</u></b>	
Reed	<b><u>Voivoi</u></b>	Vau	Assorted native trees – medicinal uses marketed as Juice Fiji	
Bamboo	Wame	Sasa	Yaqona/Waka	
	Wood carving	Ratali (Rattan)	Cagolaya (Medicinal Ginger)	
			Lemon Grass	
			Mushroom	
<b><u>Food</u></b>			<b><u>Perfume &amp; Oil</u></b>	
Honey	Turmeric	Mushroom	<b><u>Yasi</u></b>	
<b><u>Ota</u></b>	Cocoa	Lemon Grass	Makosoi	
Coconut			Moringa	
Vanilla	Coffee	Assorted Yams (Tivoli etc.)	<b><u>Lauci</u></b>	
Assorted native fruits	Bamboo Shoots	Moringa	<b><u>Dilo</u></b>	
			Lemon Grass	
<b><u>Restoration</u></b>			<b><u>Landscape Agroforestry</u></b>	
Assorted tree seeds	Vetiver Grass		Firewood	Horticulture
	<b><u>Tree Nursery</u></b>		Coco-wood	Ecotourism
Assorted Tree seedlings			<b><u>Woodchips</u></b>	
			<b><u>Bamboo</u></b>	

*\*underlined, bold, and Grey shaded commodities are part of the case study*

129. Food: Local communities forage food from the forest. These include ferns, yams, meat, and others. Honey, Yaqona, and Cocoa are common commodities that have established markets. Many of the commodities under Food fall under the Ministry of Agriculture.
130. Perfume and Oil: Pure Fiji Export Ltd markets perfume and oil in Fiji, one of the most well-developed markets in the NTFP segment. According to Frodey and Naidu (2008), Pure Fiji is a privately held, Fijian-owned company providing quality botanical skin care products targeting the USA niche market. Critical success factors of Pure Fiji are associated with its profound sourcing arrangements with rural women in Fiji and its passionate support for the sustainable development of local environments, resulting in harnessing an international reputation for its environmentally friendly botanical products targeted at the rich and famous, particularly in the USA. The company started with an investment of \$8000 and currently boasts a return above FJ\$5m. The other central learning from Pure Fiji is the strategic selection of suppliers and high-end niche markets that started Pure Fiji Export Ltd., such as Air Pacific (supplying Amenity kits), Royal Tonga Airlines, and Sheraton Resorts (Frodey & Naidu, 2008).

131. Restoration: The Ministry of Forestry has encouraged communities to germinate tree seeds and plant 30 million trees by 2035. Coupled with an influx of funding from multilateral and bilateral sources to adapt and mitigate the impacts of climate change, there has been a push to plant more native species to restore degraded areas and sequester carbon. This has resulted in the need to grow more native tree species, placing strain on supplies from Ministry of Forestry nurseries. To solve this problem, the Ministry of Forestry, through its Extension Division, began an extensive program to train communities on seed collection, propagation, and nursery management.
132. Tree Nursery for Restoration: The Ministry of Forestry has encouraged communities to germinate tree seeds and plant 30 million trees by 2035. Coupled with an influx of funding from multilateral and bilateral sources to adapt and mitigate the impacts of climate change, there has been a push to plant more native species to restore degraded areas and sequester carbon. This has resulted in the need to grow more native tree species, placing strain on supplies from Ministry of Forestry nurseries. To solve this problem, the Ministry of Forestry, through its Extension Division, began an extensive program to train communities on seed collection, propagation, and nursery management.
133. Landscape and Agroforestry: Poor and unsustainable land use practices have contributed to the degradation of agricultural lands, including forest edges. Deforestation and land degradation in forests and peripheries of forest frontiers continue to be a challenge that calls for forest and landscape restoration mechanisms to address climate change and restore forest ecosystems while supporting local community livelihoods.
134. Some of the commodities listed above are widely recognized, such as virgin coconut oil, while others are at various stages of market development. The value chain assessment advocated in this work will aim to reduce poverty by integrating adaptation to climate change, particularly for rural resource owners. Therefore, specific contextual analysis of the value chain is vital as rural products and services are affected by specificities such as poor accessibility, marginality, fragility, and diversity (Hoermann et al., 2010).

### c. Institutional set-up and policy frameworks

135. The forest sector has played a crucial role in Fiji's economic development since the sandalwood trades of the early 19th century. In 1913, the legislation for the protection of forests provided the machinery for the constitution and protection of forest reserves. The Department of Forests was first established by the Government of Fiji in 1937.
136. The first Forest Policy for Fiji was developed in 1950, while Fiji's forest sector and related industries were first legislated under the Forest Act of 1953. The policy promotes sustainable forest management, practicing tree marking during logging operations. This changed in the early 1970s as demands for economic development increased, resulting in heavy logging in the natural forests of a selected number of species and restocking with mahogany while poisoning the larger trees to make way for the planted species; the Fiji forest policy was also responsible for the establishment of pine plantations and numerous forest and nature reserves throughout Fiji, often sanctioned through ministerial proclamations. The fact that some nature and forest reserves were established even before 1950 reflects the pro-conservation thinking prevailing during that time. Fiji's early forest policy was forward-thinking, and it already considered the importance of forest protection for soil conservation and biodiversity conservation. It even stressed the importance of ensuring ecosystem services. Compared to the number of discussions and consultations that are needed today to secure forests for conservation purposes, the landowners during that time played a minimal role: most of the discussions and decisions were made by senior government officials of relevant government departments, the Fiji Native Lands Trust Board (now iTLTB), together with relevant chiefs.
137. The Forest Act 1953, responsible for the implementation of the 1950 forest policy, focused on establishing the process to ensure the sustainable management of Fiji's forests, establishes the office of the Conservator of Forests and its functions, including the Forestry board, its role and membership, and the process for appointment of its members. The Act also prescribes how the Minister for Forests makes declarations for nature and forest reserves and defines how they will be managed. The Act further specifies the process and conditions for issuing various types of

harvesting licenses. A significant element within the Act is the requirement for a logging plan as a condition for the issuance of a logging license, which includes the specification of an annual cut, any trees to be left in place, specification for trees to be felled, an indication of all proposed roads, and skidding tracks, and specifies any form of reforestation or other post-harvesting operations that will be carried out. Under this Act, the Forest Sawmills Regulation, Forest Guard Regulation, Forest (Fire Prevention) Regulation, and the Forest (Timber Marks) Regulation were established in the 1950s through the 1970s to ensure compliance and sustainable use of forest resources. The approval of the forest policy to establish sawmills, the Coloi-Suva forest nursery, and the identification of commercial species first took place in the 1950s. Mahogany and pine plantations were subsequently established in the 1960s and 1970s, providing an opportunity to develop pine processing facilities in the 1980s.

138. A National Code of Logging Practice was established in 1990 to protect forest workers and endeavors to control the negative impacts of logging on native forests and associated ecosystems. The code was later expanded to include environmental and forest silviculture aspects. In addition to requirements of the Forest Act, logging licenses are also required to comply with the conditions of the code. The code was revised in 2013 to ensure the sustainable harvesting of logs, and the Fiji Forest Harvesting Code of Practice (FFHCOP) was renamed.
139. The 1953 Forest Act was later repealed by the 1992 Forest Decree, a Decree relating to forest and forest produce emphasizing the utilization of forest resources. The need for the revision of the 1953 Act was to, amongst other things, strengthen the Ministry's role in increasing the membership and representation of the Forestry Board and enforcing stringent measures by applying increased fines and penalties to those who break the laws. Since its establishment, the 1992 Forest Act has been a major governing document in the forestry sector. This Act led to the formulation of the Forest Preservative Treatment Regulation 1992. The Fiji Forest Act (1992) is the primary law regulating forest use in Fiji. In 2007, the Forestry Sector reviewed its National Forest Policy, significantly focusing on sustainable forest management. It aimed to balance timber production, forest biodiversity conservation, and the promotion of forest ecosystem services, including the role of forests in addressing climate change mitigation and adaptation challenges as the basis for managing Fiji's natural forest resources. The policy promoted landowner involvement and a multistakeholder approach to forest and landscape management. It defined the critical stakeholders of the forest sector and their expected roles with an implementation and financing strategy.
140. Since then, extensive consultations have been carried out with all Stakeholders of the Forest Sector, resulting in the draft 2016 Forest Bill. The draft of the 2016 Forest Bill was introduced in September 2016; at the same time, the Ministry of Forests was created to address forestry issues in the modern era. The draft 2016 Forest Bill provides for the protection, management, development, and sustainable use of Fiji's Forest resources to provide social, economic, and environmental benefits to Fijians for the current and future generations. This Bill also enables the full implementation of the current Fiji Forest Policy of 2007 while addressing areas not covered in the 1992 Forest Act. It adopted a cross-sectoral approach, focusing on environmental protection and sustainable development rather than being confined to forest harvesting, as in the 1992 Forest Act. The draft 2016 Forest Bill further addresses the Outcomes of Fiji's National Green Growth Framework and key elements within Fiji's draft National Development Plan.
141. The revised forest decree (or Forest Bill 2021) has significant improvements; major ones include including the Permanent Secretary for Forests and a more detailed articulation of the role and responsibilities of the Conservator of Forests. The forest bill requires the forest policy to be revised every five years. It specifies the classification of Fiji's forest into three main categories: multiple-use forests, forest plantations, and protection forests. The bill also requires a national forest resource assessment every ten years. As a requirement for obtaining a logging license, all license holders and owners of forest plantations are now required to conduct their forest resource assessments, known as forest management inventories. The bill specifies two specific types of forest licenses: a special harvesting license for harvesting operations and a forest management license, which includes the licensing of forest plantations. A significant addition to the forest bill is the section on forest carbon trading, which specifies the conditions for implementing projects, programs, or activities involving the transfer of forest carbon rights.



Table 8: Forestry sector management, 2022 - Source: MoF Operational plan 2021-2022

Legislations	Regulations	Policies	Plans	Manuals
<ul style="list-style-type: none"> <li>Forest Act 1992</li> <li>National Research Bill</li> <li>Environment Management Act (EMA)</li> <li>Biosecurity Promulgation</li> <li>Native Land Trust Act 2012 (amended)</li> <li>Climate Change Act 2021</li> <li>Investment Fiji Act 2022</li> <li>State Lands (Amendment) Act 2022</li> </ul>	<ul style="list-style-type: none"> <li>Forest Sawmills Regulations 1968</li> <li>Preservative Timber Treatment Regulation 1992</li> <li>Forest Guard Regulations 1975</li> <li>Forest Fire Prevention Regulation 1972</li> <li>Environment Management (EIA Process) Regulation 2007</li> <li>Environment Management (Waste Disposal &amp; Recycling) Regulation 2007</li> </ul>	<ul style="list-style-type: none"> <li>Fiji Forests Policy 2007</li> <li>REDD+ Policy 2011</li> <li>Forest Certification</li> <li>Draft Forests Plantation Policy</li> <li>Fiji Climate Change Policy 2018-2030</li> <li>Public Private Partnership Policy 2019</li> <li>Draft Energy Policy 2013</li> <li>Fiji Rural &amp; Land Use Policy 2005</li> <li>Fiji NDC Implementation Roadmap 2017-2030</li> <li>Fiji 2020 Agriculture Sector Policy</li> <li>Policy for Gender in Agriculture Fiji (2022-2027)</li> </ul>	<ul style="list-style-type: none"> <li>National Biodiversity Strategy and Action Plan (NBSAP)</li> <li>Green Growth Framework (GGF)</li> <li>National Development Plan (NDP)</li> <li>National Adaptation Plan (NAP) 2018</li> <li>Forestry Strategic Development Plan (2017-2030)</li> </ul>	<ul style="list-style-type: none"> <li>Fiji Forest Harvesting Code of Practice (FFHCOP)</li> <li>Sandalwood Manual</li> <li>Nursery Manual</li> </ul>

142. There is a complex legal compliance framework<sup>44</sup> That controls all forest harvesting operations, which are conducted by the requirements of (or its successor):

- Forest Act 1992
- Fiji Pine Decree 1990
- Fiji Mahogany Industry Development Decree 2010
- Fiji Mahogany Act 2003
- Environment Management Act 2005
- Endangered and Protected Species Act 2002
- Biosecurity Promulgation 2008
- Coconut Industry Development Authority Act 1998
- Fijian Affairs Act Cap 120
- Land Conservation and Improvement Act Cap 141
- Native Land Trust Act Cap 134
- Land Development Act Cap 142
- Land Sales Act Cap 137
- State Lands Act Cap 132 and
- Surveyors Act Cap 260
- Property Law Act Cap 130

<sup>44</sup> <https://www.fao.org/faolex/country-profiles/general-profile/en/?iso3=FJI>

- Land Transport Authority Act 1998
- Health and Safety at Work Act 1996
- Factories Act Cap 99
- National Fire Service Authority Act 1994

143. The Forest Policy 2007 is not clear on the actual role of the plantation sector in achieving the stated goal of the “sustainable management of Fiji’s forests to maintain their natural potential and to achieve greater social, economic and environmental benefits for current and future generations.” While it describes the importance of natural forests in terms of the range of environmental services that are provided by natural forests and the sustainable use of the forest resources and timber harvesting, it needs to be more specific in describing how plantation forests can also provide these environmental services as well as providing an economic function for an industry that appears now to be heading towards a critical state.

144. The Fiji pine plantations were initially managed under the Fiji Pine Commission Act 1976. 1990, the pine plantation was privatized under the Fiji Pine Act 1990. The Fiji Pine Act makes provision for the incorporation of Fiji Pine Limited under the Companies Act, the establishment of the Fiji Pine Trust, the establishment of the Forest Industries Assistance Fund to help landowners with the development of their forest schemes, and the repealing of the Fiji Pine Commission Act. Fiji Pine Limited works in collaboration and aids landowners from whom the company leases its plantation lands; this collaboration is governed under the Fiji Pine Trust Rules 1990. Similarly, the Fiji Hardwood Corporation is governed under the Fiji Mahogany Act 2003, which establishes the provision for the development of the mahogany industry in Fiji, including harvesting and processing and the participation of landowners in its development. The participation of mahogany landowners is governed under the Fiji Mahogany Trust Rules 2005. Other legislations that govern the development of the Fiji mahogany industry include the Fiji Mahogany Industries Development Act 2010, providing for the restructuring of the mahogany industry to facilitate its further development about the interests of Indigenous landowners; the Mahogany Industry Licensing and Branding Act 2011 (MILBA) articulating the process for the licensing and branding of Fiji Mahogany but most important is the provision for Issuance of Licenses by the Mahogany Council for the purchase of Mahogany, and the harvesting Code of Practice for plantation grown mahogany and the Mahogany Industry Development Amendment Act (MIDA) of 2014, which excludes all mahogany outside of FHCL from the MIDA and gives the right to individual owners to harvest and sell their mahogany trees, but subject to the MILBA if harvested for commercial purpose.

145. As natural forests have to focus more on the provision of ecosystem services, conservation of biodiversity, and supporting rural livelihoods, the decision to proceed with the development of the Fiji Forest plantation policy is an indication of the recognition of the critical role of forest plantations in meeting Fiji’s future wood demands and the need for effective policies and strategies to set the direction of plantation development in Fiji. The primary purpose of the Fiji forest plantation policy is to guide the development and management of Fiji’s forest plantations in a coordinated manner, to ensure its sustainability, and to increase its contribution to Fiji’s social and economic development.

#### d. Forest’s sector performance and state support

146. “Guided by Fiji’s commitments to various conventions such as the Paris Agreement, United Nations Framework Convention on Climate Change, and the recent Seoul Forest Declaration, the Ministry is dedicated to protecting, restoring and sustainably use and manage forests as one of the building blocks for social, environmental and economic development.” Honourable Josaia Voreqe Bainimarama, Minister for Forestry (operational plan 2021-2022)

147. Fiji’s national tree-planting program to grow 30 Million Trees in 15 Years is one of the many initiatives and nature-based solutions contributing to Fiji’s recovery, prompting economic activity and empowering resource owners and industries while improving livelihoods. This goes hand in hand with Fiji’s Forest Emissions Reduction Programme Agreement, which the Government

signed with the World Bank in 2021 to offer results-based payments towards efforts to minimize carbon emissions and further reduce Fiji's already minimal carbon footprint.

148. The total budget for the Ministry is 17.7 million FJ\$ in 2022-2023, of which 10.9 million (61.6%) is for operating expenditure, 6.0 million (33.9%) for capital expenditure and 0.8 million (4.5%) as VAT<sup>45</sup>. The total budget represents an increase of 3.9 million FJ\$ (29.3%) compared to the 2021-2022 budget of 13.8 million.

Table 9: Ministry of Forestry budget summary 2021-2022 – Source: MoF Annual Operational Plan 2021-2022

SEG	SEG Particulars	Revised Actual 2020-2021 (\$000)	2021-2022 Revised Estimate (\$000)	Change (\$000)	Estimate 2022-2023 (\$000)
1	Established Staff	3,785.7	4,052.3	53.7	4,106.0
2	Government Wage Earners	1,380.4	1,291.9	12.1	1,304.0
3	Travel and Communications	400.3	286.1	20.0	306.1
4	Maintenance and Operations	1,203.6	941.0	189.0	1,130.0
5	Purchase of Goods and Services	1,048.1	607.8	179.2	787.0
6	Operating Grants and Transfers	832.0	798.1	150.0	948.1
7	Special Expenditures	760.2	2,219.4	131.1	2,350.5
	<b>TOTAL OPERATING</b>	<b>9,410.4</b>	<b>10,196.6</b>	<b>735.1</b>	<b>10,931.7</b>
8	Capital Construction	2,871.5	2,659.9	2,530.1	5,190.0
9	Capital Purchase	1,146.2	500.0	300.0	800.0
	<b>TOTAL CAPITAL</b>	<b>4,017.7</b>	<b>3,159.9</b>	<b>2,830.1</b>	<b>5,990.0</b>
13	Value Added Tax	458.3	469.3	301.4	770.7
	<b>TOTAL EXPENDITURE</b>	<b>13,886.4</b>	<b>13,825.8</b>	<b>3,866.6</b>	<b>17,692.4</b>

<sup>45</sup> MOF-Annual Operational Plan 2022-2023

Table 10: Forestry programmes and projects - Source: MoF Operational plan 2021-2022

Programme	Activities	Total Allocation by Activity (\$000)	Capital Projects within each Program/ Activity SEG 6-9	Capital projects Allocation (\$000) SEG 6-9	Desired Outcomes for Capital Projects
Policy and Admin	General administration and accounts.	1,956.0			
	Economic policy, planning and statistics.	233.4			
Forestry.	General admin.	1,711.3	Fiji Pine Trust. (R)	745.1	Sustainable management of Communally owned Pine plantations.
			Forest Subsidy	50.0	Support to forest based MSMEs
			APAFRI Subscription	132.5	Access to forest based research and technical assistance
			IUFRO Subscription	2.5	
			INBAR Subscription	18.0	
	Forest conservation and management services.	3,023.8	REDD+ (Fiji Govt.). (R)	500.0	To complete the Readiness Phase and implement the ERP
			REDD+ (WB). (R)	2,000.0	
			ArcGIS Subscription	40.0	Improve mapping of critical information
	Training and education.	461.3			
	Forestry Research and Development.	1,161.4	Pacific Week of Agriculture	150.0	Addressing forestry issues through dialogue and regional cooperation
			Sandalwood Development Programme.	100.0	Sustainable management of sandalwood
			Research and development of wood and non-wood species. (R)	500.0	Research & promote lesser known tree species for use by timber industries
	Forest product, trade and development.	2,066.7	Training Expenses	5.0	Skills & knowledge development for staff & stakeholders.
			Plywood Standard	1.5	National Plywood Standard developed and adopted.
			Upgrading of road at Nasinu. (R)	300.0	Improve road condition at Nasinu station

Programme	Activities	Total Allocation by Activity (\$000)	Capital Projects within each Program/ Activity SEG 6-9	Capital projects Allocation (\$000) SEG 6-9	Desired Outcomes for Capital Projects
			Upgrading of sawmill – timber utilisation division. (R)	300.0	Improve sawmill standard
			Purchase of laboratory equipment – timber utilisation division. (R)	300.0	Improve quality standards and service delivery
			Upgrade of office and forestry quarters. (R) C/U- MOE	400.0	Improve working and living conditions for staff.
	Extension and advisory services (harvesting and logging, forest planting and afforestation)	3,803.8	Reforestation of Degraded Forests (RDF) with indigenous & other species. (R)	3,300.0	Rehabilitate degraded/ vulnerable forest area and Improve Fiji's forest cover.  Revive local indigenous species.
	Monitoring, control and surveillance (harvesting & logging):	2,967.7	Monitoring, control and surveillance of logging Operations.	90.0	Enhance compliance level of operations.
			Utilisation of Waste Wood.	150.0	Enhance value adding on our timber products and reducing waste wood.
			Maritime Pine Development (Cicia, Gau and Kadavu). (R)	500.0 (H32) 200.0 (H50)	Revive the community pine development scheme.
	Forest parks, recreation and nature reserves.	307.0	Upgrading and maintenance of forest parks.	40.0	Improving forest park facilities to provide better services.
	<b>TOTAL</b>	<b>\$17,692.4</b>			

149. The Ministry of Forestry identified four strategic goals and six strategic priority areas for its Strategic Development Plan 2017-2030:

- SG1: Establish sustainable life cycle management of forest resources
- SG2: Improve the socio-economic impact of forests
- SG3: Contribute positively to the Global Environment
- SG4: Substantially improve service delivery
- SP1: Cohesive Legislation, Regulation, Policy, Guidelines & Compliance
- SP2: Enhance Sustainable Forests Management Frameworks and Implementation of SFM
- SP3: Capacity Building (Ministry & Stakeholders)
- SP4: Stewardship
- SP5: Forest Financing
- SP6: Organization Effectiveness

150. The outputs of the Strategic Development Plan 2017-2030 directly related to this project are:

- In SP2: Reforestation of Degraded Areas Programme implemented / 2 million Trees (2022-2023 target) planted by July 2023
- In SP3: One Non-wood Product Industry Developed by 2024
- In SP4: Agroforestry integrated into forestry and agricultural practices
- In SP5: Forest Trust Fund established

### 1.1.7 Competitive Advantage and Opportunities of plantations in Fiji

151. Log production at the primary level is dominated by pine logs (91%), followed by native (5%) and mahogany (4%). Analysis of the average annual production over five years (2017-2021) indicates that pine is at a critical harvesting trajectory over the limits of sustainable yields. On the other hand, native and mahogany production shows deficiency with room for significant improvement (see Table 11).

Table 11: 5-YR Production Against Sustainable Harvest Levels

	Estimated Sustainable Yield (cum/yr)	5 YR Average Production (cum/yr)	% Sustainable Yield
<b>Native</b>	100,000	27,487	27%
<b>Mahogany</b>	120,000	10,991	17%
<b>Pine</b>	400,000	476,938	119%

152. Competitive advantages generate more excellent value for a company and its shareholders. Generally, companies strive to secure a sustainable competitive advantage to ensure their competitors cannot neutralize such an advantage. In the interest of this analysis, we ask what the competitive advantage of Fiji's forest sector is, where products could be produced more efficiently and with the most significant opportunities. At the same time, which products or services currently produced in Fiji differ from our competitors' offerings and are considered superior?

153. Exports of pine wood chips from pine plantations slumped in 2019 and slightly recovered in 2020, but not pre-COVID conditions (see [Figure 10](#)). The decline in demand for pine wood chips may be attributed to global trade restrictions due to COVID-19. However, as global consumers transition to a paperless society, demand for wood chips from Japan/China will decline.

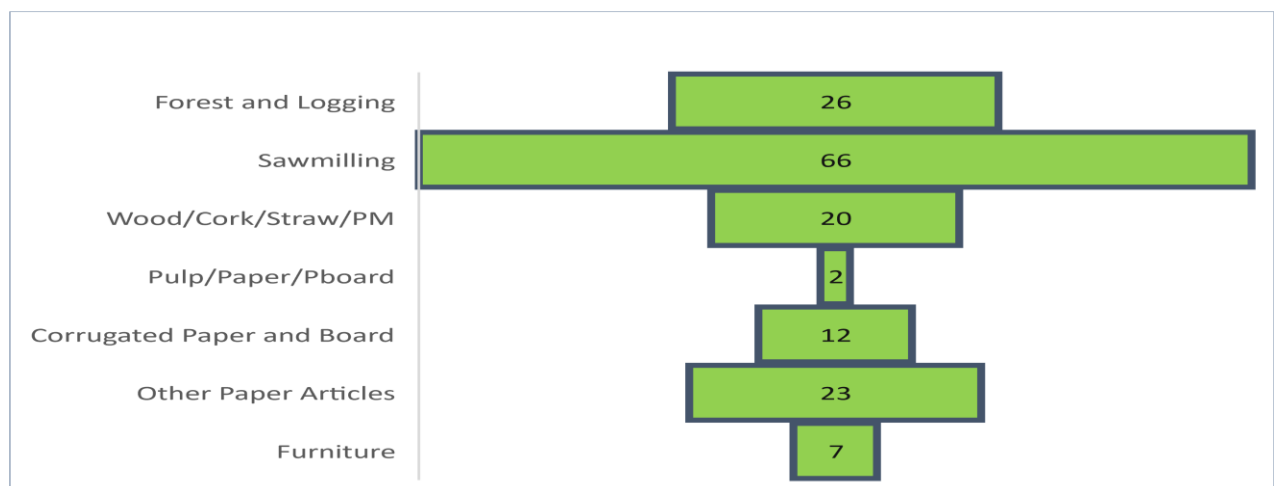
Table 12: Export of Wood Products (2018-2019) FJ\$ Million Source- The Ministry of Forestry Annual Report 2020-2021

Product	2018	2019p	2020p
Wood and articles of wood	94.6	59.0	76.6
Of Which – Woodchips pr particles	78.5	37.6	55.4
Mahogany	6.9	10.6	9.2
<b>Total Export</b>	<b>1,175.0</b>	<b>1,167.1</b>	<b>1,146.4</b>

P: Provisional

154. Despite the decline in wood chip export, pine log production continues to increase as Tropik Woods Industries Limited moves towards fully utilizing and improving the efficiency of its recently upgraded sawmill. Claiming to have a state-of-the-art integrated sawmill in Fiji, FPL and its subsidiary Tropik Woods Industries Ltd. continue to monopolize the pine subsector with a range of commodities from profile timber (lining, cladding, flooring, etc.), stress-graded construction material, wood chips as well as treated post/poles. In addition, with 100% Forest Stewardship Certification and a “Made in Fiji” label, the company is successfully penetrating export markets in the Pacific Island region, Australia, New Zealand, and beyond. The competitive advantage of the pine subsector includes its 100% FSC label and the recent upgrade of its production facility in Drasa, Lautoka. At the same time, a core competitive advantage for FPL is the commodity range that is unique to the company, including treated timber profiles where there is high demand for weatherboard cladding.
155. Fiji is home to the world's most extensive mahogany plantations. Harvesting of Fiji's mahogany plantations began in 2003. As indicated above (Table 11), the trend in mahogany log production is exploited at levels well below sustainable limits. However, it is contributing significantly to Fiji's foreign earning power (Table 12). Close consideration of the contribution of forest activities to Fiji's GDP indicates that the highest value in the production chain from logs to end products lies in the “sawmilling” process (see Figure 7). Noting the short period FHCL has been in business, perhaps it is time to invest heavily in sawmilling to capitalize on integrating downstream processes, as in the case of the pine subsector. The Ministry of Forestry fully supports the development of Forest Stewardship Council Certification for Fiji mahogany to secure a niche export market for high-end mahogany products. Under the current production levels discussed above, competitive advantage for the mahogany subsector would focus on ensuring 100% Forest Stewardship Council Certification for all mahogany plantations.

Figure 7: Average Value of Forest Activities 2018-2020 (FJ\$ million)



Source: (The Ministry of Forestry 2020-2021 Annual Report)

156. The Ministry of Forestry Operational Plan 2021-2022 listed the utilization of wood waste/residues from harvesting and timber processing facilities as one of the key outcomes to supporting commercial and business development. Using 100% forest products is an important goal to

ensure total efficiency and zero waste of natural resources/raw materials. As the mahogany subsector continues to increase its productive efficiency, the opportunity to utilize 100% of such valuable resources is considered seriously.

157. The performance of native forest log production has declined for the above reasons. The Ministry of Forest aims to slowly phase out harvesting from native forests by focusing on managing and harvesting planted forests. The Ministry of Forestry is committed to launching a plantation policy to encourage private sector investment in plantation establishment. Conducive and enabling conditions for such arrangements are being set up under the REDD+ land leasing/rent process. The Ministry of Forestry also hopes that reducing harvesting pressure on native forests will support assisted natural rejuvenation of forest ecosystems, thus increasing carbon removals.
158. Weaving all the information and discussions above into the Value Chain framework, adding known costs, average prices of commodities, and the value of each forest activity as a reflection of its contribution to Fiji's GDP, it is noted that although the level of investment to enter harvesting activity is lower than sawmilling, the maximum value and profit is associated with sawmill activity. Barriers to entry in the Fiji forest sector are economies of scale needing high capital investment. At the same time, the industry will need assistance from the government to secure market access, which is driven by research and development in designing new product lines.
159. In alignment with Gereffi (1999) (see Error! Reference source not found.), the value chain of Fiji's forest sector predominantly needs designing and marketing to drive demand down to primary production. Without a vibrant market for the end product, there is limited demand for raw materials and a continual decline in the primary sector. Given the many players, dual market structure, and a wide range of commodities in the value chain, each company would consider economies of scope rather than economies of scale to cut costs and maximize returns. Forest products are non-durable, with the leading network links being trade-based, where ownership of firms in Fiji's forest sector is locally owned (family-owned) businesses. The forest sector value chain is, therefore, a buyer-driven commodity chain.
160. The business model presented by Fiji Pine Ltd. for managing pine forest plantations that are linked to downstream processes and integrate other products, such as the sale of energy to the national grid, is a model that other plantation owners may need to consider carefully to build a competitive advantage in the sector.
161. With a continuous decline in native log production, the opportunity exists to consider developing non-wood timber products sourced from native forests or cultivated from degraded landscapes. NTFPs are commonly gathered from natural forests, while some may be produced with varying degrees of cultivation and domestication (Wilkinson & Elevitch, 2000)<sup>46</sup>. The Ministry of Forestry Business Guide 2022-2023<sup>47</sup> highlights NTFP as one of the seven (7) investment opportunities in the forest sector.
162. Recent interventions through REDD+ and the Emission Reduction Program present opportunities for Fiji to restore degraded landscapes and generate new revenue streams through emission reduction carbon credits. Fiji has identified a potential network of terrestrial protected areas under the GEF PAS 4 Forest and Protected Area Management. These key biodiversity forest areas are well-positioned to explore the development of biodiversity credits that can supplement ER credits.
163. In the interest of this assessment, we will use the term "nontimber forest product," which means resources of significant value to human society that **arise from the forest yet are not based explicitly on the wood** that is produced to **secure economic well-being of rural tribal communities** living in and around forest areas (see Box 1). NTFPs are assumed to entail micro, minor, or medium-scale trade producing domestic or export commodities. Further, it is believed

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<sup>46</sup> Wilkinson, K.M.; and C.R. Elevitch. 2000. Nontimber Forest Products for Pacific Islands: An introductory guide for producers. Agroforestry Guides for Pacific Islands #3. Permanent Agriculture Resources. Holualoa, Hawaii, USA. Website: <http://www.agroforestry.net>

<sup>47</sup> Fiji Government. 2022. The Ministry of Forestry Business Guide.

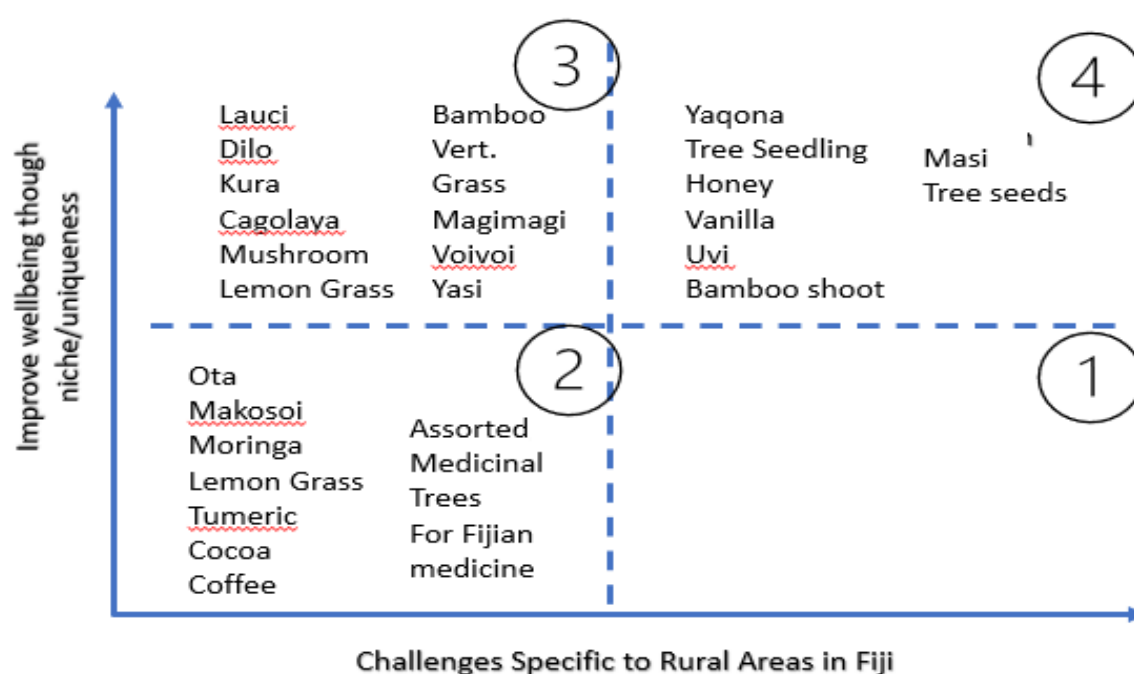


that NTFPs have no or limited access to capital, but meeting environmental, social, and economic household needs is beneficial.

#### e. Ranking NTFP on Challenges and Opportunities

164. The first tool used a quadrant where the x-axis represents challenges specific to rural MSMEs in Fiji. In contrast, the y-axis represents the opportunity to improve well-being through the implementation of NTFP intervention in rural areas (see
165. Figure 9). NTFP commodities with low challenges and high opportunities (Quadrant 3) include medicines, perfume, oil, plants for food, and handicrafts. The local names of these NTFPs are Candlenut, Dilo, Kura, Cagolaya, Mushroom, Lemon grass, Bamboo, Vetiver grass, Magimagi, and Voivoi. Commodities classified into this group are high in demand and have tremendous opportunities but face barriers such as supply consistency and quality.
166. Commodities with high challenges and opportunities include Kava (Yaqona), assorted Tree Seedlings, Honey, Vanilla, assorted Yams (Uvi) species, Bamboo Shoots, Masi, and various forest tree seeds. These commodities are considered challenging because their markets are volatile and driven by external factors such as international regulations (Yaqona), policy direction to replant trees (tree seedlings), diseases (honey), and others. Market prices for these commodities are high yet unstable. Each commodity is known to have high demand and higher rewards (market price) than those commodities listed in Quadrant 3. The above ranking indicates that the ideal selection for low-hanging intervention would fall where challenges and opportunities are low - in Quadrant 3.
167. Commodities that fall in Quadrant 3 include Candlenut, Dilo, Kura, CAgolaya, Bamboo, Magimagi, Voivoi, and Yasi. See
168. Figure 9.

**Figure 9: Using Quadrant to the Rank entry point for NTFP**



169. The identified priority value chains were further discussed and confirmed in workshops with key stakeholders (see Appendix 6 and 7). In alignment with the categorization of NTFPs, Appendix 7 presents a detailed assessment of the following NTFPs (see Table 14).

Table 14: Selected NTFP Case Study

Category	Commodity Assessed	Rationale
Handicraft	Voivoi Magimagi Masi	Involves over 90% of women in rural and some 50% of women in urban areas
Food	Ota	Involves women folk in rural areas; low challenge, not unique
Medicine	Kura	High demand, low challenges
Perfume & Oil	Candlenut Dilo Yasi	High global demands, high potential for local engagement
Tree Nursery	Assorted Tree Seedlings	Involves over 70% of women in rural areas
Landscape - Agroforestry	Bamboo Wood waste	At the infancy stage, with high potential

### 1.1.8 SWOT Analysis of the Forestry Sector

Strengths	Weaknesses
<p>Large forested areas (~60% of total land area) with 87% of natural forests</p> <p>Rich biodiversity still existing in forests of Fiji</p> <p>Recognition of importance of forest goods, services on national, local and public level</p> <p>Long forestry tradition</p> <p>Existing core budget (Forest fund) for forestry investments</p> <p>Fiji has advanced the mainstreaming and implementation of climate actions in forestry sectors including REDD+ and mainstreaming interventions to strengthen the resilience of communities.</p> <p>Strong mandate of the Ministry of Forestry</p> <p>National Forest Monitoring System existing</p> <p>Annual exercise of Forest Cover change detection</p>	<p>Lack of awareness, capacities and coordination for an integrated land-use planning and utilization especially at landscape level</p> <p>Lack of capacity for effective monitoring and enforcement of existing policies and regulations related to commercial and sustainable management practices</p> <p>Lack of long-term financial incentives to avoid converting forest to other land use</p> <p>Lack of access to technologies and finance to implement FLR</p> <p>Unclear and insecure land tenure for forested lands</p> <p>Lack of female participation in decision making</p> <p>Underdeveloped value chains for climate resilient forestry products</p> <p>Lack of institutional and regulatory support for forest products industry leading to a lack of quality control and trust and demand of consumers</p> <p>Pressure towards further deforestation from population growth and the demand for new settlement areas, and greater agricultural production for food security.</p> <p>Limited access to NTFPs markets, especially for rural communities, only few NTFP are marketed e.g. noni (<i>Morinda citrifolia</i>) and sandalwood (<i>Santalum yasi</i>)</p> <p>Non-monetary benefits are not reflected in the national or sectoral accounting system.</p>
Opportunities	Threats
<p>Forestry recognized as key sector for CC mitigation and adaptation, as well as green economy</p> <p>Significant potential to increase resilience as well as productivity of forests</p> <p>The management of productive plantations and their extension has a significant potential for high value timber supply and rural development</p> <p>There has been encouragement for the establishment in Fiji of a valuable furniture industry and other value-adding processes in order to provide higher value return.</p> <p>Revenue from forestry does not comprise a high percentage of GDP, but is expected to remain a significant driver of growth in the future.</p> <p>FLR approach allows for climate adaptive management of natural resources from Ridge to Reef for the benefit of local sustainable development</p> <p>Opportunities for stronger value and supply chains for NTFP have been identified (e.g. sandalwood for carving, sandalwood oil and incense stick; whitewood as a paneling timber)</p> <p>Existing FDB forestry financial instruments</p> <p>Ongoing National Forest Inventory 2021/2022</p> <p>Ongoing review of the Forest 1992, a new forest harvesting regulation will be developed, review of the 2011 REDD+ Policy carried out, draft Climate Change Act ongoing</p>	<p>Predicted climate change and extreme climate-related weather events</p> <p>Changes in main species composition as well as emergence of invasive species due to climate change</p> <p>Reduced productivity, resilience and capacity for natural regeneration of forest stands due to climate change</p> <p>Customary land owners and the private sector do not recognize the value of FLR and SFM</p> <p>Development of plantation areas meets constraints in financing and bears environmental risks, especially if expansion goes ahead at the expense of natural forests.</p> <p>The extent of deforestation (forest and vegetation clearing) and its impact on the surrounding environment remains a serious concern</p> <p>Lack of reforestation by the Fiji timber sector is a threat to future climate change mitigation outcomes</p> <p>Fragmentation of land suitable for afforestation and reforestation</p> <p>Low capacity of local forest owners, users, enterprises and contractors to reach the planned number of hectares</p> <p>Difficulty to engage the private sector in the project</p>

### 1.1.9 Relevant Projects (past and ongoing) in forest sector

170. Table 7 highlights past and ongoing development projects/programs in the forest sector. This comprehensive overview allows for a better understanding of the various initiatives and collaborations within the forest sector.

171. Engagement with the ecosystem of projects implemented in country and the region is a key success factor that aim at building on and reinforcing a variety of ongoing initiatives by fostering the exchange of information, best practices and success stories across projects and partners by actively contributing to improved collaboration and coordination across technical partners. Representatives of projects and initiatives identified as contributing to the overall goal and concrete activities of this project will carefully be involved all along project implementation and will be encouraged to facilitate participation of their counterparts to the events (trainings, capacity development workshops) organized by the projects. They will be consulted locally as deemed relevant for guidance in the implementation of activities.

Table 15 Past and ongoing development projects/programs relevant for the forest sector.

Project / programme	Brief description	Time period	Implementing agency / Funding source / National Partner(s)	Complementarities/Synergies
Fiji Coral Reef Resilience Project (CRRP)	This project's concept note has been submitted to the GCF. It aims to ensure the continued productivity of reef and connected coastal ecosystems by reducing local threats from overfishing, land degradation, and pollution to ensure these reefs continue to withstand anticipated ocean warming and acidification and continue to provide the necessary services communities depend on.	2023-	GCF WWF	The project will work with CRRP as a sister project for a R2R ecosystem restoration and resilience building including complementary regulatory and policy frameworks and joint development of financial mechanisms.  An in-depth collaboration has been established between the projects as also further outlined in Appendix 9 in order to enhance ecosystem services from R2R
LoCAL: Supporting Resilient Island Communities in Tuvalu, the Solomon Islands, Fiji and Vanuatu through the Local Climate Adaptive Living (LoCAL) Mechanism.	The project's concept note has been submitted to the GCF. The LoCAL Pacific facility is an Enhancing Direct Access (EDA) programme that will strengthen the climate resilience of local communities and economies by improving the capacity of communities and local governments to access and use financing for adaptation investments.	2023-	GCF UNCDF/SPC	GCF Fiji FLR, especially its proposed financial mechanisms will complement LoCAL that focuses on strengthening services for CCA and DRR and climate proofing of infrastructure and will mainly work with local governments.  Coordination with the project will be established in order to provide general collaboration in the frame of the GCF and also to further increase and exchange on resilience approaches of local communities and to adapt financial mechanisms.
Emission Reduction Programme (ERP) and ERP Agreement (ERPA) 2021	The ERPA advocates the issuance of REDD+ Leases and REDD+ Licenses to secure long-term tenure and forest permanence for emissions reductions and removals (ERR) activities.  The Emission Reduction Programme (ERP) supports sustainable development and management of Fiji's forest to realize the full potential of the forest sector through reduction in deforestation and forest degradation, promoting sustainable forest management, conservation, and afforestation and reforestation to contribute to climate mitigation while meeting the demands of timber and non-timber forest products; maintenance of ecosystem services and an increase in the resilience of local communities to the impacts of climate change. The ERP sets specific targets to achieve in 20 districts in the three main islands.	2021-	WB MoF	The GCF Fiji FLR project will further build on the successes and experiences of the ERP project and further strengthen community involvement in FLR for climate action activities.  The GCF project proposal incorporate lessons learned from the initiative related mainly to the following main takeaways: (i) Fiji's integrated land use planning addresses deforestation and forest degradation drivers, illustrating the need for multi-sectoral approaches in forest carbon initiatives; (ii) The focus on both emission reduction and livelihood enhancement for forest-dependent communities highlights the importance of incorporating socio-economic factors into climate mitigation efforts; (iii) Pursuing adaptation co-benefits alongside emission reduction goals addresses multiple climate challenges and enhances program impact; (iv) Well-planned, inclusive workshops with diverse stakeholders are essential for the success of forest carbon initiatives, underscoring the value of participatory decision-making; (v) Building local expertise, especially among Indigenous communities, is crucial for long-

				<p>term sustainability; (vi) Effective data collection and analysis are vital for assessing and improving emission reduction outcomes.</p> <p>The GCF project supports the climate change mitigation targets of the ERP although not directly supporting transfer of title to emission reductions and result-based payments. It will complement the ERP in developing District Land Use (IDLUP) and Management Plans (ILUMP), provide technical assistance to communities and the private sectors (with technologies and access to finance as well as community-based monitoring and reporting. The carbon mechanism is a source of financing for sustainable FLR, SFM and ecosystem management.</p>
Reforestation of Degraded Forest Areas	<p>This reforestation initiative is aiming to utilize degraded forests to address broad thematic areas of need including carbon stock enhancement, connecting forest corridors, coastal restoration, and food security, flood mitigation stabilization of riparian system, catchment restoration, enrichment planting, community woodlots and industrial planting. Creating future opportunities by:</p> <ul style="list-style-type: none"> <li>• Supporting plantation development for future timber needs</li> <li>• Supporting the restoration of degraded forests for its important environmental services.</li> </ul> <p>This RDF project has reforested 600ha of degraded forest areas since the introduction of the RDF program in Fiji.</p> <p>In 2017 – 2020 RDF program will continue to maximize on its 500ha annual targets by establishing more plantations on the maritime islands and also Vitilevu &amp; Vanualevu.</p> <p>Therefore this RDF program will be an on-going project in the future to allow Fiji's indigenous forest areas to recuperate from its drastic exploitation due to the past conventional logging techniques and agricultural developments</p>	2017-2020	MoFF funded	The project will incorporate lessons learned concerning R2R approaches and investments and ensure coordination in achieving long-term sustainability.
Strengthening the Adaptive capacity of Coastal Communities in Fiji to Climate Change through Nature-Based Seawalls	The project will demonstrate transformational adaptation measures in communities by protecting them from climate impacts that negatively influence their livelihoods and safety. Project interventions will increase resilience of communities and enable them to adapt to climate change, enhancing their economic outlook and livelihoods		AF Pacific Community (SPC)	The project will incorporate lessons learned and best practices concerning the use of nature based solutions as cross cutting tool to address climate change related issues and will scale up successful NbS coastal protection approaches across Fiji.
Partnerships for Coral Reef Finance and Insurance in Asia and the Pacific	Utilizing insurance products to increase resilience of coastal ecosystems is innovative but it also naturally leads to questions relating to how this type of insurance product will work and what its role could be.	2021-2024	GEF ADB	The project will incorporate lessons learned concerning the insurance products offered and how they can be implemented within the FLR and agroforestry sector
Community-based Integrated Natural Resource Management Project	The project aims to reduce land degradation, enhance carbon stocks and strengthen local livelihoods in Ra and Tailevu provinces of Fiji, by promoting community-based integrated natural resource management at landscape level. Through Farmer Field Schools, the project seeks to conduct on-ground training programs across 60 villages in the province, on Climate Smart Agriculture practices/techniques. The project will work with Forest Training Centers to conduct training programs on agroforestry, forest protection and improved forest management measures.	2019-2023	GEF FAO	The project will incorporate lessons learned and best practices concerning the use of nature based solutions as cross cutting tool to address climate change related issues and will scale up successful NbS coastal protection approaches across Fiji.

The GEF Pacific Ridge to Reef Programme	The Pacific Islands R2R National Priorities - Integrated Water, Land, Forest and Coastal Management to Preserve Biodiversity, Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods (or GEF Pacific R2R Programme) provides provide an opportunity for Pacific SIDS to develop and implement truly integrated approaches for the sustainable development of island economies and communities. The programme is structured around 1) National R2R demonstrations; 2) Improved governance for integrated, climate resilient land, water, forest and coastal management 3) Regional and National/Local R2R indicators, Monitoring and Evaluation and Knowledge Management; and 4) Regional Programme Coordination	2015-2018	GEF UNDP, UNEP, FAO	The project will build on and complement Fiji's R2R Demonstration in Waimanu Catchment - Rewa River and Delta that aims to 1) Strengthen capacity for watershed assessment, mapping and planning; 2) Reduce environmental stress targets on municipal waste and aquifer pollution, terrestrial and wetland habitats, catchment protection measures by implementation of priority measures and best practices reflected in the Watershed Management Plan and 3) Develop the enabling environment for the replication and scaling-up of best practices in watershed management as set out in the Watershed Management Plan.
Forestry and Protected Area Management in Fiji, Samoa, Vanuatu and Niue (GEFPAS-FPAM)	Reduce or reverse forest and land degradation in and around protected areas Activities -develop land use plans -establish demonstration farms -Training -Production of video documentaries	2011-2019	FAO- GEF PAS	The following main lessons learned and takeaways have been incorporated in GCF project design: (i) Training local community leaders as biodiversity conservation champions and hiring local staff in pilot areas is highly effective; (ii) Projects promoting forest protection and Sustainable Land Management (SLM) should highlight local, national, and global benefits, including climate change adaptation and mitigation; and (iii) More project funds should be allocated to developing income-generating activities with thorough economic assessments to compensate land users for reducing harmful activities in protected areas.
Fiji's Action Against Desertification	Action Against Desertification supports the <u>UNCCD National Action Programme</u> for Fiji, aiming to build the resilience and increase the productivity of forest landscapes, while improving the livelihoods of the local population through the restoration of degraded land and the sustainable management of natural resources.  Results:  Reforestation of 1,133 hectares of land and which contributed to Fiji's 30 Million Trees in 15 Years (30MT15Y) initiative; 2. assisted with the setup of backyard gardens in rural schools and communities with the provision of training, farming tools and seeds; 3. provided beehives and relevant harvesting and value-adding equipment, which have contributed to sustainable livelihood and revenue generation for communities, including women and youths; 4. established 35 project sites across Fiji which have directly benefited about 3,360 Fijians and indirectly benefited up to 2940 more Fijians in 29 neighbouring sites; 5. supported the Ministry's natural disaster rehabilitation programme by providing planting materials and gardening tools	2014-2019	EU FAO	The lessons learned were integrated in the GCF project proposal in particular related to the following main takeaways:  There is high potential to combine ecological restoration with socio economic development, when involving local communities. Livelihood initiatives like beekeeping and vegetable growing were key aspects of the project when implementing restoration activities.
The Reforestation of the Degraded Foothills of the Sugar Belt - Reforest Fiji	To improve the watershed management in the sugar cane belt of Viti Levu Island and to generate community income through Reforestation. Activities -Forest establishment (demonstration plantation, protection forest, production forests and woodlots) -forest maintenance -tree seedling production -training	2014-2018	European Union	The GCF project has integrated lessons learned from the project related forest establishment and maintenance and seedling production.
The Paris Agreement in action: upscaling	The project enhances regional & national capacity for large-scale FLR programs, crucial for achieving countries' NDCs. Forest-based	2018-2024	IKI / FAO	Following lessons learned have been integrated in project design: NDC contribution of FLR can be enhanced by focussing on participatory planning,

forest and landscape restoration to achieve nationally determined contributions	options, including REDD+, play a key role in joint mitigation and adaptation efforts, offering both carbon and non-carbon benefits. Aligning with existing regional FLR initiatives under the Bonn Challenge, the project aims to scale up restoration impacts, contributing to the achievement of NDCs.			linking restoration to livelihoods, adapting to economic shifts, regional collaboration, combining mitigation and adaptation, integrating national policies, capacity building, innovative financing, and aligning with broader national goals for sustainable development and climate action.
Nakauvadra Community Based Reforestation Project	<p>Restoration of 1,135 ha along the Southern and Northern slopes of the Nakauvadra Range. The Nakauvadra Range, a 11 387ha forest refuge has been designated as a Key Biodiversity Area (KBA) and is earmarked as a priority site in Fiji's proposed protected area network.</p> <p>Involves cash payments for tree planting and purchase of seedlings from tree nurseries managed by members of the local communities, combined with in-kind benefits in the form of additional revenue generating activities. Community Conservation Agreements commit the landowners to look after the planted trees for 30 years. No lease payments are made to landowners as the trees belong to them. Funds distributed directly to village committees on account of active participation in planting activities are shared to individuals that contribute to restoration activities. Traditional meeting structures (one with heads of LOUs where all villages attend) are used to provide the necessary oversight in the distribution of benefits.</p>	2013-2018	CI/Fiji Water Foundation	Lessons learned related to the involvement of communities to protect key biodiversity areas have been integrated in the project design.
The Sovi Basin Protected Area	<p>The Sovi Basin is Fiji's largest remaining undisturbed lowland forest in Fiji and it provides essential ecosystem services to surrounding communities and downstream provides freshwater to 70,000 people in the capital city of Suva. Recognized as one of the highest priority areas for conservation in the Polynesia-Micronesia area, the Sovi Basin has high levels of diversity, endemism and globally threatened species.</p> <p>Secured under a Conservation Lease issued by TLTB to the National Trust of Fiji (NTF) under a co-management system in partnership with landowners. Sovi Basin is funded under a USD 3.9 million Trust Fund established in 2012. The paramount chief of each of the communities surrounding the Sovi Basin Protected Area signs a Community Conservation Agreement committing to protect and monitor the forest in exchange for FJ\$ 10,000/year for community development designed to give benefits to everyone in the village.</p>	2012-	Fiji Water Carbon	Lessons learned regarding to the integration of ecosystem services in forest leases have been integrated in project design.
The Kilaka Forest Conservation area	A 99-year forest conservation lease covering 402 hectares of natural forests in the district of Kubulau on the island of Vanua Levu. It is a collaboration between the Kilaka landowners and Wildlife Conservation Society. The management plan for the Kilaka forest conservation area was derived from the Kubulau EBM plan and was endorsed by the Ministry of Forestry, the ITLTB, the Bua Provincial Council, and the Kubulau resource management committee. The Kilaka forest conservation lease pays a set annual amount of money to the land-owning community for the 99 years duration of the lease period.	2012-	WCS CI	
Drawa Rainforest	The Project aims to conserve mature indigenous rainforest through avoiding forest degradation, by means of legal protection of	2012 - 2042	Nakau Programme Pty Ltd	The project will build on the lessons learned from the implementation of the Drawa Rainforest Conservation Project that protects 4,120 ha of



Conservation Project	forest. The project activity involves termination of baseline logging activities and placement of Project Area into a protected reserve.			tropical rainforest in Vanua Levu and especially on the supported NTFPs spin-offs. The project will expand the scope of these interventions that were limited to 120 households
Emalu – REDD+ Pilot Site	<p>This is a pilot project under Fiji's national REDD+ strategy. The project examines the potential of sustainable forest management (selective harvesting) in Mataqali's forests and of conservation of forests to enhance carbon stocks and to offer a viable alternative to logging. These include: a forest carbon survey, a biodiversity survey, a land use survey, a socio-economic survey, and a cultural mapping survey.</p> <p>With an area of 6,809 ha of predominantly pristine forest was leased in 2012 for 99 years as the REDD+ Pilot Site for Fiji with a condition that is handed over to the landowners in the 30th year. The Emalu land owning unit are currently receiving monetary benefits from the lease through TLTB as well as non-monetary benefits through alternative livelihood projects.</p>	2012	Fiji National REDD+ Programme	The project will incorporate key takeaways from the REDD+ pilot project concerning MRV and baseline studies informing components 3 and enabling community-based MRV.
The Drawa Block Forest Community Cooperative (DBFCC)	Established in 2011 with a 30-year REDD+ lease with right to renewal for two consecutive 30-year periods from TLTB for the conservation of the Drawa forest. The DBFCC involves cash benefits as lease payments to the landowners with remaining carbon funds being shared as additional cash payments to the landowners as well as a women's group and a youth group. In addition, the local communities' benefit from livelihood projects that are paid from non-carbon community development support funds received from other philanthropic donors.	2011-2041	REDD+	

Table 16: key lessons learned from previous projects in forestry sector

Key lesson learnt	Brief summary
Forestry sector at the centre of climate change adaptation and mitigation strategies	Need to incorporate Climate Adaptive Silviculture into current forest management practices to exploit multiple benefits of the sector for sustainable development of whole society.
Planning of project	The project scope and intervention areas should match available funds to prevent the fragmentation of activities. Project designers tend to include as many potentially relevant elements as possible, limiting the success at prioritizing and focusing activities and strain limited local implementation capacities.
stakeholder engagement is crucial.	Projects benefited from diverse stakeholder workshops that included policymakers, ministry officials, private companies, NGOs, and indigenous landowners. This helped build networks for feedback and collaboration.
Involving international organizations can be valuable.	Programs like REDD+ in Fiji benefited from partnering with international agencies to spread knowledge and learn from regional experiences
"Learning by doing" approaches are effective.	Providing practical training and pilot projects helped stakeholders gain hands-on experience in areas like deforestation prevention and conservation.
Long-term, persistent efforts are needed for institutional change.	Advancing natural resource management practices and policies requires sustained effort over time to achieve cultural and attitudinal shifts within organizations and communities.
Regular site monitoring is important, especially for reforestation efforts..	Close monitoring of tree planting sites is needed to ensure momentum and address issues like weed control
Communication	Clear communication between project teams, responsible parties, and government ministries needs to be prioritized.
Integrated Management	Integrated community reforestation management requires support from local governance structures for advocacy and reinforcement of forest conservation messages.
	Continuous engagement and dialogue with communities helps build trust and relationships over time.
	Reforestation and afforestation activities should be complemented with other measures to address issues like soil erosion and water management in catchment areas.
	There is a need to shift beyond just tree planting to a wider view of catchment area and forest landscape management.
	Careful selection of deliverables is crucial when working with communities. Community views and reactions may change over time, so flexibility is important.

## 7 Renewable Energy and Forest nexus

172. As a SIDS, Fiji faces unique energy challenges due to its geographical isolation and vulnerability to climate change. Despite efforts to transition to renewable energy, Fiji still relies heavily on imported fossil fuels, particularly diesel and heavy fuel oil. Seventy-one percent of the Total

Energy Supply is derived from Fossil fuel; the remaining 29% of Renewable Energy Sources (RES) are mainly covered by bioenergy (65%), Hydropower (34%), and solar energy (1%).

173. Current Challenges: High reliance on imported fossil fuels remains a central issue for the energy sector, impacting Fiji's economy through high and volatile fuel prices. Fiji's energy security is threatened by climate change impacts, such as dry periods affecting hydropower generation and flooding causing infrastructure damage. The country's dispersed islands make it challenging to provide an affordable and accessible energy supply to all areas and upgrade the grid infrastructure.
174. The country has a relatively high access to electricity with 92%. Rural areas, however, face greater challenges, and with stable electricity access, and even in areas with grid connection, high costs, and community inequalities prevent some from achieving reliable electricity access. Fuelwood as an energy source is still important in rural areas and can lead to local effects of forest degradation. However, its overall degrading effect declines significantly as modern fuel adoption increases. The migration of families to urban areas in search of employment, the increase in the use of modern fuels such as electricity, liquid petroleum gas (LPG), and kerosene, and the spread of electrification to rural areas reflect the move to other fuels. According to estimation, the total fuel wood consumption decreased, in fact, from 61 kt to 35 kt from 2007 to 2017. In total 41,928 Households still utilized fuelwood in 2017 (84% from rural areas), and the average consumption ranged from 378kg/hh/a in urban areas to 927kg/hh/a in rural areas.
175. The sustainable development of Energy plays a fundamental role in Fiji's Low Emission Development Strategy 2018-2050, which envisions deep decarbonization of the economy, including all modes of transport, electricity generation, and energy demand. Specifically, four scenarios are studied in the LEDS (GoF, 2018):
  - i. A "Business-as-Usual (BAU) Unconditional scenario – (BAU<sub>uncond</sub>)," reflects the implementation of existing and official policies, targets, and technologies that are unconditional in the sense that Fiji would implement and finance them without reliance on external or international financing.
  - ii. A "BAU Conditional scenario – (BAU<sub>cond</sub>)," which reflects the implementation of existing and official policies, targets, and technologies that are conditional in the sense that Fiji would rely on external or international financing to implement mitigation actions, thus this scenario would have higher ambition than "BAU Unconditional."
  - iii. A "High Ambition scenario – (HA)" projects ambitions beyond those already specified in policies, relying on the adoption of new, more ambitious policies and technologies and availability of additional financing to implement mitigation actions, and achieves significant emission reductions by 2050 compared with the business-as-usual scenarios.
  - iv. A "Very High Ambition scenario - (VHA)" projects ambitions well beyond those already specified in policies, thus relying on the adoption of new, significantly more ambitious policies and availability of new technologies and additional financing to implement mitigation actions, and in which most sectors achieve net zero or negative emissions, by 2050.
176. A range of energy sources and technologies are considered in LEDS, as seen in Table 13. One renewable energy source considered in the report is bioenergy which encompasses but is not limited to landfill gases, bioenergy from wastewater treatment plants, biogas digesters, and biomass power plants (BPP). The feedstock sources used in biomass power plants could be agricultural residues, forest and sawmill residues, and others, as shown in Fig. 1(a). In addition, various technologies, as shown in Fig. 1(b), could be used for bioenergy generation; some include direct combustion, pyrolysis, and gasification (Sugathapala, 2022). For BPP, it is crucial to assess resources and supply them. This document analyzes the resources available for BPP operation based on the data already published or in the public domain. It is to be noted that the supply chain of biomass feedstock from the point of generation to the biomass power plants needs to be strategically planned where potential suppliers, landowners, and truckers, are part

of the planning and consultation process and aware of the specific fuel (in terms of quality and quantity) needed by BPP.

Table 17 Total installed capacity for different scenarios for on-grid generation. Source: (GoF, 2018)

	Capacity additions (MW) for different scenarios			
	VHA	HA	BAU <sub>cond</sub>	BAU <sub>uncond</sub>
<b>New Biogas Plant Vuda</b>	1	1	1	0
<b>New Biomass Plant</b>	256	166	136	22
<b>New W2E Plant</b>	10	10	10	0
<b>New Solar PV</b>	522.8	322.8	272.8	222.8
<b>New Hydro</b>	434.7	284.7	234.7	0.7
<b>New FSC</b>	90	90	18	0
<b>New Geothermal</b>	350	150	52	0
<b>New Wind</b>	350	200	150	0
<b>New HFO</b>	0	0	105	105
<b>New IDO</b>	2	2	107	142
<b>Total</b>	2016.5	1226.5	1086.5	492.5
<b>Total Biomass-based</b>	267	177	147	22
<b>% of biomass capacity</b>	13.2	14.4	13.5	4.5

#### 1.1.10 Energy sector's Institutional set-up, strategies, and Policy Framework

177. The energy sector in Fiji involves multiple institutions with overlapping responsibilities. The Department of Energy (DOA) oversees energy strategies and plans for energy efficiency goals. Energy Fiji Limited (EFL), previously known as the Fiji Electricity Authority (FEA), is the electricity producer and distributor. Additionally, the Commerce Commission operates as a body regulating electricity rates and ensuring access to the power grid across the region. Two other important bodies are the Ministry of Public Enterprises & Public Sector Reform, which supervises the business operations of EFL as a government-owned entity, and the Prices and Income Board, which manages the prices of petroleum products.
178. The setup of organizations is quite intricate, and there are initiatives to enhance cooperation and clarify duties. The National Energy Policy (NEP) spanning from 2023 to 2030 emphasizes the need for leadership and coordination by the Department of Energy while also focusing on creating an enabling environment for private capital infusion into the energy domain. The policy also highlights the importance of increased collaboration between sectors and governments. The NEP also outlines a plan for the country's energy growth to create a sustainable energy sector that is cost-effective and environmentally friendly for all Fijians, emphasizing five core areas, which include ensuring energy security and resilience, promoting energy access and equity, focusing on energy sustainability and efficiency and enhancing energy governance.
179. Related to renewable energy, Fiji focuses on boosting the country's energy capabilities and decreasing reliance on imported fossil fuels. The plan sets goals such as attaining 100% electricity production by 2030 and achieving net zero emissions by 2050. It highlights the importance of creating an environment for investments in energy projects, establishing fresh rules and norms for the renewable energy sector, and encouraging involvement from private enterprises in advancing renewable energy initiatives. It also suggests the need to reduce carbon emissions in transportation and eliminate fuel subsidies to promote the shift toward energy sources.

180. The Green Growth Framework for Fiji was introduced in 2014 as a policy document to support development in the country by aiming for a better future that benefits everyone through a harmonious blend of economic progress with social well-being and environmental protection goals in mind. One of the focuses of this framework is transitioning towards energy sources as a crucial element of Fiji's plan for sustainable growth. It sets goals for energy adoption including a target to increase the portion of electricity generated from renewable sources to 99% up, from 61% by the year 2030. The plan also emphasizes the need to decrease reliance on fossil fuels in transportation and urges the tourism and manufacturing sectors to strive to use renewable energy by 2030. Since focusing on renewable energy sources is a key goal of the Green Growth Framework, it aims to improve Fiji's energy stability and lessen its environmental impact while also boosting resilience to climate change effects and bolstering economic progress.
181. The National Development Plan (NDP) outlines a vision of uplifting all Fijians through inclusive socio economic growth and aiming for the ambitious target of achieving 100% renewable energy production by 2036. The NDP also highlights the importance of reducing carbon emissions in the economy and enhancing energy security while decreasing reliance on imported fossil fuels. It acknowledges the opportunities presented by RES like hydroelectricity, solar power wind power biomass and geothermal energy.
182. Fiji's National Climate Change Policy (NCCS) established in 2018 until 2030 provides a framework to steer the nation's efforts in addressing climate change issues. The NCCS highlights goals such as integrating climate change awareness into sectors enhancing data collection and exchange practices raising awareness through education and training initiatives implement adaptation and mitigation strategies and securing financial support. This policy is instrumental in facilitating Fiji's shift towards a low carbon economy. It strengthens Fiji's dedication to reaching 100 percent renewable electricity production by 2030 as outlined in the NDCs.

#### a. Energy sector performance

183. Energy Fiji Limited, EFL, is the sole power utility in Fiji responsible for planning, generating, and distributing grid electricity to four main islands in Fiji. In 2022, 1,081 GWh of electricity was generated and supplied to the EFL grid. 598 GWh was from hydropower plants, 410 GWh from thermal power stations that use industrial diesel oil and heavy fuel oil, 0.093 GWh from wind, and the remaining 73.5 GWh is from independent power producers (EFL, 2023). Solar Photovoltaics also contributes to grid electricity, but this production is from the consumer end and is not captured in the utility's annual report. Independent Power Producers (IPPs) produce electricity from biomass resources and export surplus to the grid, while EFL generates all the other forms of grid electricity. These IPPs are Fiji Sugar Corporation (FSC), Tropik Woods Industries Limited (TWIL), and Nabou Green Energy Limited (NGEL).
184. FSC and TWIL have combined heat and power (CHP) plants where the heat is used for the mills' drying process. FSC sells power to the grid from its mills in Lautoka, Ba, and Labasa. Lautoka, Labasa, and Ba mills have cogeneration plants of 5MW, 24 MW, and 9 MW, respectively. These IPPs sell electricity to EFL only during the sugarcane crushing season from June to November (EFL, 2019). FSC first uses its electricity internally and sells excess energy to the grid. TWIL is a sawmill that produces electricity from its 9 MW power plant using pine residue and sells surplus electricity to the grid. NGEL, commissioned in 2017, uses woodchips to power its 12 MW biomass power plant.
185. There is one bioenergy plant installed in the country that is utilizing wood chips with a capacity of 8MW. However, the plant is currently underperforming as it does not obtain sufficient wood chips. it currently is underperforming
186. Bioenergy utilization is a fundamental part of the net zero strategy of Fiji and it includes the installation of 256 MW of bioenergy plants. The LEDS do not specify however, how these capacities should be provided. The following chapter provides therefore an overview on different biomass potentials currently available in the country (for more details on calculations refer to Appendix 9)
187. Fiji LEDS have 847 GWh of electricity generation from biomass power plants under the very high ambition scenario where net zero emissions in Fiji is achieved. From the analysis (see Appendix

9) and in Table 18 it is seen that agricultural crop residue can contribute to 16.2% of the generation capacity while agricultural livestock contributes a further 9.1% to the VHA biomass electricity generation. So overall, agricultural resources can provide 214.5 GWh of electricity generation potential that has an overall 25.3% share in LEDS biomass electricity generation.

188. Forest residue can contribute 21.7% share (183.5 GWh) in electricity generation from biomass in the LEDS VHA scenario. Altogether, agriculture and forest residues contribute 398 GWh of electricity generation to the LEDS VHA scenario (the most ambitious scenario).

189. 449 GWh of electricity generation needs to come from other biomass resources, e.g. from biomass Short Rotation Plantations (SRP) and other organic waste in Fiji.

Table 19 Share of electricity generation potential from Agriculture and forestry residue

Scenarios	LEDS (GWh)	Forestry residue				
		Logging residue	Sawmill residue	Veneer residue	Total	% share
BAU_uncond	115.9	155.5	26.4	1.6	183.5	158
BAU_cond	646.9	155.5	26.4	1.6	183.5	28.4
HA	601.1	155.5	26.4	1.6	183.5	30.5
VHA	846.8	155.5	26.4	1.6	183.5	21.7
	LEDS (MW)	Logging residue	Sawmill residue	Veneer residue	Total	% share
BAU_uncond	22	25.4	4.31	0.261	30	118
BAU_cond	136	25.4	4.31	0.261	30	22
HA	166	25.4	4.31	0.261	30	18.1
VHA	256	25.4	4.31	0.261	30	11.7
	LEDS (GWh)	Agricultural residue				
		Temporary crops	Permanent crops	Livestock	Total	% Share
BAU_uncond	115.9	51.6	85.5	77.4	214.5	186
BAU_cond	646.9	51.6	85.5	77.4	214.5	33.2
HA	601.1	51.6	85.5	77.4	214.5	35.7
VHA	846.8	51.6	85.5	77.4	214.5	25.3
	LEDS (MW)	Temporary crops	Permanent crops	Livestock	Total	% Share
BAU_uncond	22	8	14	13	35	159
BAU_cond	136	8	14	13	35	25.7
HA	166	8	14	13	35	21.1
VHA	256	8	14	13	35	13.7

190. From Table 15, it is seen that to provide the additional electricity generation to meet the LEDS generation capacity after agricultural and forest residues EP is taken into account, altogether, approximately 29,300 Ha of Short Rotation Plantation is needed to achieve the Very High Ambition (VHA) of LEDS that achieve net zero emissions by 2050. A lower area of SRP will be needed for BAU and High Ambition scenario, 13000 to 16000 Ha, respectively.

Table 20 Electricity generation and area of SRP need to meet LEDS targets.

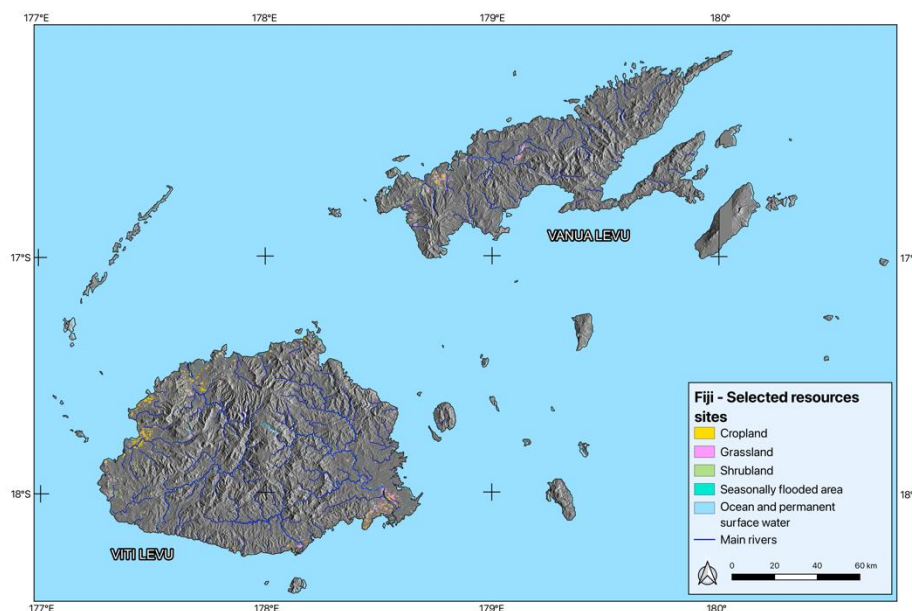
	BAU_uncond	BAU_cond	HA	VHA
LEDS (GWh)	115.9	646.9*	601.1*	846.8
Agriculture and Forestry residue EP (GWh)	398 - Able to meet and there is surplus	398	398	398

% contribution of Agri and forest residue EP to LEDS		61.5%	66.2%	47.0%
Deficit to meet LEDS (GWh)		248.9	203.1	448.8
capacity needed from SRP (MW)		40.6	33.1	73.2
Area of SRP needed (Ha)		16300	13300	29300

191. The appendix 9 presents a thorough analysis of the potential area available for SRP production to meet LEDS targets. The assessment considered only degraded land for the plantation of SRPs. Degrading forest land areas are not considered for energy generation as this may be in conflict with other national targets such as the “30 million trees in 15 years”. Instead, the assessment considered only degrading land areas from cropland, grassland, and shrubland, also using a series of further filters to avoid other conflicts.<sup>48</sup>

192. From Fig. 8, it is seen that 3750 Ha is the available degrading land area for possible SRPs, where 59% is on Viti Levu while the remaining is on Vanua Levu. This acreage would generate 37,500 tons of dry biomass from SRP. The electricity generation potential from SRPs on these lands for overall Fiji corresponds to a total of 57.5 GWh where 59% is from degrading grassland on the two main islands, followed by 25.2% for shrubland and the remaining from degrading grassland. The area of degrading land for SRP is insufficient to meet the electricity generation capacity of Fiji's LEDS and so other alternatives need to be explored.

Figure 10 Locations for degrading shrubland, grassland and cropland



193. Potential for other feedstock for possible bioenergy generation: Agricultural and forestry residues and SRPs on limited degrading land are insufficient to meet the generation requirement in 3 scenarios of Fiji LEDS. So, it is vital to identify other sources of electricity from organic waste. The theoretical potential for electricity generation from MSW in Fiji through the thermo-chemical path is estimated to be 38 GWh per year using 69000 tons of organic waste annually at different landfill sites or dumps (FDoE and UNDP, 2014a).

194. Sewerage sludge could also be another source of electricity generation. (FDoE and UNDP, 2014a) reports that the theoretical potential for electricity generation from sewage sludge in Fiji is estimated to be 12.33 GWh per year, as seen in Table 16.

195. Regarding non-hazardous industrial wastewater, there are various sources: Fiji Dairy, FSC, and the Meat industry. Fiji Meat Industry Board (FMIB) is the main abattoir in Fiji. The waste

<sup>48</sup> Only the following degrading areas were considered: (i) Outside current and planned protected areas; (ii) On area with a slope lower than 45°; (iii) Outside urban center (population higher than 300 hab/km<sup>2</sup>)



generated includes bones, organs, hooves, and other inedible animal parts leftover after all the edible parts of the animal have been removed. Due to the high organic nature of waste, there is a good potential to generate biogas and in turn electricity. A total of 122928 MJ of energy can be generated per day from slaughtering animals. Using 1 MJ = 0.27778 kWh, the energy potential from FMIB is 34.15 MWh/day which corresponds to 12.5 GWh. Distilleries in Fiji can also be a source of organic waste. Fiji has Paradise Beverages and South Pacific Distilleries are two companies that are making alcohol based beverages. (FDoE and UNDP, 2014a) reports 1.64 GWh of electricity generation potential per year. Hence, in total 64.47 GWh can be generated per year. Agricultural sector residues, forestry sector residues, livestock manure and SRPs on degrading shrubland, cropland and grassland are not sufficient to meet the generation targets of Fiji's LEDS for bioenergy generation. Other sources and resources have to be considered in order to reach bioenergy net zero targets.

Table 21 Deficit from current available bioenergy resources EP toward LEDS

	<b>BAU_uncond</b>	<b>BAU_cond</b>	<b>HA</b>	<b>VHA</b>
<b>LEDS (GWh)</b>	115.9	646.9*	601.1*	846.8
<b>Agri+forestry+SRP (GWh)</b>	450 - Able to meet and there is surplus	450	450	450
<b>% contribution of available bioenergy resources EP to LEDS</b>		70%	75%	53%
<b>Deficit (GWh)</b>		197	151	397
<b>Additional land area needed for SRP to meet LEDS targets (Ha)</b>		12,900	9,900	26,000

#### b. Relevant Projects (past and ongoing) in the Energy Sector

Table 22: A selection of important projects related to energy and climate change

<b>Project/programme</b>	<b>Brief description</b>	<b>Time period</b>	<b>Implementing agency / Funding source / National Partner(s)</b>
Fiji Agrophotovoltaic Project in Ovalau	This project aims to overcome financing barriers, technical capacity, and limited availability of land by supporting an innovative technology that combines photovoltaic power generation and agricultural production.	2020	GCF
Enabling Sustainable Rural Electrification Investment in Fiji	This project supports the Fiji Rural Electrification Fund through the completion of the pre-implementation survey and posts implementation surveys, analysis of survey data, technical assessment of solar hybrid systems and development of technical specifications, resource mobilization for solar hybrid systems, and capacity building for sustainable monitoring of rural electrification projects.	20-22	GGGI
Improved Cook Stove Programme in Fiji	The project promotes improved, clean and energy efficient cook stoves (also termed as ICS) in rural and urban households across different regions in the Republic of Fiji.	2018-46	Clean Development Mechanism (CDM) United Nations Framework Convention on Climate Change (UNFCCC)

Financing for the Feasibility Study for the implementation of solar mini grid systems in Fiji	The US Trade and Development Agency is providing full grant financing of USD 750,000 to the Government of Fiji to carry out a feasibility study on the implementation of solar mini grid systems in 75 rural sites in Fiji. The project is being implemented in collaboration with the Ministry of Finance, the Department of Energy, the Global Green Growth Institute and the Project team from the Arizona State University.		US Trade and Development Agency
Sustainable Energy Financing Program	The objective of the Program is (i) to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in the Participating Pacific Island States; and (ii) to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Pacific Island States.	07-22	World Bank

### c. SWOT Analysis of the energy sector

196. The SWOT analysis of woody biomass (in particular, Short-Rotation Plantations) for energy use in Fiji highlights its strengths as a renewable and local energy source and its potential to diversify and strengthen farmers' incomes.

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Can provide a local source of renewable biomass fuel, increasing energy security for Pacific islands</li> <li>• Offers an opportunity to reduce greenhouse gas emissions and assist in economic development of rural communities</li> <li>• Fast-growing tree species like Eucalyptus can produce large amounts of biomass in short time periods</li> <li>• Can be established on lower value or underutilized agricultural land</li> <li>• Multiple harvests possible from a single planting, providing ongoing biomass supply</li> </ul>	<ul style="list-style-type: none"> <li>• Limited land availability on small islands may restrict large-scale SRP implementation</li> <li>• Many Pacific islands, especially outer islands, have limited infrastructure and access to energy supplies, making establishing SRP systems challenging</li> <li>• Lack of local supply chains and financial support needed to grow the SRP market in Pacific islands</li> <li>• High initial costs for plantation establishment and processing facilities</li> <li>• No governmental and private sector strategy for sectoral development</li> <li>• lack of standardization</li> <li>• inadequate financial resources, and insufficient local knowledge for project development.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Growing awareness of renewable energy potential, including biomass, in Pacific Island countries</li> <li>• Possibility to integrate carbon value from emissions trading schemes to improve economic viability</li> <li>• Research funding could enable closer collaboration between universities and industry to develop supportive policies</li> <li>• Adaptation strategies for climate change in Pacific islands could potentially incorporate SRPs</li> <li>• Decentralized processing of harvested material could stimulate regional economies</li> </ul>	<ul style="list-style-type: none"> <li>• Pacific islands face environmental challenges like deforestation, land degradation, and loss of biodiversity that could impact SRP development</li> <li>• Natural disasters, which are common in Pacific islands, pose risks to SRP plantations</li> <li>• Competition for land use with food production and other priorities</li> <li>• Low value of bioenergy feedstock under present market conditions</li> <li>• Potential negative environmental impacts if not managed sustainably</li> </ul>

#### d. Lessons learned in the sector

197. The following list will address lessons learned from initiative of the whole Pacific related to short rotation plantations for energy purposes, not restricted to the context of Fiji.

- **Climate suitability:** The subtropical climate of many Pacific islands, like Hawaii, provides an ideal environment for fast-growing tree species in SRPs, such as Eucalyptus. Growth rates in Hawaii were among the highest reported globally for certain species.
- **Land availability challenges:** While underutilized agricultural or forest land may seem available, the actual implementation of large-scale SRPs can be limited by competing land uses and the small land area of many islands.
- **Infrastructure needs:** Establishing SRP systems requires significant infrastructure for planting, harvesting, processing, and energy generation. This can be challenging on remote islands with limited existing infrastructure.
- **Economic viability:** The economic feasibility of SRPs depends heavily on factors like capacity utilization, fuel costs, and electricity prices. Projects need to achieve sufficient capacity factors to be cost-competitive with diesel generation.
- **Local energy security:** SRPs can provide a local renewable energy source, reducing dependence on imported fossil fuels. This is particularly valuable for isolated island communities.
- **Job creation:** SRP projects can create significant employment opportunities in rural areas, both in plantation management and at power generation facilities.
- **Technical expertise:** Managing multi-modal renewable energy sources, including biomass, requires building local technical capacity. Pacific utilities have been rapidly gaining experience in this area.
- **Lack of regulations and inspections for wood trading/supply**
- **Local Leadership:** -Communication of the project idea and connecting it with local development visions and strategies
- **Financing challenges:** There is often a significant financing gap for transitioning from diesel generators to renewable energy systems like biomass. International support and innovative financing mechanisms are often needed.
- **Policy support:** Successful implementation of SRPs requires supportive government policies, incentives, and regulatory frameworks to overcome barriers and attract investment.
- **Environmental considerations:** While SRPs offer environmental benefits like carbon sequestration, care must be taken to manage potential impacts on biodiversity and ensure sustainable practices.

## 8 PROJECT AREAS AND TARGET GROUP

### 9 Selection criteria for project areas:

198. **Target areas** (identified in complementarity to those of WWF-Fiji) were identified based on a host of factors that included exposure and vulnerability to climate change, degradation, and deforestation hotspots, presence of areas with high biodiversity, low climate resilience, and adaptive capacity of the local population and presence of complementary initiatives (See Annex

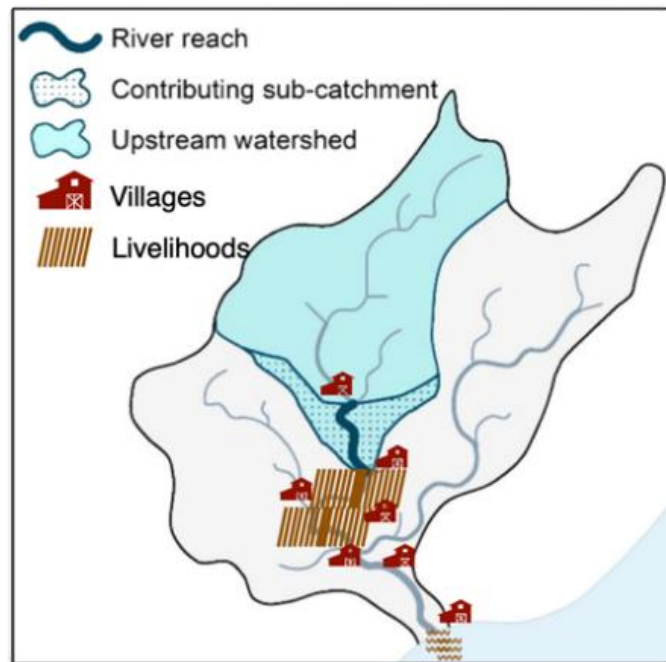
16 and Annex 25). The preliminary areas have been discussed and agreed upon in several occasions (see Annex 7) with the NDA, WWF and the Fiji Development Bank (FDB) in order to (i) ensure synergies with the whole national GCF program<sup>49</sup> and with initiatives focusing on other complementary marine and terrestrial ecosystem services (additional details on complementarity with all programs are available in Appendix 8)<sup>50</sup>. Final decision on target areas will be taken by the government during project implementation and based on the utilization of the tool developed by the project (see Annex 25b)

199. **Beneficiaries:** The GCF project will incorporate science-based decision-making around watershed and forest management and rehabilitation, participatory selection processes, and practical considerations in relation to related projects, in the following steps. Step 1 - A multi-criteria analysis is conducted to identify priority watersheds based on forest and watershed condition, carbon storage, resilience, and downstream effects. Step 2 - The initial prioritized watersheds were reviewed, and shown to cover all the coastal WWF priority areas, aligning with a ridge to reef approach. Step 3 – The multicriteria mapping identified a longer prioritized set of watersheds critical to address the project's key objectives, also allowing the further selection during project start up of watersheds, to fit the target scope of the project. Step - 4 Further prioritization and selection during early implementation will consider practicality, local community decision-making, technical and feasibility criteria and data, and community willingness to participate, laying groundwork for future scaling up of watershed management processes.
200. **Approach and Targets:** Traditionally, environmental and climate change projects in Fiji focused either on terrestrial or marine ecosystems without duly considering the upstream and downstream impacts that these systems have on each other. In this regard, the project will promote a new holistic approach for tackling environmental land management issues and integrate lessons learned from all environmental initiatives. The project will incorporate science-based decision-making around watershed and forest management and rehabilitation, participatory selection processes, and practical considerations in relation to related projects (e.g. WWF-Fiji and FDB), in the following steps. Step 1 - A multi-criteria analysis is conducted to identify priority watersheds based on forest and watershed condition, carbon storage, resilience, and downstream effects (Annex 23). Step 2 - The initial prioritized watersheds were reviewed, and shown to cover all the coastal WWF priority areas, aligning with a ridge to reef approach. Step 3 – The multicriteria mapping identified a longer prioritized set of watersheds critical to address the project's key objectives, also allowing the further selection during project start up of watersheds, to fit the target scope of the project. Step - 4 Further prioritization and selection during early implementation will consider practicality, local community decision-making, technical and feasibility criteria and data, and community willingness to participate, laying groundwork for future scaling up of watershed management processes.
201. As part of the project implementation, community landscape investment, and management plans will be developed for priority watersheds and river basins selected using the [Target Area Selection tool](#) developed for the project. A set of forestry-related investments will then be implemented within each of these communities, which would be a mix of the following: (i) Upgrade and establishment of public and community nurseries; (ii) Sustainable Forest Management; (iii) Community mixed species forest restoration; (iv) Community supported high conservation value forests; (v) Natural regeneration and sustainable forest management of logged over forests; (vi) Restoration of degraded lands in former plantation areas; and (vii) Agroforestry investments.
202. An overview of the necessary geographic locations to be considered for the identification of a catchment area is given in Figure 11. Upstream catchment will support environmental services (slope stabilization, reduced runoff, water quality, etc.) to the communities involved and downstream. Priority will be given to sloping catchments, which will provide multiple benefits to reefs, important assets, and community livelihoods.

<sup>49</sup> In particular the Coral Reef Resiliency Programm currently elaborated by WWF. <https://www.greenclimate.fund/document/coral-reef-resiliency-program>

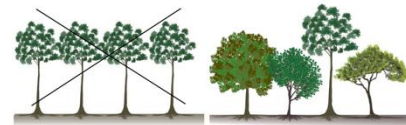
<sup>50</sup> Maps of project locations are inserted in Annex 16 and the detailed analysis of the beneficiaries of the project is included in Annex 25.

Figure 10 schematic of Catchment area site identification



203. An overview on the FLR investments, including site identification criteria, is indicated underneath. Further information can be found in Appendix 3.

204. **Community planting of mixed species.** This activity consists of planting mixtures of tree species to establish plantations that provide multiple services to the communities in a high priority watershed. Mixed-species plantations have the potential to generate a variety of forest products, as well as a range of ecosystem services. They are often established using just two or three species<sup>51, 52</sup>. Specific site identification criteria: (i) non-forested; (ii) Not needed for agriculture or earmarked for any other development purposes; (iii) Community agreement and consent for planting of trees.



205. **Community restoration of waterways and riparian zones.** This activity consists of planting mixtures of tree species for the purpose of protecting waterways and riverbanks in a high priority watershed. This activity would work in synergy with the vetiver plantations promoted by the Ministry of Agriculture and Waterways. Vetiver could be added to the systems depending on the management plans and stakeholder interest. The list of native and fruit trees suitable for riparian restoration are listed in Appendix 4. Chosen species must be water tolerant species with strong root systems that can withstand flooding. Total target: 5,000 hectares. Buffer zone for riparian areas are 10 to 20 meters from the riverbanks. However, it is encouraged that the activity would promote agroforestry at the buffer zones within 500 meters. Specific site identification criteria: (i) Highly degraded riverbanks, especially in agricultural areas (formal and informal settings); (ii) Community or Individual agreement and consent for planting of trees. Formal settings (agricultural leases) make decision independently, whereas Informal settings (by villages) make decisions as community



<sup>51</sup> <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0095267>

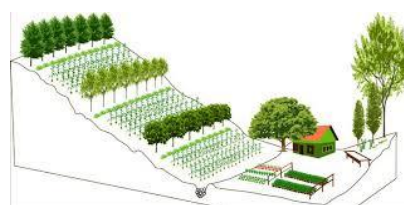
<sup>52</sup> [https://www.researchgate.net/publication/326677444\\_Mixed-species\\_versus\\_monocultures\\_in\\_plantation\\_forestry\\_Development\\_benefits\\_ecosystem\\_services\\_and\\_perspectives\\_for\\_the\\_future](https://www.researchgate.net/publication/326677444_Mixed-species_versus_monocultures_in_plantation_forestry_Development_benefits_ecosystem_services_and_perspectives_for_the_future)



206. **Agroforestry.** This activity consists of an interplanting of trees in agricultural systems for sustainable livelihoods and environmental services.

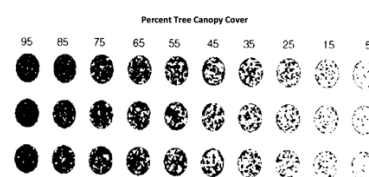
Agroforestry systems are multi-functional, and it is up to the farmers to decide on the management options<sup>53</sup>, such as production systems, woody perennials, sylvopasture, etc.

For the FLR project in Fiji, it is recommended to plant at least 3 native species and 1 fruit tree, with a 6m x 6m spacing. The list of native and fruit trees suitable in Fiji are in Appendix 4. Chosen species must be well-suited to the local conditions and can provide multiple benefits, such as food security, fodder, environmental services, nitrogen fixing, and economic returns. Specific site identification criteria: (i) Active agricultural areas; (ii) Community support for the agroforestry activities; (iii) Need and request from individual farmers; (iv) Sloping croplands (preferable)



207. **Natural regeneration of degraded forests.** This activity consists of natural regeneration of native species in areas where forests have *partially* disappeared. It will be implemented by the benefitting communities. The activity depend on the existence of seed trees and no nursery establishment is necessary. When identifying the seed trees,

any native species with height greater than 40 cm found within the sites can be candidates. For areas with several candidates, the most dominant trees should be chosen. The necessary activities to support the growth of the seed trees are explained in detail above. Specific site identification criteria: (i) Degraded forest areas where tree cover have been heavily reduced but still have canopy cover greater than 10%; (ii) Not needed for agriculture or earmarked for any other development purposes; (iii) Community agreement or (in the case of logged over forest) agreement from companies and consent for planting of trees.



208. **Reforestation of over logged plantations.** This activity is to be similar to “**Community planting of mixed species**”. However, it would be implemented by the private entities. When choosing species, it is recommended to identify native dominant species that has been growing in the area before plantation and deforestation. Specific site identification criteria: (i) Deforested former plantation areas; (ii) Demonstrated urgent needs for more stable tree cover (next to waterways, downstream sedimentation, etc.); (iii) Needs and requests from the private entities.

209. **Restoration of left-aside degraded lands.** This activity is similar to “**Community planting of mixed species**”. However, it would be implemented by the private entities. When choosing species, it is recommended to identify native dominant species growing in the area before plantation and deforestation.. Thinning can be conducted later once the trees have grown. Specific site identification criteria: (i) Degraded former plantation areas (ii) Demonstrated urgent needs for more stable tree cover (next to waterways, downstream sedimentation, etc.); (iii) Needs and requests from the private entities; (iv) no previous obligation for reforestation/restoration of lands in lease agreements

210. **Establishment of high conservation value forests.** This activity consists of the identification and establishment of new protected areas based on the revised policies as part of the project. Once the protected areas are created the communities will contribute to its management and conservation. There are 3 key activities that will support the protection status of the forests, namely: (i) Community awareness and training, (ii) Ecological monitoring by the community (Example manual<sup>54</sup>), and (iii) Ongoing awareness and sensibilization. Specific site identification criteria: (i) Forest areas with demonstrated conservation value or among the list identified in the Protected Area Committee (PAC); (ii) Available documentations on the rationale for establishing the protected areas; (iii) Draft management plans with community consultations; and (iv) Establishment of compensation framework with community consultation.

<sup>53</sup>

[https://apps.worldagroforestry.org/Units/Library/Books/Book%20777/meteorology%20and%20agroforestry/html/agroforestry\\_sytems\\_major.htm?n=14](https://apps.worldagroforestry.org/Units/Library/Books/Book%20777/meteorology%20and%20agroforestry/html/agroforestry_sytems_major.htm?n=14)

<sup>54</sup> <https://www.fao.org/forestry/14700-0271f3fb3f50174269227fd97906437a9.p>

211. **Establishment of permanent forest estates.** This activity consists of the identification and establishment of permanent forest estates based on National Forest Inventory and the revised policies as part of the project. Once the estates are recognized the stakeholders involved would decide on the management options. As explained above, there are forest function categories available: multiple use forests, protection forests, forest plantations, and mangroves. The project scenarios for activity 9 is the establishment of multiple use forests and plantation forests where sustainable timber harvesting can be expected. Specific site identification criteria: (i) Forest areas with identified forest functions in line with National Forest Inventory; (ii) Stakeholder requests; and (iii) Draft management plans with stakeholder consultations.
212. **Beneficiaries.** The total number of direct beneficiaries (196,877 unique individuals, adjusted by a 70% adoption multiplier) comprises those receiving high-intensity targeted support and achieving verified adaptation benefits across three strategic results areas: (i) the adoption of improved and new climate-resilient livelihood options (ARA 1); (ii) increased availability of forest ecosystem services functional to food security, livelihoods, and Disaster Risk Reduction (ARA 2 ); and (iii) the improved ecological health and economic value of communal lands and ecosystems resulting from sustainable forestry investments and climate-responsive lease management (ARA 4 ).
213. **Indirect Beneficiaries (149,715)** are individuals that experience specific and measurable adaptation benefits resulting from the project's interventions without directly receiving highly-intensity targeted support. These benefits are generated through systemic national de-risking, the implementation of policy safeguards for communal forest assets, and improved environmental stability—such as reduced flood risks and enhanced water safety—resulting from large-scale landscape restoration. In alignment with GCF methodology, this category captures those who obtain a demonstrable resilience gain through broader institutional reforms, the stabilization of essential ecosystem services, and the dissemination of technical knowledge across the forestry and agricultural sectors.

Table 23 Beneficiaries mapping and project involvement / benefits

Sector	Rationale	Involvement
(I) Communities	The iTaukei communities are responsible for deciding how to utilize their forest resources. Any formal activity, such as logging or forest conservation, undertaken on communally owned land requires the consent of the landowning community and needs to be approved by the iTLTB after consultation with the Ministry of Forestry (which makes its decisions based on the Fiji Forest Policy). Communities have been identified as lacking the necessary technical capacity to implement activities related to FLR and SFM and are often guided by short-term benefits, leading to unsustainable practices.	The project's core strategy is to engage communities in a participatory manner. This approach will be applied in the elaboration, execution, and monitoring of community-based land use plans, which will be coordinated by various action groups at the village, district, and provincial levels. These plans will regulate the restoration and sustainable management of 76k ha of land and support the development of alternative livelihood opportunities, the establishment of community forest management funds, and the establishment of Payment for Ecosystems Services schemes.
(II) People employed in the forestry sector and staff from national institutions, civil society organizations, academia, and nurseries	The forestry sector is underperforming, contributing only 1.4% to the GDP despite its vast potential. Institutions are not adequately equipped to address the adverse impacts of climate change from a long-term landscape perspective. As a result, projects are often carried out on a sectorial basis, failing to recognize the integrated impact of ecosystems and their potential to contribute to sustainable economic, rural, and resilient development.	Within the project, many capacity development activities and tailored training are foreseen to disseminate the knowledge related to climate action through integrated landscape reforestation activities. The main topics will also be the diversification of sectorial economic activities and sustainable timber and NTFP value chains and the possibilities to finance them. In this regard, the project will collaborate with local and national institutions, representatives of national and regional civil society organizations, students, teachers, and professors, public and private nurseries operators and public and private forest professionals.
(III) Representatives of Small and medium enterprises operating NTFP	The project's assessment listed more than 30 NTFPs at various stages of development and produced and marketed by SMEs. These SMEs are driven by passionate individuals who recognize the opportunity and embrace its development with little Government assistance.	The project will develop financial mechanisms attractive to SMEs and connect with financial institutions to promote investments in climate-resilient NTFPs, contributing to diversifying the rural population's livelihoods. In addition, the activities will also support the creation of institutional and regulatory support for NTFPs to enhance quality control and consumer trust and demand.



(III) Staff of National Finance Institutions	FDB has a substantial portfolio of financing products for agricultural activities and some products for forestry activities. Nevertheless, government facilities and FDB lending programs face challenges in repayments due to the low capacity of farmers and medium—and small enterprises.	The project will develop innovative financial mechanisms to finance the sustainable adoption of FLR, SFM, and climate-resilient agroforestry/agriculture. These include (i) de-risking of existing relevant financial instruments, such as FDB loan programs, and (ii) developing new mechanisms, such as the Community Facility for customary landowners and farmers and the Development Facility for SMEs. Furthermore, the activities will enhance the capacities of the FI to assess climate action investments and measure climate-related risks to ensure alignment with the Paris Agreement.
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## 10 Option Analysis

214. This section provides a description of the options analysis conducted to evaluate the potential impact of each option and its interventions under each output/component of the project. The criteria included in evaluating each option considered the advantages and disadvantages of each option, the cost implications, the climate action potential, the value for money, and specific related factors to each output/component.

215. One of the primary consequences of forest degradation is increased runoff and sedimentation, and Fiji is losing over 50 tons of soil per hectare annually through run-off, which is four times the average in tropical areas ([FAO, 2018](#)). Similarly, agriculture and other land use changes such as constructions are negatively impacting downstream ecosystems via pollution and additional sediments<sup>55</sup>. This aggregated sediment-laden runoff increases flood risks and can hinder the survival and growth of photosynthetic organisms like corals and algae. Sedimentation further has devastating effects on the calcification ability of coral reefs that are already impacted by climate change phenomena like ocean warming, frequent marine heatwaves, and acidification. According to [Suárez-Castro et al. \(2021\)](#), 41% of coral reefs worldwide are significantly impacted by sedimentation problems. The research of [Brown et al. \(2017\)](#) confirmed that the most degraded catchments of Vanua Levu in Fiji, in which the native vegetation was removed for infrastructural or agricultural development, were the ones with the highest erosion and consequently the highest marine turbidity rates<sup>56</sup>. The national economy is dependent on the utilization of natural resources and their further degradation would significantly and negatively impact the sustainable development of the population. Fiji is expected to have much larger losses due to heavier rainfall, if adaptation measures are not introduced. Fluvial and pluvial floods lead already to losses of 2.6% and 1.6% of GDP per year respectively, ([World Bank, 2021](#)) and are expected to further increase by almost 40% and 45% respectively until 2050 ([World Bank, 2017](#)). The overall economic impact of climate change in the Pacific region is estimated to reach 12.7% of annual GDP by 2100 ([ADB, 2013](#)). Given that disaster losses are not evenly distributed throughout the population and affect poor people disproportionately, a F\$1 loss in assets due to a disaster in Fiji has an impact on the population equivalent to a drop in national consumption by F\$1.8 or F\$900 million drop in annual consumption as the result of F\$500 million average annual asset losses from tropical cyclones and floods. An average of 25,700 people are being pushed into poverty every year in Fiji due to tropical cyclone and floods losses while the 100-year tropical cyclone would force almost 50,000 Fijians, about 5 percent of the total population, into poverty. Furthermore, cyclones are also heavily impacting ecosystem services. It is estimated e.g. that after Tropical Cyclone Winston in 2016, native forests, mangroves and coral reefs require up to 15 years to regenerate and provide the same level of ecosystem services (TNC, 2020).

<sup>55</sup> Agricultural activities and urban development that often follow forest degradation contribute to increased fertilizer use and wastewater discharge into rivers and coastal areas. Excessive nutrient levels can cause algal blooms, which negatively impact coral health, diversity, and the overall resilience of reef ecosystem. Globally, agricultural runoff threatens approximately 25% of the total reef area ([Ferreira, 2018](#)), and, according to the [WWF \(2022\)](#), macroalgae increased across the Fiji Great Sea Reef (GSR), from 4% in historic surveys to 5% in 2019, probably due to land-use pollution.

<sup>56</sup> A further regional example, in the Solomon Islands, extensive logging contributed to a loss of reef habitat from 3,528 to 1,941 ha, decreasing populations of inshore *Acroporid* corals and associated parrotfish species (Hamilton et al., 2017).

216. Restoring forests in upland areas of Fiji strengthens terrestrial, coastal, marine and coral reefs ecosystems and the wildlife and livelihoods depending on them. Although not fully reflected in the national policy framework, the Ridge to Reef (R2R) approach is also in line with the concept of *vanua* ("land" in iTaukei language) which connects the health of the land, the sea, and its human and non-human dwellers and stresses at the same time the importance of addressing land-sea processes (Fache and Pauwels, 2022). As identified in the mapping of ecosystem services and functions from R2R conducted by stakeholders in Taveuni, Fiji, the three vegetation "levels" closer to the ridge (inter valleys, deep forest and cloud forest) all provide ecosystem services and functions with local and downstream benefits ([Heider, 2017](#)). For example, by absorbing rainfall and reducing freshwater inputs to coastal areas and marine habitats, by stabilizing soils and reducing erosions and landslides, and by absorbing and fixing soil nutrients and heavy metal minerals in soils and groundwater ([Carson et al. 2019](#)). [Delevaux et al.](#) (2018) predicted through scenario-based modelling of Fiji that 573.8 ha of forest restoration across eight watersheds would decrease sediment delivery to the coast by 24.2 tons yr<sup>-1</sup>, resulting in a 1.1% mean increase in coral cover across 577 ha of benthic habitat, and 13.9 kg ha<sup>-1</sup> increase in fish biomass.

Table 24 Option Analysis related to Component 1. Strengthened regulatory framework for climate-responsive and integrated landscape management (Ridge to Reef – R2R)

Option Analysis	Cost Implication	Climate Impact	Advantage	Disadvantage	Value for Money
<p><b>Option 1: No action approach</b></p> <p>The current management of landscapes is hindered by an incomplete governance framework and lack of coordination, which fails to incorporate R2R approaches adequately and maximize the potential for both adaptation and mitigation benefits.</p>	<p>2.2 percent of the population falls into poverty every year and average annual losses are 404 mln FJD (4.2% of GDP) due to the impact of fluvial and pluvial floods, which are partly caused by missing ecosystem functions of degraded forests.</p>	<p>The lack of adequate and modern policies and governance is one of the pillars of the adaptation deficit and the maladaptive management of natural resources. Without action maladaptive and unsustainable practices will continue affecting all ecosystems negatively with direct externalities on the livelihood of rural communities and the economy in general. Climate Change impacts due to extreme weather events are expected to increase in the future and will be exacerbated by degraded forests that cannot carry out their protective function.</p> <p>The option will furthermore jeopardize development targets and climate-related strategic ambitions (i.e., Carbon Neutrality by 2050). Forest degradation will continue increasing both exposure and vulnerability of the population, their livelihood, and the capacity of Fiji to act as a climate change leader in the region and globally.</p>	<p>The main advantage is that there will be no need to invest.</p>	<p>Forests cannot be prepared and managed to face current and future climate challenges. This will also imply that the sustainability of investments downstream is threatened.</p> <p>No action will also de facto prevent communities from contributing to climate change mitigation and adaptation, potentially creating inter-community conflicts related to natural resources management.</p>	<p>Non-adaptation of forests will exacerbate natural disasters impacted by climate change, like floods and their damages and losses.</p> <p>The average percentage of people falling into poverty due to the impact of fluvial and pluvial floods, partly caused by missing ecosystem functions of degraded forests, will increase from 2.2 percent to 3.1 percent by 2050. The annual losses from floods are expected to increase from 4.2% to 5.9% of the GDP.</p> <p>The forest sector has experienced a consistent decline in productivity over the years. In 2016, it added FJ\$164m to Fiji's GDP, which decreased to FJ\$153m by 2020.</p>
<p><b>Option 1: Top-Down Policy Intervention</b></p>	<p>Addressing only the major policies at the national level will require limited financial resources and will partly contribute to achieving policy targets.</p>	<p>Without the involvement of all stakeholders and transversal synergies with other important initiatives and sectors like coastal zone management and</p>	<p>Relatively little costs involved and less time for implementation required due to less complex procedures for stakeholder involvement</p>	<p>The intervention will remain incomplete as it will not support policy adoption, the creation of governance mechanisms, and transversal ownership of</p>	

Option Analysis	Cost Implication	Climate Impact	Advantage	Disadvantage	Value for Money
		marine conservation, it is unlikely that climate investments will reach long-term sustainability. Therefore, some of the policy targets might be reached, but without long-term sustainability of investments.		objectives. Finally, not involving all stakeholders transversally may fail to create the needed enabling condition for transformative paths and for ensuring the additional value of climate change mainstreaming across policies, sectors, and stakeholders via the aimed ridge-to-reef approach.	
Option 2: Transversal policy intervention:	The cost of this option is estimated to be USD 11,4mln	<p>Involving stakeholders in all phases of implementation, including monitoring and evaluation, allows for the evaluation of results on an annual basis on reaching climate change mitigation and adaptation targets related to actual condition of ecosystems and the latest trends in timber harvesting, carbon storage, etc.</p> <p>The public, private sector and community investments offer concrete and large-scale CAS investments that contribute significantly to fulfilling national climate change commitments. They can be further upscaled beyond the project through the coordinated policy intervention.</p> <p>Developing a domestic offset mechanism for forestry, opening up international carbon finance opportunities through the voluntary carbon market, and</p>	<p>The options allow a full engagement of all stakeholders, ensuring their contextual participation and ownership and their capacity to engage in the medium and long-term perspectives. This approach will ensure upgrading the policy and establishing the appropriate governance mechanisms, and it will allow stakeholders to effectively engage in the process and contribute to climate change adaptation and mitigation targets.</p> <p>Decision-makers can rely on a permanent inflow of unbiased and relevant information to adjust decision-making processes for more sustainable natural resource exploitation.</p> <p>The option allows the involvement of communities in large scale forestry modernization.</p>	<p>Significant increase in costs and time consuming. Furthermore, complex implementation process as it is necessary to involve stakeholders that represent all beneficiaries. It is essential that information reaches the whole community.</p> <p>The System and framework are complex and require a well-designed and long-term functioning connection and engagement between state private sector and above all communities.</p>	<p>Fijis forests provide crucial ecosystems services corresponding to a value of FJD \$544 mln (250 mln USD - approx. 6% of the GDP) annually). They are critical for the economic stability of the country and its communities, including the regulation of water flows and water quality and the protection against landslides, flood risks and downstream coral reef ecosystems</p> <p>Investments in AFOLU sector for the VHA-Scenario of the LEDS correspond to only 150 mln USD, although the sector contributes with an emission reduction of 31% the most to reaching net zero targets. Investment in the forestry sector are therefore the most cost-effective measures by far to reach net zero.</p> <p>Trans-sectoral coordination and community involvement will be very crucial for reducing</p>

Option Analysis	Cost Implication	Climate Impact	Advantage	Disadvantage	Value for Money
		<p>evolving Article 6 strategies can unlock needed financing to upscale forest investments for mitigation (and adaptation co-benefits) over and above those that can be delivered with public funding alone. This requires concerted investments in national capacities and the development of respective regulatory frameworks.</p>	<p>Furthermore, intervening in the forestry sector by addressing drivers of degradation as well as the relevance of ecosystem services permits to have multiple impacts on investments.</p> <p>In addition, creating linkages with other sectors beyond forestry allows the release of further synergies and opportunities with other sectors (e.g. rehabilitation of degraded agricultural land through forestry investments)</p>		<p>exposure the country to floods and flash floods of economic-related infrastructures and on marine environment. This is highly important for the well-being of the local population, given that the economic value associated with coral reefs in Fiji is estimated at 525.7 million constant 2017 US\$, mostly (90.3%) related to international holiday visitors.</p> <p>The voluntary carbon market has grown considerably over last five years to reach approximately USD 2 billion in 2022 with expectations of further growth to between US \$5 billion to US \$50 billion by 2030. The financial flows obtained could provide significant and sustainable support to nature-based climate solutions in the country.</p> <p>The overall project investment is expected to yield a positive economic return. The estimated Internal Rate of Return exceeds the social discount rate considered in this analysis, indicating that the project is economically viable over a 30-year evaluation period.</p>

Table 25 Option Analysis related to Component 2 – Enhanced sustainable and resilient management of ecosystems and forests by stakeholders

Option Analysis	Cost Implication	Climate Action	Advantage	Disadvantage	Value for Money
<b>Option 1: No action (BAU)</b>	<p>Not acting will not require any additional costs.</p> <p>Climate change adaptation gaps will, however, persist and further exacerbate the country's extreme weather events and disasters and related costs.</p>	<p>As a result of no action, (i) Local nurseries would remain limited in expanding their capacities, representing a significant bottleneck for climate-related forestry restoration; (i) production processes would not factor in climate-adaptive procedures; and (iii) communities would not have the capacity to implement investments on their territory.</p> <p>All of the above would significantly endanger Fiji's ambition in the climate change sector and minimize the potential for the success of planting 35 million trees by 2035, as foreseen by the Low Emission Development strategy and the NDCs.</p>	None	<p>No action would not allow any significant increase in forestry investments and would limit the activities to the status quo/BAU.</p>	<p>Non-adaptation of forests will exacerbate natural disasters impacted by climate change, like floods, and their damages and losses.</p> <p>The sector's contribution to value addition and the GDP will remain low, at an average of 1.2 percent of GDP and 4.1 percent of export earnings.</p>
<b>Option 2: Enhance the technical capacities of local nurseries</b>	Total costs: USD 3,9 mln	<p>If Fiji wants to achieve its forestry and climate change targets, it needs to invest in all of the activities foreseen by all options to ensure a 360-degree approach to forestry where climate change and its adverse impacts are addressed fully.. This entails (I) technology and knowledge transfer to ensure climate-adaptive seedling production and forestry investments and (II) tailored forest investments (i.e., afforestation, forest</p>	<p>Transferring technology and knowledge with on-the-job training to forest stakeholders will create the precondition to secure the highest possible survival rate of forestry investments and enhance long-term climate-proofing of forestry investments.</p>	<p>Addressing only the upgrading of the nurseries would be very costly and, on the other hand, not allow for efficient management of the structures and investments in climate adaptive silvicultural practices. Therefore, the mid-and long-term sustainability of the nurseries and the investments they support (if any would occur) would be at high risk.</p>	<p>Most activities funded under the project are projected to generate positive financial outcomes, primarily in the medium and long term. In economic terms, most activities are expected to yield positive returns over a 30-year evaluation period. This underscores the nature of investments that require time to generate results, particularly those in the different forestry models analyzed.</p>
<b>Option 3: Upgrade technical and knowledge capacities for seedling production</b>	Total costs: USD 4,4 mln			<p>High public investment is required.</p>	

Option Analysis	Cost Implication	Climate Action	Advantage	Disadvantage	Value for Money
<b>Option 4: Upgrade technical and knowledge capacities for seedling production</b> <b>And</b> <b>Tailored forestry investments carried out by communities</b>	Total costs: USD 13.2 mln	<p>restoration, and sustainable forest management).</p> <p>This will contribute to expanding production and climate-adaptive landscape restoration activities to reach the milestones of 35 mln trees planted by 2030 and reaching net zero by 2050.</p>	<p>A substantial effort is needed to update the technical and knowledge capacity of the industry to ensure the implementation of flexible production capacities based on the need to produce seedlings for restoration efforts. Considering that the communities are ultimately responsible for managing the resources on their land, they need to be empowered to overcome the lack of knowledge and access to finance and technologies to carry out climate adaptive investments. The project will bridge, therefore, public, private, and community actors to carry out integrated investments with a high impact to enhance resilience and livelihood options, in particular for the poor and vulnerable parts of the rural population.</p>	<p>To be functional and impactful, all options have to be in place. One of them alone would not lead to success, as explained as follows:</p> <p>217.leds</p>	

Table 26 Options Analysis of Component 3 “Strengthened financial mechanisms and incentives, , incentives, and opportunities for sustainability and scaling up.

Option Analysis	Cost Implication	Climate Action	Advantage	Disadvantage	Value for Money
<b>Option 1:</b> <b>Do nothing (BAU)</b>	As global markets shift toward low-carbon goods and services, Fijian businesses may need to provide climate-smart products to remain competitive internationally.	Not acting will render the newly developed policies as mere bureaucratic procedures without tangible impact, as stakeholders will lack the financial and technical capacity to comply with the new framework, jeopardizing the sustainability of the	Not investing in decarbonization might have some benefits in the short term, as industries can invest in other sectors to achieve cost-efficiency of production.	The private sector will not be able to contribute significantly to national climate change commitments while at the same time risking its international competitiveness.	In the long term, not investing in sustainable forestry and landscape is expected to have very negative impacts on companies' international competitiveness and on the cost-efficiency of production.



Option Analysis	Cost Implication	Climate Action	Advantage	Disadvantage	Value for Money
	Forest stakeholders can only value forests as resources to be extracted, as there is no financial incentive or mechanism, technical capacity, or availability of inputs to consider ecosystem services such as disaster protection, soil erosion control, water retention, GHG removals, livelihoods, and others. While the project will establish the needed policy framework (Output 1.2) and related governance, the application of these policies requires financial and technical support as well as climate adaptive practices and inputs (i.e. seedlings) for stakeholders to embed the new policies in their operational procedures.	proposed paradigm shift. This will further increase climate change exposure, vulnerability.			In addition it will potentially raise tensions between upstream and downstream communities as it will result in GDP losses due to missed economic opportunities (e.g., reduced tourism, agriculture, forestry values) and increased climate change adaptation costs due to poor management of natural resources.
<b>Option 2:</b> <b>Minimum action</b>  <b>Information dissemination and sensitization</b>		benefits such as increased biodiversity and reduction of the climate adaptation deficit of the forestry sector may be jeopardized, as stakeholders will be unable to transfer the acquired knowledge to operations and investments.	Limiting action to information dissemination and sensitization will reduce costs and can generate awareness and promote behavioral change.	this approach will not provide stakeholders with the incentives and financial mechanisms to compensate for the short-term reduced earnings from adopting sustainable forest and landscape management approaches. it will also jeopardize the effectiveness and sustainability of the proposed paradigm shift, as it does not offer clear financial mechanisms to support stakeholders' transition. Stakeholders will be unable to transfer the acquired knowledge to operations and investments.	The Reserve Bank of Fiji has warned that the transition to a low-carbon economy under the Climate Change Act will expose the financial system to "significant" shocks, particularly for high-emitting sectors, including agriculture. This creates risks but also opportunities for businesses to adapt.
<b>Option 3:</b> <b>Full Action: Information, dissemination, technical assistance, inputs, financial resources.</b>  The project will support incentives, financial mechanisms, and technical knowledge transfer, along with climate-adaptive seedlings to stakeholders managing degraded, overexploited, or newly	Costs correspond to USD 20.9 mln	The approach will include providing support to ensure the sustainable and financially viable engagement of stakeholders under a market-recognized certification standard (FSC-ESPRO). The project will offer technical assistance and support to all stakeholders and help identify and link them with de-risking financial mechanisms (e.g., parametric insurances,	The approach will include providing support to ensure stakeholders' sustainable and financially viable engagement under a market-recognized certification standard (FSC-ESPRO). The project will offer technical assistance and support to all stakeholders and help identify and link them with de-risking financial mechanisms (e.g., parametric insurance, sustainability-linked loans,	The option requires the concerted involvement of a variety of private sector actors and the absence of disruptive events that might shift participants' focus on other, perceived as more urgent, matters.	Most activities funded under the project are projected to generate positive financial outcomes, primarily in the medium and long term. In economic terms, most activities are expected to yield positive returns over a 30-year evaluation period. This underscores the nature of investments that require time to generate results, particularly those in the

Option Analysis	Cost Implication	Climate Action	Advantage	Disadvantage	Value for Money
available land for forestry investments.		sustainability-linked loans, and guarantees). Supporting certification and de-risking opportunities will enable safer and better-positioned placement of Fijian forest products in their respective markets. Supported activities will also encourage stakeholders to engage with the sustainability-linked products the FDB will make available via Output 3.2.	and guarantees). Supporting certification and de-risking opportunities will enable safer and better-positioned placement of Fijian forest products in their respective markets. Supported activities will also encourage stakeholders to engage with the sustainability-linked products the FDB will make available via Output 3.2.		<p>different forestry models analyzed.</p> <p>The most profitable activity would be agroforestry practiced in areas with less slope, where it is possible to have a combined production of high-value annual crops, fruits, trees, and shrubs. Additionally, the non-timber activities associated with the preservation and protection of forest areas show promising returns on investment</p> <p>The international market for NFTP grew from US\$11 billion in 1995 to US\$88 billion in 2011 (Sheppard et al., 2020). This growth underscores the increasing importance and potential of NTFPs in the global market. NTFPs in Fiji are driven mainly by dedicated individuals and value created corresponds to approx. 0.4% with high margin for growth if organized in sustainable way with access to finance.</p>

## 11 Key Technologies, practices and sectorial approaches identified by stakeholders to address climate change adaptation and contribute to climate change mitigation

- a. Outcome 1: Strengthened regulatory framework for climate-responsive and integrated landscape management (Ridge to Reef – R2R):

Output 1.1: Strengthened institutional coordination and multi-sectoral collaboration on applying R2R approaches

Output 1.2: Key forest policies and land management regulations are updated, reviewed, and/or developed

Output 1.3: Climate responsive land use plans at landscape scale developed.

218. Forests are crucial for the well-being of humanity. They provide foundations for life on earth through ecological functions, regulating the climate and water resources and serving as habitats for plants and animals. Forests also provide a wide range of essential goods such as wood, food, fodder, and medicines, in addition to opportunities for recreation, spiritual renewal, and other services.

219. Land degradation in Fiji reduces the provision of ecosystem services that take different forms – decline in food availability, soil fertility, carbon sequestration capacity, wood production, groundwater recharge, etc. – with significant social and economic costs to the country. As a solution, the restoration of degraded and deforested landscapes has gained recognition internationally as a way for countries to achieve multiple national and international priorities on mitigating climate change, improving livelihoods, reducing desertification, and conserving biodiversity. Restoring degraded and deforested landscapes using the climate-adaptive Forest Landscape Restoration (FLR) from Ridge to Reef approach would be a cost-effective, long-term, sustainable, nature-based solution.

220. However, to accelerate the adoption of an FLR approach on a larger scale in Fiji, the leading root causes and bottlenecks to address the forest-decarbonization nexus are to be overcome, namely: (I) outdated policy and knowledge framework; (II) Lack of community engagement and awareness including youth and females; (III) undervalued forests' value chains; and (iv) lack of public and private financial tools to support sustainable forestry investments.

221. The activities of the outcome will enable integrating and capitalizing on different experiences in the sector to transform the national landscape planning from a single project approach to a long-term and process-oriented approach addressing all necessary practices and financing mechanisms necessary for climate change adaptation/mitigation and how the agriculture and forestry sector can contribute to it. In this regard, the project will seize the opportunity to update key forest policies and regulations to integrate the R2R approach into the country's legal framework.

222. The activities will also be an opportunity to expand coordination with WWF-Fiji and FDB (both AEs of potential GCF projects in the country) and create an enabling environment for the scaling-up and rolling out of nature-based solutions (NbSs), including coastal protection approaches across Fiji. The activity will also see the participation of the Pacific Community, which will support the integration of promoted actions within the regional context of the action of the United Nations Satellite Centre (UNOSAT) of the United Nations Institute for Training and Research (UNITAR). UNOSAT will promote innovative remote sensing technologies to advance understanding of lessons learned and monitoring and verification of activities implementation and beneficiaries reached. In this regard, it will provide a dashboard integrating project- and climate-related information, including georeferenced maps of field activities that will be integrated with national databases.

223. The design of climate risk-informed and integrated participatory community landscape management and investment plans combines scientific climate risk assessments with local knowledge and community participation, creating a more holistic and context-specific planning process. Integrating climate risk information into landscape management ensures that plans are forward-looking and resilient to future climate impacts. The participatory nature of the process empowers local communities to take an active role in decision-making, fostering ownership and increasing the likelihood of successful implementation. Furthermore, combining landscape management with investment planning directly links environmental conservation and economic development, potentially attracting diverse funding sources. This integrated approach aligns with landscape approaches and community-based participatory climate action principles, which have shown promise in other contexts for balancing conservation, development, and climate resilience objectives.
224. Establishing community-supported ecological monitoring of climate-adaptive forestry interventions across target districts combines traditional ecological knowledge with modern scientific methods, empowering local communities to participate in forest management and climate adaptation efforts actively. By involving community members in data collection and monitoring, the project creates a sense of ownership and stewardship, enhancing long-term sustainability. This participatory approach also allows for real-time feedback on the effectiveness of climate-adaptive forestry practices, enabling adaptive management strategies. Furthermore, integrating local observations with scientific data provides a more comprehensive understanding of forest ecosystem responses to climate change and management interventions. This innovative model enhances the resilience of Fiji's forests and builds local capacity, strengthens community engagement in climate action, and creates a scalable framework for community-based ecological monitoring that can be replicated in other Pacific Island nations facing similar climate challenges.
225. Carbon credits can potentially leverage the country's rich coastal and forest ecosystems for climate change mitigation while providing sustainable economic opportunities. Fiji's extensive mangrove forests, seagrass meadows, and tropical rainforests offer significant carbon sequestration potential. By developing carbon credit projects for these ecosystems, Fiji can access new funding streams through international carbon markets, supporting conservation efforts and local livelihoods. This approach aligns with Fiji's climate commitments and low-emission development strategy, offering a novel way to finance the country's transition to a more sustainable economy. Additionally, as one of the first Pacific Island nations to implement such projects, Fiji can become a regional leader in blue and green carbon initiatives, potentially creating a model for other small island developing states to follow.

**b. Outcome 2: Climate resilience of local communities through climate-adaptive forest management increased while contributing to mitigation and food security**

Output 2.1: Technical and knowledge capacity to produce climate-adaptive seedlings established

Output 2.2: Community- and farmer enterprise-led FLR for afforestation and conservation of High Conservation Value Forests established

226. In line with the recommendations of the National Adaptation Plan to apply an ecosystem-based adaptation approach to the proposed national contributions to climate change, the project aims to restore forest and other landscape ecosystems by integrating land, water, and living resources. The project will increase diversity at different levels:
227. Genetic diversity from different populations of the same species to increase the gene pool of collected seeds and, therefore the probability of having a representation of varieties better adapted to drought, frost, pests, etc;
228. Species diversity by mixing different trees and plants in the same restoration site to accelerate the recovery of the forest ecosystem in terms of plant composition, structure, and ecological processes and consequently enhance ecosystem services and resilience against climatic risks.

229. The project has selected several native trees that better suits future climate conditions in Fiji. Please refer to Appendix 3 and 4 for a more detailed description of the selected areas, and Appendices 3-5 provide more details on the native species. These species have a wide ecological range (they grow under large temperature and precipitation gradients), and the capacity to withstand drought, re-sprout after fire and to attract seed-dispersal fauna.
230. Transferring technology and knowledge with on-the-job training to forests stakeholders is a precondition to secure the highest possible survival rate of forestry investments and to ensure their long-term climate-proofing. Addressing only a few steps of the process (e.g., plantation or maintenance of forests) is not functional and does not respond to the existing challenges linked to climate change, people's needs, and the healthiness of ecosystems. Therefore, the project will work with Fijian stakeholders to ensure a 360-degree approach to forestry where climate change and its adverse impacts are addressed fully. The project will support forest stakeholders with (i) technology and knowledge transfer, (ii) tailored communities' forestry investments and (iii) addressing the governance of forests' stakeholders, ensuring the participation and action of local communities.

c. **Outcome 3: Strengthened financial mechanisms and private sector involvement in climate change-related investments for sustainability, food security & scale-up**

Output 3.1: Forest Ecosystem Services certification is accessible to stakeholders

Output 3.2: Design of improved financial mechanisms supported and made accessible to communities and the private sector

Output 3.3: Support the restoration and SFM of commercially logged over natural forests and plantations

231. The project will support the decarbonization path of Fiji by enhancing the operationalization of the existing legal framework (e.g., the Climate Change Act) and supporting the private sector decarbonization efforts. The project will work with both national institutions and financiers (IFIs, national banks, and investment funds) to provide companies in Fiji with the needed technical assistance and the possibility to access financial resources to invest in the best available technologies for a climate-resilient business development, as well as developing new financial mechanisms to enable communities and private sector forestry operators to invest in FLR and SFM.
232. The activity will support private sector operators and the communities in adopting the FSC /FSC ES-PRO certification by developing guidelines tailored for the Fijian context and specific training on initiating, ensuring, and maintaining FSC / FSC ES-PRO certification. Training will also include communication and community engagement activities to maximize impact at both market and field levels. Training materials will be prepared in collaboration with the MoFF, MoTA, and MoE and will include changes and knowledge sharing with companies already FSC-certified in Fiji and other countries of the region. Additionally, stakeholders identified the need to further expand the level of certification by including the FSC ES-PRO impact verification framework. The ES-PRO<sup>57</sup> establishes the requirements for forest and land managers to contextualize, measure, report, and verify the positive impacts of their management activities on five ecosystem services – biodiversity conservation, carbon storage and sequestration, watershed services, soil conservation, and recreational services. Its outputs include quantifiable, externally verified, and annually audited impact data to substantiate positive impact claims.

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<sup>57</sup> Applying the ES PRO includes seven steps for identifying the ecosystem services to be verified, describing the local social and biophysical context, naming stakeholders and beneficiaries and their rights to use, access, or receive payments for ecosystem services, and demonstrating positive impacts through an explicit theory of change that links management activities to specific outputs and outcomes.

## 12 CARBON ACCOUNTING ANALYSIS

233. The GHG emission analysis and calculation in Fiji utilize the NEXT tool, which is composed of several modules for evaluating GHG emissions in the AFOLU sector<sup>58</sup>. Annex 22: Assessment of GHG emission reductions report provides further methodological and detailed information on the NEXT tool and the calculation results in the Fijian context.
234. The project implementation period is seven years, but the NEXT tool captures the full impact of management and conservation strategies on biomass and soil carbon stocks until these stocks reach equilibrium. Carbon stock changes, including biomass, litter, deadwood, and soil, are estimated over the implementation period, and the additional time required for each carbon stock to reach equilibrium. The changes in biomass carbon stock are estimated over a further 13-year time series. The total lifetime considered for the project is 20 years to capture soil organic carbon changes until the year 2050.
235. The GHG analysis includes CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions. However, it does not account for the life cycle GHG impacts of materials used in the project. The analysis focuses on the activities implemented by the project, such as afforestation, forest management, cropland, and grassland management, and harvested wood products.
236. The monitoring approach for verifying GHG emission reductions includes ex-ante technical assessments, on-site verification, continuous site visits, and ex-post expert evaluations of forestry and decarbonization practices.
237. The assumptions associated with the activity data vary depending on the component. For example, in the forest management and governance component, climate-adaptive silvicultural management practices are assumed to prevent 1% of the land from being thoroughly degraded and promote regeneration on an additional 1% of the remaining land. Carbon stock changes are estimated using different approaches, such as a simple carbon stock approach and a gain-loss approach.
238. The GHG appraisal results show the carbon accounting of forestry activities for specific years, such as the year 2030 (completion of afforestation activities), the year 2043 (20 years after the project start), and year 2050 (project lifetime).
239. Overall, the project is estimated to avoid at least 6 million tCO<sub>2</sub>eq over the 20-year project lifetime. Most of the emissions are avoided through the implementation of forestry activities. The cost per tCO<sub>2</sub>eq avoided is approximately 8 USD, which aligns with other similar projects approved by the Green Climate Fund.

## 13 ENVIRONMENTAL AND SOCIAL SAFEGUARDS

240. This project is classified as a moderate risk (Category B) and focuses on identifying triggers, potential impacts, and mitigation measures related to environmental and social issues. The project's risk assessment was conducted using FAO's Environmental and Social Screening Form, resulting in the moderate-risk categorization. The Environmental and Social Management Framework (ESMF) serves as a practical tool to guide the identification and mitigation of potential adverse environmental and social impacts. It facilitates consultations with stakeholders and project beneficiaries.

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<sup>58</sup> The Nationally Determined Contribution Expert Tool (NEXT) is a greenhouse gas accounting tool developed by the Food and Agriculture Organization of the United Nations (FAO) to support the assessment of environmental impacts in the Agriculture, Forestry, and Other Land Use (AFOLU) sector. It utilizes Intergovernmental Panel on Climate Change (IPCC) methodologies and provides estimates of carbon removal and greenhouse gas emission reductions based on actions determined by countries in their climate policies. NEXT helps countries interpret, track, and enhance the ambition of their Nationally Determined Contributions (NDCs) and supports the transparency framework outlined in the Paris Agreement. It offers a comprehensive overview of climate actions by providing detailed temporal results and a range of indicators, including the social value of carbon. The tool enables assessment and reporting of progress, evaluation of additional emissions reductions, and assessment of achievements in GHG emissions reductions over a 30-year time frame. It helps countries understand the impacts of past and ongoing climate actions and informs the development of necessary measures and investments to meet climate targets.

241. To support the project, a Project Management Unit (PMU) will be established under the guidance of a steering committee consisting of representatives from line ministries, stakeholders, and the private sector. An Environmental and Social Safeguards (ESS) Specialist will be hired within the PMU, responsible for ensuring compliance with the ESMF, conducting environmental and social assessments, and overseeing mitigation measures. The ESS Specialist will collaborate with the Monitoring and Evaluation unit and Gender Specialist for reporting and stakeholder engagement.
242. The work plan for implementing the ESMF includes capacity building, ESS screening and assessment, oversight, stakeholder engagement, a Gender Action Plan, and monitoring and reporting. The project is expected to positively impact the environment, society, and economy, including job creation, poverty reduction, improved fuel efficiency, enhanced biodiversity, soil quality, and water availability. Negative impacts related to on-ground activities in the forestry sector can be mitigated through careful species selection and considering climate change projections.
243. Throughout the project design, consultations were held with relevant government agencies and stakeholders in the forestry, energy, and agriculture sectors. Stakeholder engagement will continue during project implementation, with annual consultations and sharing the ESMF, Grievance Redress Mechanism, and Gender Action Plan. Additional consultations will take place as needed for sub-activities.
244. Additional information on FAO and GCF Safeguards applicable to this project, mitigation measures, approaches to enhancing positive impacts, and principles and procedures for impact mitigation during implementation can be found in Annex 6: Environmental and Social Management Framework.

## 14 IDENTIFIED ACTIONS TO TRANSFER TECHNOLOGIES AND PRACTICES AND TO SCALE UP RESULTS NATIONALLY

245. The project interventions outlined above encompass a range of strategies that will facilitate the transfer of technologies and practices, leading to nationwide scaling up of results. Through implementing these diverse strategies, the project's primary objective is to ensure the effective transfer, adoption, and scaling up of knowledge and best practices among stakeholders, sectors, and regions. This collective effort will play a crucial role in promoting sustainable and climate-adaptive forest management practices throughout the country:

246. **At-the-job training and capacity development:** The project will provide practical training opportunities to professionals, academics, financiers and forest workforce, allowing them to acquire hands-on experience in implementing sustainable and climate adaptive silviculture practices/approaches, climate adaptive forest management, ecosystem management, using the MRV, highlight quality plant/seedling production, economic and environment benefits of sustainable short rotation plantations among others. The capacity development training will take place in the field and workshops, enabling participants to apply the acquired knowledge directly to their work.

247. **Communities' involvement and education:** The local communities are of fundamental importance for the success and long-term impact of the project, and the activities will therefore support communities via dedicated training and participation in the regular monitoring of the execution of plans, strategies, and investments in their areas of interest. Participatory approaches will be secured through community technical advisors and involving local schools and youth clubs. This will contribute to tracking down progress on issues of particular concern to stakeholders (e.g., forestry investments), ensuring that stakeholders are well-informed about forest changes, encouraging stakeholders to review their objectives in the light of outcomes, and facilitating knowledge transfer to community members, students and other youths of both sexes.

248. **Field conferences:** The project will organize conferences and workshops where experts and practitioners can share their experiences, present research findings, and discuss best practices. These conferences will serve as platforms for knowledge exchange and



networking, enabling participants to learn from each other and gain insights into successful approaches.

249. **Raising awareness:** Various awareness-raising guidelines, campaigns, workshops, and public events will be conducted to educate and inform stakeholders about the importance of sustainable forest management, climate adaptive approaches and decarbonization strategies. These initiatives will target a wide range of audiences, including local communities, decision-makers, and the general public, to foster a broader understanding of the benefits and significance of the project's interventions.

250. **E-knowledge diffusing:** The project will leverage digital platforms and online resources to disseminate knowledge and share information. This may involve the creation of an online portal, webinars, video tutorials, and interactive tools that provide accessible and user-friendly information on sustainable forest management practices.

251. **Updating national curricula:** The project will collaborate with relevant educational institutions to incorporate sustainable and climate adaptive forest management and land restoration practices into the teachings of universities and technical schools. This integration will ensure that future professionals and students receive comprehensive training and education on these important topics.

252. **Private sector involvement:** The project will engage the private sector in all the projects components, including financial institutions, forestry companies and forest owners, in the implementation of sustainable practices. This involvement may take the form of partnerships, capacity-building initiatives, financial support; and sharing of best practices to promote the adoption of sustainable forest management approaches within the private sector.

253. **Civil society and community organizations involvement:** The project will actively involve civil society and community organizations, such as non-governmental organizations (NGOs) and local community groups, in project activities. These organizations can play a vital role in raising awareness, mobilizing communities, and ensuring the participation of local stakeholders in decision-making processes related to forest management.

254. **Policy dialogue between public, communities, private, and NGOs:** The project will facilitate policy dialogues and collaborative platforms where representatives from the public sector, private sector, and NGOs can come together to discuss policy frameworks, share insights, and develop strategies for promoting sustainable forest management. This dialogue will help align priorities, address challenges, and create an enabling environment for effective knowledge transfer and implementation. The project will enable integrating and capitalizing on different experiences in the sector to transform the national landscape planning from single project approach to a long term and process-oriented approach addressing all necessary practices and financing mechanisms necessary for climate change adaptation/mitigation and how the agriculture and forestry sector can contribute to it.

## 15 PROJECT FEASIBILITY ASSESSMENT

255. The project's feasibility has been thoroughly assessed by national and international experts, who have conducted detailed analyses documented in various working papers. These analyses serve as the basis for the project proposal and supporting documents. The feasibility assessment examines the coherence of the proposed project interventions with the relevant laws, policies, and strategies governing the sector. It also evaluates the project against the investment criteria of the GCF and emphasizes its contribution to the UN Country Framework, including the FAO. Furthermore, the assessment highlights the economic and financial viability of the project and presents different options and scenarios for investment examination.

256. The project's alignment with national policies, strategies, international commitments, and national laws and regulations is summarized in tables, demonstrating how the project adheres to existing climate change policy frameworks and sector-specific standards. In cases where specific laws and standards are not yet established, the project will be assessed based on

available international standards and legal frameworks implemented in similar contexts in other countries.

Table 27: Contribution of the proposal to the main national strategies, policies and international

<b>National Climate Change policy</b>	
<b>Main relevant objectives/priorities</b>	<b>Main contributions of the project</b>
Objective 1.1. To institutionalize and enhance accountability for climate risk management through appropriate long-term governance arrangements, planning processes, and evidence-based decision-making.	Develop multi-stakeholder platform on climate change management.
Objective 1.3 To accelerate resilient development objectives using national standards of compliance.	Develop NRM, Afforestation, Natural Regeneration, Reforestation and plantation strategies, guidelines, tools, standards, and codes-of-practices.
Objective 2.4 To drive regional and global action to reduce stressors on the marine environment.	Carry out Environmental impact assessment methods and procedures as well as safeguard policies for land-use planning.
Objective 3.2 To increase ecosystem protection, natural resource redundancy, and environmental resilience through nature-based solutions.	Develop green and blue carbon financing schemes.
Objective 3.4 To implement climate change adaptation solutions which are inclusive, equitable, and locally driven.	Implement ecosystem-based forest restoration adaptation solutions which protect biodiversity, increase carbon sequestration potential, and reduce human vulnerability to climate impacts.
Objective 4.1 To derive 100% of national electricity production from renewable energy sources by 2030 and achieve net zero annual greenhouse-gas emissions by 2050.	Restore and bring und Sustainable Forest Management practices 73,737 ha of forests.
Objective 4.3 To preserve and enhance Fiji's natural carbon sinks and carbon reservoirs.	Develop Short Rotation Plantation strategy for energy production.
Objective 5.1 To improve data availability, analytical-capacity, risk communications and awareness.	Establish the forest ecosystem services levy or timber extraction levy.
Objective 5.2 To invest strategically in human and technological capacity-building for climate-resilient development.	Design climate risk informed and integrated participatory community landscape management and investment plans (CLMP)
Objective 6.1 To Increase the use and availability of domestically derived climate finance.	Establish Natural Resources Management related Public-Private-Community Partnerships mechanisms.
Objective 7.2 To establish private-public partnerships.	
<b>Fiji Low Emission Development Strategy 2018 - 2050</b>	
<b>Main relevant objectives/priorities</b>	<b>Main contributions of the project</b>
New solar, hydro, biomass, wind, waste-to-energy, biogas, geothermal, and energy storage installations	Develop Short Rotation Plantation strategy for energy production and carry out 800 ha of SRP plantations.
Reduced deforestation and increases in plantation productivity.	Implement ecosystem-based forest restoration adaptation solutions which protect biodiversity, increase carbon sequestration potential and reduce human vulnerability to climate impacts.
Extensive afforestation.	Restore and bring und Sustainable Forest Management practices 80,737 ha of forests
<b>Existing GCF country programme</b>	
The project is included in the country program, and it will work in complementarity and synergy with the proposals of the WWF-Fiji and of the Fiji Development Bank. Under the coordination of the NDA and the overall support of a joint (FDB/WWF/FAO) steering committee, the project will operate in complementarity with other GCF projects (FAO, WWF, and FDB/DAE) and represents an effective example of national ownership and coordination of GCF projects.	
<b>Relevance to and alignment with existing policies</b>	
<b>Main relevant objectives/priorities</b>	<b>Main contributions of the project</b>
<b>NDC</b> Target 5: To adopt Climate Smart Agriculture practices, with emphasis on the promotion of sustainable practices in crop management, livestock and sugarcane farming and fisheries.	<b>NDC</b> Restore and bring und Sustainable Forest Management practices 80,737 ha of forests, including climate adapted and sustainable agroforestry and reforestation
Target 10: To conserve natural environment and biodiversity wealth enabling sustainable long-term provision of ecosystem services, including carbon sequestration potential. Target 11: To plant 30 million trees by 2035.	
Target 11: To plant 30 million trees by 2035.	

<p><b>NAP</b>  15.B.9 Diversify renewable energy generation to improve its resilience, including increasing investing in solar generation and feasibility studies for new biomass power plants.  16.1 Strengthen enforcement of planning and environmental legislative and institutional frameworks, most notably the Environment Management Act and Environment Impact Assessment process.  16.2 Prioritize and delineate critical areas for protection and sustainable management based on ecosystem services, cultural importance, biodiversity, food security, water security, access and benefit sharing, and importance for adaptation and disaster risk reduction.  16.5 Strengthen the management and monitoring of ecosystems.  16.8 Implement ecosystem-based approaches to adaptation to protect, maintain, and restore degraded habitats with active community, 111 NGO and private sector engagement particularly the restoration of critical watersheds, riparian and coastal zones.  16.10 Implement a national program for the monitoring and management of rivers and watersheds (ridge to reef) to reduce the negative impacts of unsustainable activities linked to logging, river, and seabed mining.</p>	<p><b>NAP</b>  Develop Short Rotation Plantation strategy for energy production.  Develop NRM, Afforestation, Natural Regeneration, Reforestation and plantation strategies, guidelines, tools, standards, and codes-of-practices.  Carry out Environmental impact assessment methods and procedures as well as safeguard policies for land-use planning.  Develop green and blue carbon financing schemes.  Implement ecosystem-based forest restoration adaptation solutions which protect biodiversity, increase carbon sequestration potential and reduce human vulnerability to climate impacts.  Restore and bring und Sustainable Forest Management practices 75,750 ha of forests.  Establish the forest ecosystem services levy or timber extraction levy.  Design climate risk informed and integrated participatory community landscape management and investment plans (CLMP)  Establish Natural Resources Management related Public-Private-Community Partnerships mechanisms.</p>
<p align="center"><b>Capacity of Accredited Entities or Executing Entities to deliver</b></p>	
<p>FAO will be the Accredited Entity as well as one of the executing entities. FAO is accredited with the major climate funds (e.g. GEF, AF) and has vast experience in the domains of the project. Likewise, EEs (MoFF, MoAW, FHCL and FPL) are the deputed institutions to address climate change, forestry, community planning and agriculture. Further details are available in Section B.4)</p>	
<p align="center"><b>Role of National Designated Authority</b></p>	
<p>The NDA will have the role of coordinating all climate change projects and programs in the country. Withing this project the NDA will be the chair of the Steering Committee. Under the coordination of the NDA and the overall support of a joint (FDB/WWF/FAO) steering committee, the project will operate in complementarity with other GCF projects (FAO, WWF, and FDB/DAE) and represents an effective example of national ownership and coordination of GCF projects.</p>	
<p align="center"><b>Engagement with CSOs, indigenous peoples, women, and other vulnerable groups</b></p>	
<p>The project was developed and prepared following a request to FAO, by the Government of the Republic of Fiji. During project elaboration, key government agencies and other stakeholders dealing with the forestry, land management, agriculture, environment, Indigenous Affairs, private sector and other sectors were consulted. These included consultations with institutions (central and local), academia and civil society organizations (e.g. WWF, CI, IUCN, Fiji Women Rights Movement) (Annex 7). The consultations verified the technical feasibility of project's activities and allowed to obtain feedback from stakeholders on all aspects of the project.</p> <p>With regards to Indigenous Peoples, it was agreed with the Government of Fiji that the Project already satisfies the FPIC requirements (Annex 6b). Should it be determined that a detailed FPIC will be needed, this will be, through community-level consultations, at project start-up. During execution, the project will ensure that all vulnerable stakeholder groups are included in the implementation process in a transparent and participatory way. This will among others be achieved through the involvement of relevant ministries/groups/CSOs in:</p> <p>257. Establishment of the multi-stakeholder platforms</p> <p>258. Design, implementation and monitoring of integrated participatory community landscape management and investment plans.</p> <p>259. Implementation of forest restoration and sustainable management activities.</p> <p>260. Regular national and community-level consultations to update stakeholders on the project's progress, discuss upcoming activities and gather feedbacks.</p> <p>261. Targeted outreach and inclusive consultations to ensure marginalized groups' voices are heard.</p> <p>Furthermore, during project execution, consultations with stakeholders will take place yearly, at the time of the preparation of the Annual Work Plan (AWP) – i.e., at the beginning of each of the seven project Fiscal Years (FY). These consultations will involve reviewing the previous Annual Work Plan (AWP), assessing activities, validating results, and identifying necessary modifications. Stakeholder engagement will be ensured under the aegis of AWP review and preparation, supported by the outcomes of local consultations. Before becoming a final AWP, all activities will be discussed, reviewed, and validated, including through the Project's multi-stakeholder gender working group. Therefore, community consultations will feed into the review and preparation of the AWP. Details of the AWP consultations for the FY are available in Annex 7 – Section IV.</p> <p>Participants will include relevant ministries and representatives of local institutions, civil society organizations as well as other concerned stakeholders. Stakeholder engagement will be maintained throughout the project duration. The roles and responsibilities of key stakeholders, including the Ministry of Agriculture, Ministry of Fisheries and Forestry, Ministry of Environmental Protection, i-Taukei Land Trust Board (TLTB), local communities, the private sector, and NGOs/CSOs, are clearly defined in the implementation arrangement session and will be regularly reviewed with the Steering Committee.</p> <p>The PMU Monitoring and Evaluation (M&amp;E) Unit will hold annual consultations in project areas to support planning and monitor the execution of activities. In addition, these consultations will also provide a space to discuss all project activities. The Project Management Unit (PMU) will oversee monitoring and evaluation, ensuring the ESMF, GRM, and GAP are implemented and communicated to all</p>	

stakeholders. With specific regards to the ESMF and the GAP, these will be the responsibility of the Environmental and Social Expert and the Gender Expert respectively. Annual consultations in target areas will support planning and monitoring execution, feeding into the review and drafting of AWP. The ESMF, GRM and GAP will be presented to all stakeholders in FY1. The GRM and any Environmental and Social Management Plans (ESMPs) will be presented and explained again (FY2) and validated at each consultation throughout FY 2-7.

The AWP will be presented by the PMU and reviewed by partners (including the gender working group) at the national, Governorate, and community levels. During these stakeholder engagement consultations, the Environmental and Social Management Framework (ESMF) – including relevant ESMPs prepared for sub-activities and the Grievance Redress Mechanism (GRM) - and the Gender Action Plan (GAP) - will be shared with stakeholders and explained. A complete description of the stakeholder's engagement plan during project execution is available in Annex 7 – Section IV.

A structured grievance mechanism will be established at the project level, allowing stakeholders to file complaints through designated channels (email, phone, contact person). The PMU Safeguards Specialist will assess and address complaints, ensuring confidentiality. Unresolved grievances will be escalated to higher levels as necessary. The PMU will be responsible for receiving all stakeholder feedback, on any issues that may arise, as regards the GRM. The PMU Environmental and Social Safeguards Specialist, together with the Gender Specialist and the PMU M&E specialist, will be responsible for ensuring that the ESMF, eventual ESMPs and GAP are carried out, and that the GRM is communicated to all stakeholders.

All safeguard instruments, including the ESMF and GAP, will be disclosed online in the three official languages (English, Bau Fijians, Fiji Hindi) at least 30 days prior to project approval. Information will be accessible locally and culturally appropriate, ensuring effective stakeholder participation.

Table 28: Contribution of the project to the FAO Country Programme Framework 2022-2025

9	National development priority	Main Contributing Activities
<i>By 2027, people, communities and institutions are more empowered and resilient to face diverse shocks and disasters, especially related to climate change, and ecosystems and biodiversity are better protected, managed and restored</i>	5-Year and 20-Year National Development Plan 2017-2036; National Climate Change Policy (NCCP) 2018–2030; National Biodiversity Strategy and Action Plan (NBSAP) 2020–2025; Fiji Offshore Fisheries Management and Development Plan (OFMDP): A plan for tuna and other pelagic fisheries. 2021– 2026	Sub-outcome 1.1: Better protected, managed and restored biodiversity/ environment/ ecosystems Sub-outcome 1.2: Enhanced climate change adaptation and resilience Sub-outcome 1.3: Effective disaster risk management Sub-outcome 1.4: Scaled-up climate change mitigation.
<i>Outcome 2: By 2027, more people, particularly those at risk of being left behind, benefit from more equitable access to resilient, and gender-responsive, quality basic services, food security/nutrition and social protection systems</i>	5-Year and 20-Year National Development Plan 2017-2036; Fiji's pathway to "A Safe, resilient, innovative food system" (September 2021); Ministry of Agriculture Strategic Development Plan 2019–2025; Addressing Gender Gap for Agriculture in Fiji (2022-2027); Fiji Offshore Fisheries Management and Development Plan; A plan for tuna and other pelagic fisheries. 2021–2026;	Sub-outcome 2.5 Addressed drivers of food insecurity, malnutrition in all forms, and NCDs;
<i>Outcome 3: By 2027, more people, especially those at risk of being left behind, contribute to and benefit from sustainable, resilient, diversified, inclusive and human-centered socioeconomic systems with decent work and equal livelihoods' opportunities, reducing inequalities and ensuring shared prosperity.</i>	Ministry of Fisheries Strategic Development Plan 2019 – 2029; Fiji E-agriculture strategy 2017	Sub-outcome 3.3 Transformation of agrifood systems Sub-outcome 3.6 Bridging the digital divide

262. Following consultations with national institutions, UN agencies, civil society and private sector stakeholders, the Government of Fiji and FAO agreed to implement the UN Country Programme Framework (CPF) focusing on three priority areas during the period 2021-2026 (Table 3). The GCF project is building on FAO's past experience in the country and its comparative advantages – and is in line with key national strategies.

263. Building on FAO's past experience in the country and its comparative advantages - and in line with key national strategies, the project will contribute to each priority area. The main elements of the feasibility are reported in tables 24, 25, and 26. For the economic/financial, social/gender and environmental feasibility detailed information is reported in Annex 3/25, 8 and 6. Concerning climate and water details and additional information are available in the chapters 3 and 4 of this document.

264. The proposed project is developed in accordance with GCF investment criteria and in adherence with the principle of national ownership. The scope and objectives of the projects have been defined in consultation with national stakeholders taking into account all the relevant climate change strategies. More information about the other investment criteria provided in the table below (Table 22).

Table 29: Component 1 main elements of feasibility

<b>Outcome 1: Strengthened regulatory framework for integrated landscape management aimed at climate change adaptation and mitigation</b>						
<b>Project Component/Sub-component</b>	<b>Climate Relevance<sup>59</sup></b>	<b>Coherence with National Policies and Standards<sup>1</sup></b>	<b>Technical Feasibility</b>	<b>Economic Feasibility<sup>60</sup></b>	<b>Social Feasibility<sup>61</sup></b>	<b>Environmental Feasibility<sup>62</sup></b>

<sup>59</sup> Details on climate change and climate change adaptation are above in chapter 3

<sup>60</sup> Details of the economic and financial feasibility are available in Annex 3

<sup>61</sup> Details on social feasibility are available in Annex 6 and Annex 8

<sup>62</sup> Details on environmental feasibility are available in Annex 6 and above in Chapters 3 and 4.

<p>Output 1.1: Strengthened institutional coordination and multi-sectoral collaboration on applying R2R approaches</p> <p>Output 1.2: Key forest policies and land management regulations are updated, reviewed, and/or developed</p> <p>Output 1.3: Climate responsive land use plans at landscape scale developed.</p>	<p>It is the focus of the component to enhance the overall resilience of Fiji's forest landscapes and communities with a climate adaptive approach from ridge to reef (R2R). This will contribute to the resilience of all ecosystems in particular the coastal zone and marine areas.</p>	<p>The project is aligned with major national policies and strategies, including the Low Emission Development Strategy (LEDS) and National Communications. Promoting conservation of forest biodiversity through sustainable forestry practices.</p> <p>Furthermore, one of the main aims of the project is to update key policies and regulations and promote the mainstreaming of CAS along with all relevant policies.</p>	<p>The activities will enable integrating and capitalizing on different experiences in the sector to transform the national landscape planning from a single project approach to a long-term and process-oriented approach addressing all necessary practices and financing mechanisms necessary for climate change adaptation/mitigation and how the agriculture and forestry sector can contribute to it.</p> <p>It will also enhance the existing carbon monitoring, reporting, and verification system by bringing it up to international standards. The project will assist public and private stakeholders to get involved in Climate</p>	<p>Forests provide job opportunities and non-wood forest products (NWFPs). These products are estimated to generate an annual value of approximately USD 39.6 per ha per year. Additional ecosystem services associated with this include pollination, direct and indirect protection from natural hazards, tourism, and flood protection, for an average estimated social value of about US\$ 11.1 per hectare per year.</p> <p>The voluntary carbon market has grown considerably over the last five years to reach approximately USD 2 billion in 2022, with expectations of further growth to between US \$5</p>	<p>The project will focus on the involvement of the local communities in the monitoring of the changes in forests and on their social, economic, and environmental functions to provide evidence and inform authorities as well as the public in a transparent and consistent manner on the forest sector's performance.</p> <p>The project aims to raise awareness, stimulate public discussions, and involve communities to embrace ecosystem-based adaptation considering the environmental, social, and economic challenges of forest restoration in an accelerated climate change reality.</p>	<p>Forest degradation, along with resulting habitat loss and fragmentation, is one of the key environmental problems at present, resulting in loss of forest carbon, and biodiversity and impacts also the functioning of other key ecosystems like coastal and marine ecosystems. The project will restore degraded and deforested landscapes using the Forest Landscape Restoration (FLR) approach</p>
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Table 30: Component 2 main elements of feasibility

<b>Outcome 2: Climate resilience of local communities through climate-adaptive forest management increased while contributing to mitigation and food security</b>						
<b>Project Component/Sub-component</b>	<b>Climate Relevance<sup>63</sup></b>	<b>Coherence with National Policies and Standards<sup>1</sup></b>	<b>Technical Feasibility</b>	<b>Economic Feasibility<sup>64</sup></b>	<b>Social Feasibility<sup>65</sup></b>	<b>Environmental Feasibility<sup>66</sup></b>
<p>Output 2.1: Technical and knowledge capacity to produce climate-adaptive seedlings established</p> <p>Output 2.2: Community- and farmer enterprise-led FLR for afforestation and conservation of High Conservation Value Forests established</p>	<p>The project's investments in forest nurseries, raising knowledge on CAS and supporting the investment of communities in climate adaptive landscape restoration activities will not only support the establishment of resilient landscapes and restoration of degraded land but also contribute to the long-term objective of increasing the contribution of the forest to reach net zero emissions by 2050.</p>	<p>The component will provide the basis for the country to reach 35mln trees planted by 2030. A precondition for this is the availability of a network of public, private and community nurseries to produce climate adapted seedlings. This is one of the main aims of the component.</p> <p>Furthermore, the activities will also promote sustainable community FLR activities that can be upscaled beyond the project.</p>	<p>The project will support forest stakeholders with: (I) technology and knowledge transfer to ensure climate-adaptive seedling production and forestry investments and (II) tailored forest investments (i.e., afforestation, forest restoration, and sustainable forest management).</p>	<p>Most activities funded under the project are projected to generate positive financial outcomes, primarily in the medium and long term. In economic terms, most activities are expected to yield positive returns over a 30-year evaluation period. This underscores the nature of investments that require time to generate results, particularly those in the different forestry models analyzed.</p>	<p>The project will work with all relevant Fijian stakeholders to ensure a 360-degree approach to forestry where climate change and its adverse impacts are addressed fully.</p> <p>It will provide opportunities to rural areas through nurseries development and forestry investment and therefore counteract rural migration phenomena. At the same time, it will promote the contribution of the communities to sustainable development pathways and therefore increase their self-worth.</p>	<p>Transferring technology and knowledge with on-the-job trainings to forests' stakeholders is a precondition to secure the highest possible survival rate of forestry investments and to ensure their long-term climate proofing. Furthermore, the activities will contribute to biodiversity conservation (terrestrial and marine) and the enhancement of soil health and carbon sinks.</p>

Table 31: Component 3 main elements of feasibility

<sup>63</sup> Details on climate change and climate change adaptation are available above in chapter 3

<sup>64</sup> Details of the economic and financial analyses are available in Annex 3

<sup>65</sup> Details on social feasibility are available in Annex 6 and Annex 8

<sup>66</sup> Details on environmental feasibility are available in Annex 6 and above in chapter 3 and 4.

**Component 3: Strengthened financial mechanisms, incentives, and opportunities for sustainability and scaling up**

<b>Project Component/Sub-component</b>	<b>Climate Relevance<sup>67</sup></b>	<b>Coherence with National Policies and Standards<sup>1</sup></b>	<b>Technical Feasibility</b>	<b>Economic Feasibility<sup>68</sup></b>	<b>Social Feasibility<sup>69</sup></b>	<b>Environmental Feasibility<sup>70</sup></b>
<p>Output 3.1. Forest Ecosystem Services certification is accessible to stakeholders</p> <p>Output 3.2. Design of improved financial mechanisms supported and made accessible to communities and the private sector</p> <p>Output 3.3: Support the restoration and SFM of commercially logged over natural forests and plantations</p>	<p>The project will, on one side, offer technical assistance in identifying financial derisking mechanisms and, therefore, contribute to a more climate-resilient forestry sector. At the same time, it will ensure that in the products offered also, wider ecosystem services are considered, including climate resilience and mitigation. It can, therefore, be assumed that this would lead to the commercial sector being engaged in more climate-smart production of forest products and that its contribution to national climate change targets will be enhanced.</p>	<p>The component will support reaching the main national climate change policies, in particular the NAP, LEDS and NDCs by increasing climate resilience and efficiency / carbon sinks of plantations/community forests and providing opportunities to invest in SRPs for sustainable energy purposes and rehabilitation of land degradation.</p>	<p>The project will work with both national institutions and cofinanciers (IFIs, national banks and investment funds) to provide companies and communities with the needed technical assistance and possibility to access financial resources to invest in best available technologies for climate smart forest products</p>	<p>Most activities funded under the project are projected to generate positive financial outcomes, primarily in the medium and long term. In economic terms, most activities are expected to yield positive returns over a 30-year evaluation period. This underscores the nature of investments that require time to generate results, particularly those in the different forestry models analyzed.</p> <p>Fiji is home to the most expensive Mahogany plantations. FSC certification is so far missing and could bring further added value to the production.</p>	<p>Growth opportunities for rural pro-poor landowners whose land is leased by plantation forests lie in creating niche products with appropriate training and coaching, as is the case with the MSME assessed.</p> <p>NFTPs show very high involvement of rural women (up to 90%) and youth in value chains</p>	<p>Next to the climate resilience and mitigation aspects, the activities promote also wider environmental impacts of FLR activities, such as soil erosion control water retention and other ecosystem services.</p>

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<sup>67</sup> Details on climate change and climate change adaptation are available above in chapter 3

<sup>68</sup> Details of the economic and financial feasibility are available in Annex 3

<sup>69</sup> Details on social feasibility are available in Annex 6 and Annex 8

<sup>70</sup> Details on environmental feasibility are available in Annex 6 and above in chapter 3 and 4.

Table 32: Coherence of the proposal against GCF Investment Criteria

	Indicator	Expected Result	Rationale
Impact Potential	Project lifetime emission reductions (in tonnes of carbon dioxide equivalent)	6 million tonnes of CO <sub>2eq</sub> .	<p>The project will increase the capacity of public and private forests to remove CO<sub>2</sub>, it will reduce the negative impact of drivers of forest degradation, and it will support the Fijian Finance institutions and private sector to decarbonize their processes and increase their resilience.</p> <p>With regards to mitigation impacts, the project used FAO NEXT, a tool specifically designed for evaluating the carbon impact of projects in the AFOLU sector that uses IPCC methodology (Annex 22).</p>
	Expected change in loss of lives, value of physical assets, livelihoods, and/or environmental or social losses due to the impact of extreme climate-related disasters and climate change in the geographical area of the GCF intervention.	<p>80,737 hectares of forests and agricultural lands restored, protected enhanced and/or sustainably managed</p> <p>Beneficiaries: 0.35 mln (0.18 mln women)</p>	<p>The project will transfer to Fiji the knowledge, technology and CAS practices needed to reduce the climate change and adaptation deficit of public, private and community forest stakeholders, as well as to enable the forest sector to become more resilient to climate change and contribute effectively and efficiently to the national decarbonization process.</p>
Paradigm Shift	Project Vision	<p><b>IF</b> forests are restored using climate-adaptive, ridge-to-reef approaches and sustainably managed by all stakeholders, and communities—including women and girls—and the private sector receive tailored technical assistance and access to credit,</p> <p><b>THEN</b> communities will strengthen their climate resilience and contribute to low-carbon, sustainable development pathways,</p> <p><b>BECAUSE</b> ecosystem services will be valued in land use planning and in the pricing of forest and agroforestry products, and project-promoted participatory investment and governance</p>	<p>The project will introduce innovative approaches to climate change adaptation and mitigation in Fiji. Thanks to tailored investments, policy development, involvement of communities and bridging with sustainability linked financial resources, the project will resolve the barriers currently preventing long term paradigm shift and will create the enabling conditions for ridge to reef management of natural resources. Transformational planning and programming will allow communities (Output 1.3) to be permanently engaged in the planning of climate change activities, while the value of ecosystem services will become part of the cost of land leases with dedicated premiums and sustainability linked financial support (Output 3.1-3.2).</p> <p>Innovation: The project will work with the Fiji Development Bank, local investment funds, and insurance companies to provide companies involved in forestry and agriculture with sustainability and adaptation-linked financial tools.</p> <p>Initiating the decarbonization process or addressing poverty in rural areas without addressing forests and community reliance on key ecosystems services such as livelihood is not cost effective as it will not guarantee adaptation impacts nor reduce net emissions. Coherently the project will introduce a number of innovations: (I) introducing climate adaptive silviculture practices, technologies and investments; (II) addressing forests with a crosscutting approach to ensure that investments in adaptation also yield mitigation and poverty alleviation results; (III) involving the diverse actors of the sector, in particular the communities, in the decision making process; (IV) creating the linkages with national banks and investors with private sector companies interested in decarbonization and forestry; and (V) guaranteeing with no additional costs quantifiable benefits on terrestrial and marine landscapes, such as: (a) increased biodiversity in forest and agriculture land; (b) expansion of bio-corridors; (c) socio-economic condition of rural households; (d) protection from disasters; and (e) soil erosion control. Finally, supporting the country in establishing carbon credit schemes will allow to expand benefits on the whole natural environment.</p>

		<p>mechanisms, and credit access will enhance ecosystem resilience, reduce community vulnerabilities, and lower GHG emissions.</p>	<p>Potential for scaling up and replication: <b>Transformational planning and programming</b> will allow communities (Output 1.3) to permanently participate in the planning of climate change activities and be rewarded for sustainability linked activities promoted in their areas of influence. Furthermore, the project will <b>catalyze climate innovation</b> by developing policies, guidelines and financial mechanisms to develop and execute schemes that value carbon removal potential, carbon stocks, biodiversity and other ecosystem services. To this end, the project will support Fiji in embedding these values into the cost of land leases by law with dedicated premiums and sustainability-linked financial support (Output 3.1-3.2).</p> <p>Potential for knowledge sharing and learning: The project will introduce new approaches and technologies and will transfer them to: (i) Academia; (ii) Schools; (iii) Private Sector; (iv) Financial Institutions; (v) National Institutions; (vi) local institutions; and (vii) Communities. Furthermore, the monitoring and evaluation approaches (Annex 11) promoted by the project lead to transparent, precise, and replicable evidence-based analysis from which <b>lessons learned and best practices</b> could be derived.</p> <p>Contribution to the creation of an enabling environment: All the activities proposed by the project will be continued by Fiji. This will be guaranteed by the new policy framework promoted by the project, by the establishment of financial mechanisms with the FDB and other finance institutions in Fiji (Outcome 3), and by the enhanced participation of communities in the assessment, monitoring and planning of their areas of interest (Output 1.3). The combination of these three will support overcoming systematic barriers to low-emission development to catalyze impact beyond the scope of the intervention. Furthermore, the project will create the enabling condition for new markets (e.g. sustainable wood and Non-Timber-Forest-products) as well as for a climate and <b>sustainability linked management of ecosystems</b>. This will also be made possible by the creation with the Fiji Development Bank (FDB) of a specific sustainability linked facility as well as the involvement of Fijian investment funds and insurance mechanisms to support the paradigm shift of commercial enterprises involved in forestry and agroforestry via the <b>deployment of low-emission and climate-resilient investments</b>.</p> <p>Contribution to the regulatory framework and policies: The project will support Fiji in <b>advancing its regulatory framework</b> by: (i) Updating and upgrading the coordination procedures among climate concerned ministries; (ii) establishing public-private partnerships; (iii) updating the policies and guidelines related to protected areas, land planning, community participation; forest management plans; (iv) establishing the strategies for short rotation plantations; (v) updating the climate management manuals for farms; (vi) creating the standards and guidelines for green and blue finance; and (vii) establishing the procedures for communities to contribute to the monitoring of natural resources. These will allow the project to promote and actively ensure <b>mainstreaming of climate change</b> considerations into policies and regulatory frameworks and decision-making processes.</p> <p>Overall contribution to climate resilient development pathways: The project will introduce new approaches and technologies to address forest ecosystems and ecosystem services in general <b>without increasing the overall cost base of the process</b>. On the contrary, by introducing sustainable forest management processes and ecosystem services value in the cost of leases, the project will rationalize climate-related expenditures and reduce the overall cost of climate change management activities such as river dragging, relocation of communities due to floods, and infrastructures. Additionally, thanks to the collaboration planned with the South Pacific University and the other Fijian universities and schools, the</p>
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			project will contribute <b>to reduce the adaptation deficit of the pacific region</b> by transferring knowledge to young males and females.
Sustainable Dev.	Economic co-benefits		The project will create job opportunities for rural populations in the project's intervention areas, both on farms and beyond, due to the promotion of investments and productive forestry, agroforestry, and non-timber activities. Additionally, it is expected that improved management of forest areas will help boost tourism related to these ecosystems, which will also be an important source of employment in the country.
	Social co-benefits		The project will enhance community participation while also empowering youth and women in forestry investments and forest management. Furthermore, thanks to the introduced practices and technologies, the project will create new jobs and markets (e.g., CO2eq management, green biomass, and climate adaptive nurseries).
	Environmental co-benefits		In addition to the presented positive impacts in terms of CCA and CCM, the project will have positive impacts on biodiversity, soil quality, and water availability, decrease evapotranspiration and slow down soil erosion, increase agricultural yields, and protect rural communities and infrastructures from flash floods, floods, and landslides. Moreover, thanks to its ridge-to-reef approach, the project will contribute to the resilience of at least 90,000 ha of coastal and marine ecosystems thanks to the reduced erosion and consequent siltation of reefs, mangroves, and seagrass beds. Finally, the project will partner during the entire execution with key NGOs such as WWF-Fiji that will support and advise on community participation, biodiversity, and nature conservation.
	Gender empowerment co-benefits		The project will benefit the entire population of Fiji with a specific focus on sectorial stakeholders and private companies. In all training and investments, when possible, the project will prioritize women owning/leasing lands for bioenergy or other purposes and will ensure that at least 30% of beneficiaries are women. Furthermore, the project will ensure women participation and empowerment in all the activities related to forestry investments. Through investments in community nurseries, women will be reached and involved in community behavioural change activity (Activity 2.1.1)
	Sustainable Development Goals	<p><b>Direct Contribution:</b>  <b>2 End global hunger</b>  <b>7 Affordable and Clean Energy;</b>  <b>13 Climate Action;</b>  <b>15 Life on Land.</b></p> <p><b>Indirect Contribution:</b>  <b>1 End poverty in all its forms everywhere</b>  <b>3 Ensure healthy lives and promote well-being for all at all ages</b>  <b>6 Ensure availability and sustainable management of water and sanitation for all</b>  <b>8 Decent work and economic growth</b></p>	<p>Identified SDGs indicators are additional to those that will be presented in detail in the logical framework matrix of the project. SDGs will be accounted for separately. Project's indicators will be clearly described and presented in the FP.</p> <p>Direct Contributions to targets  Target 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality  Target 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services.  Indicator 7.1.2 Proportion of population with primary reliance on clean fuels and technology  Target 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.  Indicator 7.2.1 Renewable energy share in the total final energy consumption</p> <p>Target 13.1. Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. Indicator 13.1.2 Number of deaths, missing persons and persons affected by disaster per 100,000 people  Target 13.2: Integrate climate change measures into national policies, strategies and planning. Indicator 13.2.1 Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate</p>

	<p><i>17 Partnerships for the goals</i></p>	<p>change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other).</p> <p>Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning Indicator 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions</p> <p>Target 13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible Indicator 13.a.1 Mobilized amount of United States dollars per year starting in 2020 accountable towards the \$100 billion commitment</p> <p>Target 15.2: By 2030, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally. Indicator 15.2.1 Progress towards sustainable forest management</p> <p>Target 15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems Indicator 15.a.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems</p> <p>Target 15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation Indicator 15.b.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems</p> <p>Indirect contributions</p> <p>Target 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters. Indicator 1.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 people</p> <p>Target 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. Indicator 3.9.1 Mortality rate attributed to household and ambient air pollution</p> <p>Target 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes. Indicator 6.6.1 Change in the extent of water-related ecosystems over time</p> <p>Target 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead. Indicator 8.4.1 Material footprint, material footprint per capita, and material footprint per GDP</p>
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Need of Recipients	Vulnerability	<p>80,737 hectares of forests and agricultural lands restored, protected enhanced and/or sustainably managed</p> <p>Direct beneficiaries: 0.35 mln</p>	<p>The natural environment, including forestry, has been identified by the main climate related policies as one of the most vulnerable priority sectors. As described in FP, the project will address the vulnerability of the forestry sector by introducing climate adaptive silviculture technologies, processes and practices and will support the country in expanding/enhancing/establishing the needed policy and legal reforms to remove the bottlenecks that are at the root of the identified climate change adaptation deficit of the sector. The project will address through an integrated landscape approach weather-related hazards in Fiji in particular flood. Natural hazards affect largely poor rural people and women. Due to their large dependency on natural resources, rural people are more exposed to hazards and dispose of fewer resources to cope with crises.</p>
	Country's financial, economic, social and institutional needs and the barriers to accessing domestic (public), private and other international sources of climate-related finance	<p>Fiji economy is fragile and severely stressed by the latest extreme weather events (e.g. cyclones Evan (2012) and Winston (2016) and Yasa (2020)) as well as by the impacts of the global pandemic recently ended (COVID-19 2019-2022) (Gross Domestic Product (GDP) per capita in Fiji was last recorded at US\$4,402 in 2016, while GDP per capita in Fiji was expected to reach US\$4,600 by the end of 2020, according to Trading Economics global macro models and analyst expectations. Due to the impact of the COVID-19 pandemic on the tourism sector, Fiji's economy shrank by 15.7 percent in 2020. The current indebtedness of the Republic of Fiji is close to US\$ 3.61 billion or 79.8 percent of GDP. External debt is about US\$1.12 billion, about 25.2 percent of GDP and 31.1 percent of total debt (October 2021). The fiscal situation of the Government, and the fragility of the private sector prevent any significant scale of investment into climate change adaptation and mitigation. Given Fiji's level of exposure to natural disasters, investment in the forest sector is considered a high-risk endeavour to Fiji's domestic banking system. This project aims to cushion the risk by ensuring better awareness-raising and knowledge of the needs of community enterprises and the forestry sector investment to local banks. Therefore, as reported in the NDC, the country can increase their share of climate change mitigation if financial support is provided. The project will only cover the additional cost of adapting to climate change and mitigation investments.</p>	
Country Ownership	Alignment with nationally determined contributions (NDCs), relevant national plans indicators, and/or enabling policy and institutional frameworks	<p>The project will address the needs and priorities reported by the Republic of Fiji in its NDC(s), National Communications, National Adaptation Plan, Low Emissions Development Strategy, and other national policy framework. In addition, the project will contribute to implement the GCF Country Programme of Fiji, by supporting achieving three of four of its outcomes.</p>	
	Engagement with relevant stakeholders, including national designated authorities' indicator	<p>The <i>Forest Landscape Restoration for Climate Benefits and Resilience (Fiji FLR)</i> project was developed following collaboration established between the Ministry of Fisheries and Forestry of the Government of Fiji and FAO to develop the Green Climate Fund (GCF) proposal, under the guidance and support of the GCF-National Designated Authority (NDA) in Fiji. In 2023, an initial workshop organized by FAO together with the Ministry of Fisheries and Forestry was held to agree on a common vision to develop a Green Climate Fund (GCF) Concept Note, by elaborating the project goal, objectives, expected outcome and beneficiaries as well as the Monitoring and Evaluation strategy. That same year, consultations were held to start up, develop and finalize the Full Funding Proposal (FFP).</p>	
Efficiency and Effectiveness	Cost per tonne of carbon dioxide equivalent	<p>The project will promote a more efficient and effective way to address forests and carbon removals.</p>	

		Cost per Tonne of CO2 eq. (GCF): USD 4.9 / tonne Cost per Tonne of CO2 eq. (Total): USD 8 / tonne
	Ratio of co-financing	GCF/COFINANCING= 1/0.67
	Expected rate of return	The incremental cost-benefit analysis of the project indicates a promising return on investment, considering a social discount rate of 7.40 percent <sup>71</sup> and an evaluation period of 30 years. Economic indicators, such as Net Present Value (NPV), Internal Rate of Return (IRR), Benefit/Cost ratio (B/C), switching values for benefits, and switching values for costs, are estimated at US\$144.8 million, 11.6 percent, 1.78, -44 percent, and 78 percent, respectively.
	Application of best practices	The project will apply best practices from well-established international climate adaptive silviculture experiences that will secure forestry investments from design to maintenance. Additionally, the project will apply best practices from other countries (i.e. France, Australia) that have established their own national offsetting mechanisms.

Table 33 Project Alignment with Key National Policies and Strategies in Fiji

Policy	Brief description
Fiji Forest Policy 2007	Fiji's National Forest Policy highlights the need to involve all forestry stakeholders to: (i) create a unified vision of the role of the forest sector in Fiji; (ii) lead strategic planning for the Forestry Sector; (iii) provide analysis, policy and planning expertise, information about forests and forestry, and forward-looking ideas for decision- and policy-makers; and (iv) promote policies that encourage sustainable forest management and support Government's strategic planning for the sustainable development of Fiji.
Fiji's Updated Nationally Determined Contribution 2020	The project contributes directly to the following NDC targets: 'Target 10: To conserve natural environment and biodiversity wealth enabling sustainable long-term provision of ecosystem services, including carbon sequestration potential' and 'Target 11: To plant 30 million trees by 2035'
Climate Change Act 2021	The Act legally binds Fiji to its commitment to net-zero carbon emissions by 2050. It provides guidance on how Fiji can develop and enact long term climate change measures to protect its people, ecosystems, and biodiversity in the face of climate emergencies. Moreover, operationalise the National Adaptation Plan and sets the mechanisms for REDD+. The project builds on the Act especially its component 3.
National Adaptation Plan (NAP) 2018	The project is in alignment with the overall vision of the NAP. It is in alignment with adaptive measure 12.A.6 to promote and integrate climate-smart agriculture (CSA) practices (including agroforestry).
Fiji National Climate Change Policy 2018-2030	The 2017 revised National Climate Change Policy (NCCP, Ministry of Economy, 2017) calls inter alia for recognition of Ecosystem Based Adaptation approaches (EbA) in reversing deterioration of natural resources and in restoring quality and resilience of ecosystems. It links the resilience of communities with EbA by recognizing the need for sustaining economic growth, maintaining food and nutrition security, adapting settlements and infrastructure, and ensuring awareness of climate change.
Forest Bill 2016	The Forest Bill sets the framework based on which the project will be implemented detailing issues such forest classification, customary rights, and forest protection.
5-Year & 20-Year National Development Plan: Transforming Fiji	The project is in alignment with the forestry key policies and in particular with strengthening sustainable forest management and its related strategies to support forest conservation, sustainable forest harvesting practices and climate change mitigation and adaptation.

<sup>71</sup> Estimated using the Weighted Average Approach

Green Growth Framework	The project is alignment with the Thematic area 1: Building resilience to climate change and disasters and is supporting the identifies way forward of promoting agroforestry for food security and as a preferred land use for sloping land
National Biodiversity Strategy and Action Plan for Fiji 2017–2024	The project is alignment with the Action Plan Focus 2: Developing Protected Areas and in particular with Strategic Area PA2: Expand Fiji's protected area network at the national, provincial, district and community level to achieve national targets and Strategic Area PA3: Develop sustainable financing mechanisms for new and existing protected areas.

## 16 Economic and financial feasibility

265. The economic and financial analysis of the project "Forest Landscape Restoration for Climate Benefits and Resilience (Fiji FLR)" focuses on determining the net incremental financial and economic benefits generated by the project investment. **The incremental ex-ante cost-benefit analysis involved calculating key economic and financial metrics, such as NPV, IRR, B/C ratio, payback period, and switching values to assess potential returns across the entire project, its components, and primary activities.** The financial analysis offers insights into the returns generated by activities supported by the project, examining them from the perspectives of private enterprises, producer organizations, and beneficiaries. In contrast, the economic analysis highlights the genuine societal benefits, which hold particular significance for policymakers and organizations operating within the public investment framework.

266. **Economic analysis.** An incremental cost-benefit analysis was conducted to assess the economic viability of the project. This analysis considered the total cost of the project, a social discount rate of 7.40%, an evaluation period of 30 years, GHG emission reduction, soil erosion reduction, avoided damage to coral reefs linked with the tourist activities, and specific social price conversion factors estimated for this project. Results indicate that the project is likely to yield generally positive returns on investment. The Economic Net Present Value (ENPV) is estimated at USD 141.5 million, and the Economic Internal Rate of Return (EIRR) is 11.45%, with a benefit-cost ratio of 1.63 and switching values of benefit and cost of -39% and 63.0%, respectively. The following table shows the main economic indicators considering different evaluation periods, which demonstrate promising economic returns on the entire investment operation in the medium and long term. The project would not be economically viable with an evaluation period of 20 years.

Economic indicators	30 years	25 years	20 years
NPV	\$141,491,784.22	\$43,461,873.95	(\$24,746,748.59)
EIRR	11.453%	9.219%	6.063%
B/C	\$1.63	\$1.21	\$0.86
Payback period	17.77	17.77	17.77
ENPV/ha	1753	538	-307
Switching value - benefit	-39%	-18%	17%
Switching value - cost	63.05%	21%	-14%

267.

268. **Financial analysis.** A financial analysis was conducted based on the projected costs and benefits of various agroforestry and forestry models to be financed under the project. This analysis considered an estimated capital cost for the sector in Fiji of 8.2 percent and an evaluation period of 30 years, given that forestry investments are medium- and long-term. The following table shows the financial indicators for different models, which present mixed results. The most profitable activity would be agroforestry practiced in areas with less slope, where it is possible to have a combined production of high-value annual crops, fruits, trees, and shrubs. Additionally, the non-timber activities associated with the preservation and protection of forest areas show promising returns on investment.

Investment models	Return per hectare (@8.20%)	
	IRR (%)	B/C
Agroforestry - A	15.8%	1.22
Agroforestry - B	9.3%	1.03
Community planting of mixed species	10.0%	1.10
Community restoration of waterways and riparian zones	9.0%	1.07
Natural regeneration of degraded forests	7.6%	0.61
Natural regeneration of over logged primary forest	8.7%	1.18
Restoration of overlogged plantation	10.1%	1.25

Restoration left aside degraded land	11.3%	1.42
Short Rotation Plantations	9.5%	1.04
Sustainable Forest Forest Management	9.2%	1.14
<b>Investment models</b>	<b>Return per business (@8.20%)</b>	
	<b>IRR (%)</b>	<b>B/C</b>
Forest Protection (SFM) - Non timber activity	11.3%	1.11
Forest Conservation (HFV) - Tourism activity	14.1%	1.21

269. **Sensitivity and scenario analysis.** The following table shows the investment returns considering hypothetical changes in key variables that may affect the investment. The results indicate that the project would generally have positive returns on investment, even in the face of adverse situations that cannot be directly controlled by the project.

Sensitivity and scenario analysis				
	Δ%	Risk analysis	IRR (%)	NPV (USD M)
<b>Base scenario</b>		Considering different assumptions and projections for the medium and long term	11.45%	141.5
Project benefits	-10%	Combination of risks affecting output prices, yields and adoption rates	10.70%	104.9
Project benefits	-20%		9.70%	68.3
Switching value - benefits			39.00%	
Project costs	10%	Increase of input prices	10.80%	119.9
Project costs	20%		10.20%	98.4
Switching value - benefits			63.00%	
Evaluation period (25 years)		Risk related to uncertainty of medium- and long-term investments	9.20%	43.5
Evaluation period (20 years)			6.10%	-24.7
Social discount rate (6%)		Risk related to the economic, political and social stability of the country	na	235.5
Social discount rate (10%)			na	34.9
Without considering ecosystem services		Effect of ecosystem services	7.50%	3.6
Considering ecosystem services – only GHG emission reduction			8.80%	50.1
Considering ecosystem services – only soil erosion reduction			9.90%	88.8
Considering ecosystem services – only avoided damage to the tourist sector			7.70%	9.7

## 17 PROJECT COORDINATION AND COLLABORATION

270. FAO will assume these responsibilities per the detailed provisions in the Accreditation Master Agreement (AMA) between FAO and the GCF. As the Accredited Entity (AE) of the Project, the FAO's supervision role will be attributed to the FAO Subregional Office for the Pacific Islands (FAO SAP) in Apia, Samoa, and relevant Offices and divisions at FAO headquarters (HQ), in Rome Italy, such as the FAO Office of Climate, Biodiversity, and Environment (OCB) and other technical divisions as required.

271. FAO has extensive experience in supporting countries in climate change adaptation and mitigation, as well as climate adaptive silviculture both in Fiji and the Region. Furthermore, FAO – via its Investment Center - has been collaborating for over 4 decades with International Finance Institutions (IFIs) such as the World Bank (WB), the International Fund for Agricultural Development (IFAD) and the EBRD to support assignments (e.g. investment plans, assessments, studies, strategies) that are essential for advancing climate change adaptation and decarbonization of private sector operators. Under implementation of more than 200 climate and resilience projects, the organization has the experience and technical capacity to manage

the requested grant and properly support Fiji in the forest sector and decarbonization processes. In Fiji, FAO has been operational since over 20 years in various areas, including in SFM, agriculture, fisheries, biodiversity, sustainable management of natural resources, land degradation, disaster risk reduction and climate change adaptation. Activities include policy building and development and capacity development of national institutions, NGOs, associations, companies and farmers. Finally, FAO supported the country with the promotion of forestry investments (forest restoration, forest assessment and afforestation). Examples of FAO's work in Fiji include:

**A) Building resilience to natural disasters.** FAO has implemented projects with the aim of enhancing national and local capacities to integrate disaster risk reduction in agriculture. Major efforts will be dedicated to strengthening communities' knowledge and means to identify and mitigate risks affecting food security.

**B) Protecting Fiji's natural resource base.** FAO provides assistance to the Government in implementing biodiversity projects to establish an integrated system of protected areas. As part of project activities, existing and potential protected areas have been surveyed and their biodiversity resources assessed, while landowning communities around protected areas have received support enabling them to apply appropriate land management techniques.

**C) Providing strategic advice.** FAO has provided technical assistance to strengthen policy and planning through capacity building and related advisory services. Recent contributions include a five-year (2018-2022) strategic development plan for the agriculture sector; a strategic plan for the implementation of Codex Alimentarius; and a feasibility study for the introduction of agricultural insurance. Fiji's first overarching policy on planted forests is also being formulated with FAO technical assistance.

**D) Building the evidence base and capacities for policy-making.** FAO and the Government have partnered to strengthen the Agricultural Statistics Unit, which is part of the MoAW and Primary Industries. Together with assistance in conducting agricultural censuses, FAO has supported the Government in creating a dedicated information management mechanism – the Fiji Agricultural Statistics System – ensuring the regular collection, collation and dissemination of sound agricultural and market data. To guarantee sustainability of the system, national staff were trained and the capacities of the Agricultural Statistics Unit were developed to ensure effective collection of community-level data and the inclusion of use-supply accounts and food balance sheets in the market information system.

272. The FAO will set up a dedicated FAO-GCF Project Task Force (PTF) comprising relevant staff from SAP, the FAO Office in Fiji, and HQ to perform the AE functions. The segregation of responsibilities within FAO will ensure that the Organization can independently and effectively perform the AE functions. The project implementation and supervision function will remain independent of the Executing Entity functions. FAO will establish the Project Task Force (PTF) as a management and consultative body with a Formulator/Budget Holder (BH), a Lead Technical Officer (LTO), and a Funding Liaison Officer (FLO) / Technical Cooperation Program (TCP) Officer.
273. The Project Steering Committee (PSC) will be established for the overall strategic guidance of this project and the projects implemented by WWF-Fiji and the Fiji Development Bank. The PSC of the project will be housed within the NDA (Climate Change Division of the Office of the Prime Minister). The PSC will be composed of primary stakeholders such as: the Ministry of Fisheries and Forestry, the Ministry for iTaukei Affairs, the Ministry of Agriculture and Waterways; Ministry of Environmental Protection (MoEP), Ministry for Tourism and Civil Aviation; Minister for Finance, Strategic Planning, National Development and Statistics (MoFSPNDS), the Ministry of Interiors (MoI), as well as representatives of provinces, in project areas, the Chamber of Commerce/Finance Institutions, Forest Owners Guild, FAO (Observer) and Civil Society (Observer).
274. The role of the PSC will be to: (i) Provide overall guidance and direction to the project; (ii) Ensure that co-financing support is provided in a timely and effective manner and reported against its availability and use; (iii) Address project issues as raised by the Project Management Unit (PMU) and/or PSC members or EEs; (iii) Review the project progress, and provide direction and

275. A complete list of relevant ongoing projects and their complementarities and synergies with this project are available in the table underneath.

The diagram illustrates the implementation arrangement and reporting structure for the Green Climate Fund (GCF) project in Fiji. It shows the flow of funds, reporting, and guidance between various entities.

**Legend:**

- Blue arrow: Reporting
- Orange arrow: Guidance
- Green arrow: Co-financing Agreement / Co-execution Agreement

**Entities and Flow:**

- GREEN CLIMATE FUND** (represented by a globe icon) provides funding to the **FAO Accredited Entity** (blue box).
- The **FAO Accredited Entity** reports to the **Project Steering Committee (PSC)** (blue box) and provides guidance to the **FAO-SAP / FAO-Fiji Executing Entity** (blue box).
- The **Project Steering Committee (PSC)** is chaired by NDA and has a secretariat from FAO/WWF/FDB. It reports to the **FAO Accredited Entity** and provides guidance to the **Project Management Unit (PMU)** (blue box).
- The **Project Management Unit (PMU)** is located in Suva, Fiji, and reports to the **FAO-SAP / FAO-Fiji Executing Entity**.
- The **FAO-SAP / FAO-Fiji Executing Entity** reports to the **FAO Accredited Entity** and provides guidance to the **Ministry of Fisheries and Forestry [EE]** and the **Ministry of Agriculture and Waterways [EE]** (green ovals).
- The **Ministry of Fisheries and Forestry [EE]** and the **Ministry of Agriculture and Waterways [EE]** are part of the **Fiji Pinewood Corporation** and **Fiji Hardwood Corporation** (green box).
- The **Fiji Pinewood Corporation** and **Fiji Hardwood Corporation** report to the **Ministry of Fisheries and Forestry [EE]** and the **Ministry of Agriculture and Waterways [EE]**.
- The **FAO-SAP / FAO-Fiji Executing Entity** provides co-financing and co-execution agreements to the **Ministry of Fisheries and Forestry [EE]** and the **Ministry of Agriculture and Waterways [EE]**.
- The **FAO-SAP / FAO-Fiji Executing Entity** reports to the **Beneficiaries** (represented by a large grey arrow pointing down).

Table 34: Role of the main institutional stakeholders

Institution	Description
NDA	The NDA Secretariat is the fundamental intermediary between stakeholders in Fiji and the GCF. The NDA is the Honorary Minister for Environment and Climate Change within the Ministry of Environment and Climate Change, Office of the Prime Minister. The NDA provides strategic oversight of the country's GCF activities. The NDA will ensure coordination among Climate projects with specific functions to facilitate the coordination and complementarity of the projects funded by the GCF to the FDB, the WWF, and the FAO. Participate in and provide input for all the other activities.
MoFF	The Ministry is responsible for initiatives for the conservation and sustainable management and development of fisheries & forest resources. Its Department of Forest has various functional divisions organized to ensure the management of forestry resources and to support the management of recreation and conservation areas. Office locations. Within the project, the MFF will guide and support the project's work on forestry investments and forest-related activities. Participate in and provide input for all the other activities.

MoAW	The Ministry is responsible for (a) Maintaining food security, (b) Quick Economic Recovery through the implementation of the Demand Driven Approach Programme (DDA) and other commodity projects, (c) Poverty Alleviation by building the capacity of farmers, and (d) Sustainable management of Natural Resources through the Flood Protection programmes and other SLM practices. The MAW will guide and support the project's work regarding agriculture and other investments involving farmers, and flood control investments such as riparian forests. Participate in and provide inputs to all other activities.
MiTA	The Ministry is tasked with formulating government policies and programs for the indigenous population. It directly links iTaukei institutions and its administration across the fourteen provinces with the government and other expressions on national and international governance. It keeps official records relating to iTaukei land and livelihood grounds (e.g., fishery, forestry, agriculture), and it keeps traditional knowledge and expressions of culture among its priorities. It is responsible for dealing with disputes and formulating advocacy programs to safeguard the iTaukei heritage. The MIA will guide the project about landscape planning-related activities within the project. Participate in and provide input for all the other activities.
ITLTB	The ITLTB (former Native Land Trust Board) is a statutory trust established to control and administer iTaukei land on behalf of Yavusa, Mataqali, and Tokatoka indigenous owners. It deals with iTaukei land via leases and licenses issued over such land on behalf of communities. It facilitates access to land and land-based resources for social and economic development. Its purpose is to secure, protect, and manage land ownership rights assigned to the iTaukei landowners and to facilitate the commercial transactions that revolve around its use. It is doing all this for the national good and public interests, particularly for the benefit of the iTaukei landowners. Within the project, the ITLTB will support and coordinate the project's work on landscape planning-related activities. Participate in and provide input for all the other activities.
Ministry of Lands & Mineral Resources (MLMR)	The Ministry is a key facilitator and contributor to the nation's socio-economic development. It is responsible for policy formulation, monitoring, and implementation of programs governing state land administration, the mineral sector, and Fiji's groundwater resources. This includes facilitating the development and management of land resources for sustainable socio-economic development. The MLMR will support the project's work on landscape planning-related activities and participate in and provide input for all other activities.
Ministry of Education, Heritage and Arts (MEHA)	The MEHA is mandated to provide a holistic and innovative system, among other things, that enables all children to realize and appreciate fully their inheritance and potential to succeed and contribute productively to a peaceful and sustainable Fiji. Within the project, the MEHA will support the mainstreaming of introduced practices and technologies into national university and vocational school curricula.
MECC	The Ministry's mandate covers urban and rural areas. It is responsible for hydrological forecasting, drainage surveillance and realignment, waterways dredging, and river embankment management to improve stormwater management, mitigate flooding, and improve irrigation. It provides various services, including drainage, irrigation, river improvement, river dredging, watershed management, and coastal erosion management. Within the project. Guide and support the project's work about biodiversity and natural regeneration, as well as ensure environmental safeguards and conservation of key ecosystems in project areas. Participate in and provide input for all the other activities.
Ministry of Trade, Co-operatives, Small and Medium Enterprises (MCTTT)	The Ministry is responsible for formulating and implementing policies and strategies that create and facilitate growth in industry, investment, trade, tourism, transport, cooperative businesses, micro, small, and medium enterprises (MSMEs) and enhance metrology, standards, and consumer protection. Within the project, the MCT will work on landscape planning-related activities and will facilitate the participation of co-operatives and small and medium companies. Participate in and provide input for all the other activities.

277.FAO has extensive experience in supporting countries in climate change adaptation and mitigation, as well as climate adaptive silviculture both in Fiji and the Region. Furthermore, FAO – via its Investment Center - is collaborating since over four decades with International Finance Institutions (IFIs) such as the World Bank (WB), the International Fund for Agricultural Development (IFAD) and the EBRD to support assignments (e.g. investment plans, assessments, studies, strategies) that are essential for advancing climate change adaptation and decarbonization of private sector operators. Having implemented more than 200 climate and



resilience projects, the organization has the experience and technical capacity to manage the requested grant and properly support Fiji in the forest sector and decarbonization processes.

278. Examples of recently implemented or ongoing projects in Fiji include:

- FAO, for the past years, as parts of its various programs such as the EU-funded Action Against Desertification Project and the International Climate Initiative-funded project on “Paris Agreement in Action”, has been able to establish baseline phenology data for some islands (Mamanuca) which would help in planning seed collection.
- Community-based Integrated Natural Resource Management Project. GEF funded project to reduce land degradation, enhance carbon stocks, and strengthen local livelihoods in Ra and Tailevu provinces of Fiji, by promoting community-based integrated natural resource management at the landscape level.
- The GEF Pacific Ridge to Reef Programme. Implemented in cooperation with UNDP and UNEP to improve Climate Resilience and Sustain Livelihoods, providing an opportunity for Pacific SIDS to implement truly integrated approaches for the sustainable development of island economies.
- Fiji’s Action Against Desertification. EU-funded project to support the UNCCD National Action Programme for Fiji, aiming to build resilience and increase the productivity of forest landscapes while improving the livelihoods of the local population through the restoration of degraded land and the sustainable management of natural resources.

## 18 MONITORING, REPORTING AND EVALUATION ARRANGEMENTS

279. **M&E Structure:** A monitoring and evaluation system will be established for the project in keeping with the guidelines of GCF to report on its Integrated Results Management Framework designed to measure the core indicators as well as all other indicators identified in Section E. The PMU established in Fiji will be responsible for monitoring of the project activities with the oversight of FAO- Fiji Office and technical backstopping by the regional office (SAP) where required. An M&E system will be developed with an M&E Officer and a Monitoring Information System (MIS) to keep track of performance and core indicators at the national and province level. The M&E officer of the project will work in parallel with the M&E officer of the Forestry Directorate that will hold specular functions and support integrating the MIS with data related to cofinancing activities. All service contracts, Letters of Agreements and others with implementing partners will specify their responsibility with respect to sex-disaggregated data collection and reporting. The execution partners will submit reports to the PMU which will prepare a consolidated report on an annual basis. Regular meetings for monitoring and follow-up will be organized where problems will be discussed and, when needed, corrective measures will be recommended. Concerning the GAP, the project’s gender working group will provide assistance to the M&E unit with additional oversight for monitoring the implementation of the GAP and assisting to maximise benefits for gender targets through all project activities. FAO as the main implementing agency will be responsible for maintaining records on all project activities in standard reporting formats. All implementing partners will be required to provide information on the core indicators, impact, outcome and output level indicators specified in the IRMF. FAO-HQ will support the PMU in reviewing and analyzing progress reports and to assess performances against baseline and targets. FAO will manage and coordinate reporting to the GCF according to its standards procedures.

280. **Types of Reports:** The PMU at the FAO office in Fiji will formulate an annual work plan and budget based on the annual physical targets based on the implementation plan (Annex 5) which will be approved by FAO-Fiji/FAO-SAP and the Project Steering Committee (PSC). Formats will be developed for each of the reports, namely the quarterly statistical and narrative reports and

an Annual Performance Reports (APRs). These reports will be prepared by the technical staff at the PMU under the guidance of the M&E Specialist at the PMU. The key reports that will be submitted have been identified in the M&E Reporting Matrix given below together with their timelines and reporting responsibility (Table 14). More details are provided in Annex 11. The Annual Performance Reports (APRs) will document the progress towards achieving the indicators in GCF's IRMF and any additional project level indicators that have been selected for the project. APRs will also contain a narrative with updates on the progress of each output and outcome envisaged at the project level. The contracts with the service providers will specify their reporting responsibilities, the frequency of the reports to be produced and provide them with the formats to be used for reporting. All partners will be required to review the GAP which is an integral part of the proposal, and report on its implementation. All data will be disaggregated by sex to enable an assessment of the progress in inclusion of women in the project.

281. **MIS System:** A MIS system will be developed for the project to record key information of all beneficiaries (e.g. MAFWM, Municipalities, Company, Household). The M&E Unit in the PMU will coordinate and produce a consolidated MIS report for the project on an annual basis. Within the first quarter of the second year, when activities have been initiated and sufficient outreach has been achieved and the M&E data base begins to get populated, thematic maps will be generated by the project and will be monitored through consolidated remote sensing practices or geospatial analysis. This is expected to yield a better understanding of trends and patterns and make the analysis more meaningful in understanding the relationship between climate parameters and the pattern of adoption and participation in project activities. The MIS system will geo-reference all activities using FAO's Remote Sensing application- Earth Map. The MIS system will also record beneficiary phone numbers for feedback from participants. The MIS system will also be used for tracking beneficiaries over time and assessing impact.
282. **Baseline assessment:** The project will carry out a baseline assessment using primary and secondary data to measure changes and impact. To measure attributable changes, the baseline assessment will draw on mixed methods, using qualitative methods (e.g. participatory rural appraisal, focus group discussions, key informant interviews, etc.) and quantitative methods (e.g. site-scale survey). Information on some of the key GCF indicators like awareness about climate information, resilience to climate risks will be measured through specific questions on these elements. All surveys and assessments will be sex-disaggregated and key gender-sensitive indicators both quantitative and qualitative outlined in the GAP will be captured in the initial and subsequent surveys and findings.
283. **Evaluation:** In compliance with the requirements in FAO's AMA with the GCF, the FAO Office of Evaluation (the Accredited Entity independent evaluation office) will be responsible for the independent evaluation of this project. This evaluation shall be conducted in accordance with the GCF Monitoring and Accountability Framework (MAF) and the requirements outlined in the GCF Evaluation Policy, Evaluation Standards and Evaluation Operational Procedures and Guidelines. To this end, the evaluation will include multiple components, such as assessments of implementation and impacts. The overall evaluation will, inter alia, study the effectiveness, efficiency, and timeliness of project implementation; analyze partnership arrangements; identify issues requiring decisions and remedial actions; and, through the interim evaluation report, may propose mid-course corrections or needed adjustments to the implementation strategy. The final evaluation report will focus on project impacts and the degree to which expected long-term results have been achieved and may be sustained. It may also identify future actions needed to sustain results and disseminate replicable good practices and key issues faced during project implementation. The evaluation budget includes all evaluation costs, such as inception phase, evaluation design, data collection activities, analysis, report writing, quality assurance and dissemination. FAO will communicate the results of this evaluation to the GCF Secretariat. At a minimum, this shall be done through the required interim and final independent evaluation reports following the timeline agreed upon by the Secretariat and FAO.
284. **Beneficiary Feedback:** FAO will establish a mechanism for beneficiary feedback and demonstrate how they have incorporated the feedback in improving their implementation approach. The M&E staff of the PMU will undertake periodic visits to the project areas to discuss with communities about their views regarding project activities and to confirm their direct

involvement during the site selection phases. The beneficiary feedback will also entail discussions with partners and executing entities about their experience with the project and the way partners engage with them during the implementation of the various components. The beneficiary feedback will be organized so that the reports provide sex-disaggregated perspectives. The PMU will also establish a grievance redress system which ensures confidentiality. FAO's Guidelines for Compliance Reviews will follow the procedures for Complaints Related to the Organization's Environmental and Social Standards (ESS).

285. **Learning and knowledge management:** The Project will synthesize the lessons that emerge from the Project in a dedicated section of the APRs, including detailed participant data disaggregated by gender and age, as well as lessons on some of the innovative aspects of the investments. These lessons will be shared with stakeholders to enable their incorporation them into strategies and plans being developed by the country in its NAP/NAMAs and other key strategy documents. TAs working on specific topics and policy briefs will be required to develop knowledge products for wider dissemination. FAO will also capitalize on its in-house expertise to develop and disseminate knowledge products for wider circulation as a policy advocacy tool.
286. **Communication:** The project's interventions, data, and results will be communicated and disseminated to different stakeholders and beneficiaries at the national and provincial levels. FAO will use its office in Fiji and capitalize on its access to other forums in the region for wider dissemination. All the documents requiring multilingual support will be made available in Fijian and English.
287. **Tools.** Technologically advanced tools for monitoring ecological restoration are available and can be used in addition to already used tools to inform future planning and managing decisions on restoration in Fiji. These tools include:
  - the [Adaptation, Biodiversity and Carbon Mapping Tool \(ABC-Map\)](#), a geospatial application to assess environmental impacts in the agriculture, forestry and other land-use sectors;
  - the [Assessment, Understanding and Reporting of Restoration Actions \(AURORA\)](#) tool, which helps stakeholders develop a monitoring system tailored to their needs and goals;
  - [Collect Earth Online](#), a tool for land-use data collection to establish reference levels and monitor the dynamics of land-use change with high-resolution satellite imagery;
  - [Earth Map](#), which provides free and user-friendly access to satellite imagery and geospatial datasets for analyzing changes to the Earth's surface to aid policy and investment decisions;
  - the [Framework for Ecosystem Restoration Monitoring \(FERM\)](#), the official monitoring and reporting platform of the United Nations Decade on Ecosystem Restoration 2021–2030; and
  - [Se.plan](#), a spatially explicit tool to identify potential restoration opportunities by assessing defining the benefits relative to costs as well as biophysical and socioeconomic constraints.

## 19 Appendices:

### Appendix 1: DEFINITIONS ACCORDING TO IPCC AND FAO <sup>72</sup>

**Adaptation:** In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate.

**Adaptive capacity/Readiness** The combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities.

**Anthropogenic:** Resulting from or produced by human beings.

**Baseline/reference:** The baseline (or reference) is the state against which change is measured. It might be a 'current baseline,' in which case it represents observable, present-day conditions. It might also be a 'future baseline,' which is a projected future set of conditions excluding the driving factor of interest. Alternative interpretations of the reference conditions can give rise to multiple baselines.

**Climate change:** A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.

**Climate projection:** A projection of the response of the climate system to emissions or concentration scenarios of greenhouse gases and aerosols, or radiative forcing scenarios, often based upon simulations by climate models. Climate projections are distinguished from climate predictions in order to emphasize that climate projections depend upon the emission/concentration/radiative-forcing scenario used, which are based on assumptions concerning, e.g., future socioeconomic and technological developments that may or may not be realized and are therefore subject to substantial uncertainty.

**Climate scenario:** A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models. Climate projections often serve as the raw material for constructing climate scenarios, but climate scenarios usually require additional information such as about the observed current climate.

**Disaster risk reduction (DRR):** Denotes both a policy goal or objective, and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard, or vulnerability; and improving resilience.

**Exposure:** The presence of people; livelihoods; environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected.

**Hazard:** The potential occurrence of a natural or human-induced physical event that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, and environmental resources.

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<sup>72</sup> Sources: [IPCC](#) and FAO

Land use and land use change: Land use refers to the total of arrangements, activities, and inputs undertaken in a certain land cover type (a set of human actions). The term land use is also used in the sense of the social and economic purposes for which land is managed (e.g., grazing, timber extraction, and conservation). Land use change refers to a change in the use or management of land by humans, which may lead to a change in land cover. Land cover and land use change may have an impact on the surface albedo, evapotranspiration, sources and sinks of greenhouse gases, or other properties of the climate system and may thus have radiative forcing and/or other impacts on climate, locally or globally.

ND-GAIN Index: The Index summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. It aims to help governments, businesses and communities better prioritize investments for a more efficient response to the immediate global challenges ahead.

Vulnerability: The propensity or predisposition to be adversely affected.

### Other definitions

Forest: Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use. (FAO, FRA 2020)

Other wooded land: Land not classified as Forest, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds in situ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.

Other land: All land that is not classified as Forest or Other wooded land.

Naturally regenerating forest: Forest predominantly composed of trees established through natural regeneration.

Planted forest: Forest predominantly composed of trees established through planting and/or deliberate seeding. Planted forests include forest plantations and the planted part of semi-natural forests

Plantation forest: Planted Forest that is intensively managed and meet ALL the following criteria at planting and stand maturity: one or two species, even age class, and regular spacing.

Other planted forest: Planted forest which is not classified as plantation forest.

Forest expansion: Expansion of forest on land that, until then, was under a different land use, implies a transformation of land use from non-forest to forest.

Afforestation (sub-category of forest expansion): Establishment of forest through planting and/or deliberate seeding on land that, until then, was under a different land use, implies a transformation of land use from non-forest to forest.

Natural expansion of forest (sub-category of forest expansion): Expansion of forest through natural succession on land that, until then, was under a different land use, implies a transformation of land use from non-forest to forest (e.g. forest succession on land previously used for agriculture).

Forest degradation: a reduction in the capacity of a forest to produce ecosystem services such as carbon storage and wood products as a result of anthropogenic and environmental changes.

Deforestation: The conversion of forest to other land use independently whether human-induced or not.

Reforestation: Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.

## Appendix 2: CURRENCY AND CONVERSION FACTORS

1 Fiji Dollar = 0.45 United States Dollar

1 kWh = 860 kcal = 3.600 kJ (3.6 MJ)

1 MJ = 239 kcal = 0.278 kWh

1 kcal = 4.19 kJ = 0.00116 kWh

1 toe = 41.87 GJ = 11.63 MWh

Standard metric system utilized

## Appendix 3: Investment Models



#### Appendix 4: Recommended Species List for each activity model

## Appendix 5 Forest Landscape Restoration Working Paper

## Appendix 6 – Value Chain Assessment of Fiji’s Forest Sector

## Appendix 7 - Value Chain Assessment of Non-timber Forest Products in Fiji

## Appendix 8 – Complementarities, Synergies and Coordination of FDB, WWF and FAO GCF Proposals

## Appendix 9 – Potential Contribution of Short Rotation Plantations for Energy Use to the Low Emission Development Strategy

## Appendix 10 An economic evaluation of the coral reef ecosystem in Fiji

## Appendix 11 – FDB Current Lending Facilities Related to Forestry and Agriculture

Financial product	Objective	Eligibility	Lending packages	Main types of customers	Key risks/challenges
<b>Forestry Loan</b>	Forestry & logging loans are available for forest based projects for the following purposes: building construction and purchase, plant and equipment, utilities and van (new), trucks (new) and used vehicles, working capital.	<ul style="list-style-type: none"> <li>- Maximum term is between 3-15 years.</li> <li>- Shall not exceed \$162,500 per applicant excluding SCARF component</li> <li>- Minimum equity of 10% subject to viability.</li> <li>- Competitive interest rates</li> <li>- Terms available to suit your business cycle</li> <li>- Reasonable fees &amp; charges</li> <li>- Reduced administrative requirements</li> <li>- Normal FDB screening for credit assessment applies.</li> </ul>	Agriculture	Forest based projects	Borrowers lack of business acumen
<b>Farm Development Loan</b>	To alter the landscape in any number of ways such as: changing landforms from a natural or semi-natural state for purposes of agriculture or subdividing lots for mixed farming etc.	<ul style="list-style-type: none"> <li>- Maximum term is up to 15 years.</li> <li>- Minimum equity of 10% subject to viability.</li> <li>- Farmers must demonstrate farming experience appropriate to their project proposal.</li> </ul>	Agriculture projects	For any Agriculture farmers	
<b>Root Crops, Ginger, Vegetable &amp; Fruit Farming</b>	Root crop loans are available for Dalo, Cassava, Yam, Kumala, Ginger, Yaqona and Potato. Vegetable farming is available for cabbage, Okra, herbs, long beans, corn, radish etc. Fruit farming options include pineapple, papaya, watermelon, bananas, passion fruit, mangoes, jackfruit, avocado, lemons, star fruit etc. Farmers must demonstrate farming experience appropriate to their project proposal.	<ul style="list-style-type: none"> <li>- Maximum term is up to 15 years.</li> <li>- Minimum equity of 10% subject to viability.</li> <li>- Farmers must demonstrate farming experience appropriate to their project proposal.</li> </ul>	As above	As above	
<b>Horticulture, Grains &amp; Pulses Farming</b>	Horticulture loans are available for fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, flowers, seaweeds and landscaping.	<ul style="list-style-type: none"> <li>- Maximum term is up to 15 years.</li> <li>- Minimum equity of 10% subject to viability.</li> <li>- Competitive interest rates</li> <li>- Terms available to suit your business cycle</li> <li>- Reasonable fees &amp; charges</li> <li>- Reduced administrative requirements</li> </ul>	As above	As above	-



Financial product	Objective	Eligibility	Lending packages	Main types of customers	Key risks/challenges
		<ul style="list-style-type: none"> <li>- Normal FDB screening for credit assessment applies.</li> </ul>			
<b>Agricultural Land Sub-Division</b>	Agricultural land sub-division is available for Sale of Sub-Divisions for Agricultural Purposes	<ul style="list-style-type: none"> <li>- Maximum term is up to 15 years.</li> <li>- Equity at least 35% of the project cost</li> <li>- Competitive interest rates</li> <li>- Terms available to suit your business cycle</li> <li>- Reasonable fees &amp; charges</li> <li>- Reduced administrative requirements</li> <li>- Normal FDB screening for credit assessment applies.</li> </ul>	As above	As above	-
<b>Farm Vehicles, Machinery, Implements &amp; Equipment Loan</b>	This facility is available for the purchase of necessary equipment and vehicles needed to manage a farm. The applicant must demonstrate the ability for successful management of a farm business.	<ul style="list-style-type: none"> <li>- Minimum equity of 10% subject to viability</li> <li>- Competitive interest rates</li> <li>- Terms available to suit your business cycle</li> <li>- Reasonable fees &amp; charges</li> <li>- Reduced administrative requirements</li> <li>- Normal FDB screening for credit assessment applies.</li> </ul>	As above	As above	-
<b>Farm House Construction Loan</b>	Construction of Farm Housing is available for non-cane farm based agricultural projects. Farmers must demonstrate farming experience appropriate to their project proposal.	<ul style="list-style-type: none"> <li>- Maximum term is up to 15 years.</li> <li>- Minimum equity of 10% subject to viability, other conditions apply.</li> <li>- Competitive interest rates</li> <li>- Terms available to suit your business cycle</li> <li>- Reasonable fees &amp; charges</li> <li>- Reduced administrative requirements</li> <li>- Normal FDB screening for credit assessment applies</li> </ul>	As above	As above	

Financial product	Objective	Eligibility	Lending packages	Main types of customers	Key risks/challenges
<b>Sugarcane Farming (for all purpose)</b>	Sugar cane loans are available to provide financial assistance to all (existing, new entrance and below average producers) Sugar Cane Farmers, within loan eligibility for Land Development, Land Purchase, Construction of Farm House, Farm Vehicles, Machinery, Equipment, Implements, and Working capital	<ul style="list-style-type: none"> <li>- <b>Equity contribution depends on case by case basis.</b></li> <li>- <b>Maximum loan term of up to 12 years.</b></li> <li>- <b>Competitive interest rates</b></li> <li>- <b>Terms available to suit your business cycle</b></li> <li>- <b>Reasonable fees &amp; charges</b></li> <li>- <b>Reduced administrative requirements</b></li> <li>- <b>Normal FDB screening for credit assessment applies.</b></li> </ul>	As above	As above	-
<b>Agriculture Family Loan Facility -</b>	<p>Farming as a family. The FDB understands. If you have been farming for 10 years or more without a formal lease, FDB has an innovative solution for you.</p> <p>As Farmers, you are contributors to the Nation's agriculture production target and agriculture development. The absence of a lease can sometimes get in the way of much needed finance. Finance that can grow your family farming business.</p> <p>The Fiji Development Bank's "Agriculture Family Loan" Facility, breaks the barrier to accessing finance.</p> <p>It is an innovative solution that is positioned to meet your needs.</p>	<ul style="list-style-type: none"> <li>- <b>Farmers with no formal lease throughout Fiji.</b></li> <li>- <b>10 years of farming experience.</b></li> <li>- <b>Farmers residing on the same farm land for the last 10 years.</b></li> <li>- <b>Have an established market.</b></li> <li>- <b>MUST have immediate family participation.</b></li> <li>- <b>Preference given to: potential to export or producing climate resilient or organic crops.</b></li> </ul>	As above	As above	-

## Appendix 12 - FDB's managed Government Facilities

Facility	Objective	Target beneficiaries	Source of funding	Benefits <sup>73</sup>	Implementation Modality
<b>Seed Capital Revolving Fund – Forestry, Fishery &amp; Eco-tourism and Village tourism Loans</b>	All projects under equity funding assistance from Government will require at least 35 per cent contribution towards the project cost. Government through (Seed Capital Revolving Fund/SCARF) will contribute 25 percent cash and the balance of 10 percent has to be met by the applicant in cash or kind. However, if the applicant is unable to contribute the 10 percent component, the SCARF can be increased to 35 percent. Equity limits are noted under each facility guideline. It is limited to Fishing (suspended), Forestry (suspended <sup>74</sup> ) and Eco-Tourism.	For the purpose of Forestry, Fishery and Eco Tourism and Village based Tourism Projects  For joint venture company or partnership with other communities, the Indigenous Fijians/Rotumans ownership should not be less than 51 per cent.  Also, additional control measures to be in i.e., Board and management control, audit certificate to verify status every six months.	Govt & FDB	Easier access to finance	Direct finance & Co-financing (Govt of Fiji Seed Capital Revolving Fund)
<b>Export Credit Facility</b>	The Fiji Development Bank jointly with the Ministry of Commerce has prepared the Export Credit Facility to assist short-term working capital requirement of the Established and New Exporters.	To assist short-term <b>working capital requirements</b> for exporters in any of the forms below:  1. This can be for any type of activity in the Agro-business, Forestry, Marine Products, Mineral Water, ICT and Audio-Visual sectors which is in support and or facilitation of the export process but deemed to be working capital in nature. 2. Equipment purchases and expenses related to exports. 3. Applicable for financing of both tangible and intangible assets in the ICT and Audio/Visual sectors.	Govt & FDB	As above	As above
<b>Import Substitution and Export</b>	The Reserve Bank of Fiji (RBF) on the 30th of July 2010 announced the rationalization of its Export Finance and Import	<u><b>Export Finance</b></u>  All goods by primary and secondary exporters:	Via RBF	As above	

<sup>73</sup> i.e. grant, loan, capacity building opportunities

<sup>74</sup> Suspended as limit has been exhausted.

Facility	Objective	Target beneficiaries	Source of funding	Benefits <sup>73</sup>	Implementation Modality
<b>Finance Facility</b>	<p>Substitution Facility into one Facility called the Import Substitution and Export Finance Facility (ISEFF). The changes to the facility include reduced administrative requirements, streamlined approval process and no minimum eligibility funding amounts. On 30 April 2020 the RBF announced further revisions to the ISEFF (refer HOC 38/2020) and further revisions to interest rate was announced on 1 June 2021 (refer HOC 49/2021).</p> <p>The merged Facility focuses on improving Fiji's balance of payments position by assisting exporters, large scale commercial agricultural farming and renewable energy businesses to obtain credit at concessional rates of interest. In addition, the RBF has further reduced the administrative requirements and streamlined the approval process for funding under the scheme</p>	<p>Primary exporters – production/manufacture of goods. Secondary exporters – agents and distributors of their clients.</p> <p>Export of certain professional services. For example: Architectural Engineering</p> <p><u>Import Substitution</u> - for new and existing businesses involved in: The production of import substitutes. Industries or businesses that promote renewable energy sources.</p> <p>Refinancing Loans for Existing Eligible Businesses</p>			

## Appendix 13 - Possible interventions to achieve climate benefits within the project

Projected CC impacts on forestry, ecosystem, agriculture and livelihoods	Project proposed climate smart and NBS practices (to be integrated in different target landscapes)	Adaptation benefits	Mitigation benefits
	<b>Forest Landscape Restoration (FLR)</b>		
Increasing temperatures and higher evapotranspiration	Restoration of tree cover along waterways/riparian zones including with productive species such as sago, ivi, vetiver grass, juncao grass, other fruit trees etc.	✓	✓
Increasing severity of tropical cyclones, leading to more tree damages	Community planting of species that promote local, endemic and cyclone resistant tree species.	✓	✓
Increasing (nighttime) temperatures, and increasing severity of tropical cyclones lead to increasing spread of pests and diseases	Nature-based pest, pathogen and disease control, through increased biodiversity.	✓	✓
	<b>Restoring wetlands, bare land and rangeland</b>		
	Restoring and protecting wetlands with blue forests – mangrove restoration and replanting.	✓	✓
Increasing heavy rainfall intensity and frequency, leading to soil erosion and sedimentation	Revegetate bare soil/land to reduce runoff and sedimentation into coastal habitats. Use direct seeding with pioneers, acacia and casuarina/nokonoko as well as protecting existing regeneration.	✓	✓
	Buffer zone management and tree canopy cover restoration.	✓	✓
	<b>High value forest conservation</b>		
Increasing temperature and changing rainfall pattern will lead to change in biodiversity composition, increasing pressure on forest resources	Establishment of high conservation value Protected areas	✓	✓
	Endangered and vulnerable species	✓	
	Managing illegal logging	✓	✓
	<b>Sustainable Forest Management</b>		
	Improved sustainable community forestry management through tree selection and reduced harvesting as well as weed control and management.	✓	✓
Reduced productive functions and prolonged growth of forest	Monitor and improve survival rates of seedlings. Enhancing pollination	✓	✓
	Promoting indigenous species and heterogeneity (forest enrichment) in forest areas to enhance ecosystem services.	✓	✓
Increasing temperatures, leading to higher risk of fires	Forest floor management (The vitality of an ecosystem is connected to the energy and nutrient status of the forest floor which has the most biologically active portion of the soil and often the largest reservoir of nutrients.) This will also help in reducing the risk of forest fire.	✓	✓
	<b>Re-generative Agroforestry</b>		
	Agroforestry restoration, including using nitrogen-fixing trees and crops, fruit and nut trees	✓	✓
Increasing temperatures, leading to higher heat and water stress	Shade grown crops such as cocoa, ota, vanilla, antherium, turmeric, banana and bamboo and spice	✓	✓
	<b>Diversified, Climate Resilient Agriculture</b>		
Increasing temperatures and higher evapotranspiration, leading to higher drought risks	Drought resistant yams and other climate resilient crops, seeds and planting materials.	✓	
	Staged farming practices and fast yielding crops e.g. corns followed by more traditional crops.	✓	
	Rotational ginger farming (cycle of taro, cassava, nitrogen fallow or pigeon pea, ginger) on moderately sloping sites.	✓	
	Vegetable farming and small glasshouse farming, including use of compost and biochar to improve productivity.	✓	
	Hydroponics and aquaponics.	✓	
Increasing temperatures, leading to higher heat and water stress, and decreasing yields and crop quality	Improved cropping system to include cover cropping, crop rotation, intercropping and other context appropriate strategies.	✓	
	Climate smart livestock linked with rangeland restoration	✓	✓
Increasing severity of tropical cyclones, leading to more damages by strong winds	Crop shading using leaves, maintaining/growing trees around crops for shading against winds.	✓	
	<b>Improve water management</b>		
Increasing temperatures, leading to higher water stress	Improved water catchment and storage, key line farming system, bunds and channels on the contour planted with vetiver, bamboo and trees.	✓	
	Bucket irrigation, drip irrigation	✓	✓
	Use of wicking based systems,	✓	

## Appendix 14: Climate Event Impacts on Communities, Economic Activities, and Ecosystems in Fiji

### Historical Impacts (1970-2024)

Climate Hazard/Event	Period of Impact	Impact Type	Impact on Communities (Quantitative Data)	Impact on Economic Activities (Quantitative Data)	Impact on Ecosystems (Quantitative Data/Description)
<b>Tropical Cyclones &amp; Floods (Combined)</b>	1970-2016	Natural Process	Over 3 million people affected; 57% by 66 cyclones, 16% by 44 floods, 27% by 6 droughts.	Average asset losses >FJD 500 million (USD 220 million) per year, representing >5% of GDP.	-
<b>Tropical Cyclones &amp; Floods (Poverty Impact)</b>	Annual Average	Natural Process	25,700 people pushed into poverty annually.	Drop in national consumption by FJD 900 million (USD 400 million) due to FJD 500 million asset losses.	-
<b>Tropical Cyclone Winston</b>	2016	Natural Process	Affected over half of 900,000 residents (~350,000 people).	US1.3 billion economic losses (US700 million damages, US600 million other losses).  Total damage/loss to agriculture, livestock, forestry, fisheries: \$259.3 million.  Transport: \$61.9 million.  Water: \$11.8 million.  Electricity: \$19.7 million.	Native forests, mangroves, and coral reefs required up to 15 years to regenerate.  Environmental damage/loss: \$412.60 million.
<b>Tropical Cyclone Harold</b>	2020	Natural Process	Flooding up to 1 meter high.	Damaged all houses, loss of all crops and livestock.	-

<b>Fluvial &amp; Pluvial Floods</b>	Current	Natural Process	-	Losses of 2.6% (fluvial) and 1.6% (pluvial) of GDP per year.	-
<b>Sea Level Rise</b>	1998-2022	Natural Process	+5 cm per decade in Lautoka; +10 cm per decade in Suva (higher than global average +4.5 cm/decade).	-	Contributes to flood exposure, adverse impacts on coastal/marine ecosystems.
<b>Relocation due to Climate Impacts</b>	Ongoing	Natural Process / Human-induced Driver	Vunidogoloa village (26 homes, 140 people) first relocated in 2012. 3 communities moved, 40 more awaiting relocation.  Sea level rise (45%), coastal floods (41%), intense cyclones (12%) are primary drivers.  >60 villages identified as threatened by rising sea levels, >40 settlements expected to be relocated within 10 years.	-	-
<b>Forest Degradation (Human-induced)</b>	Ongoing	Human-induced Driver	-	-	40% of indigenous forests exhibit degradation.  Total tree cover loss (2001-2024): 54.1 kha (3.5% of 2000 tree cover).  Humid primary forest loss (2002-2024): 7.56 kha (14% of total tree cover loss), total area decreased by 1.4%.  Net change in tree cover (2000-2020): -21.5 kha (-1.8%).

<b>Mangrove Loss/Degradation</b>	2003-2013 & Ongoing	Human-induced Driver / Natural Process	-	Net annual economic loss from degradation in Ba/Rewa deltas: US\$335,000/year.	Reduced 25% of their area from 2003 to 2013.
<b>Soil Erosion (from forest/land degradation)</b>	Annual Average	Human-induced Driver	-	-	Fiji losing over 50 tons of soil per hectare annually through run-off (4x tropical average).  Forest restoration across 8 watersheds could decrease sediment delivery by 24.2 tons/year.
<b>Coral Reef Degradation/Bleaching</b>	Ongoing	Natural Process / Human-induced Driver	-	Affects tourism sector (economic value of coral reefs estimated at USD 525.7 million in 2017).	41% of coral reefs worldwide significantly impacted by sedimentation.  Degraded catchments in Vanua Levu showed highest erosion and marine turbidity.  Mass coral bleaching (2000, 2002) caused 40-80% hard coral mortality (<5m depth).  Ocean warmth highest in 653 years.
<b>Agricultural Losses (Droughts)</b>	Over last decade	Natural Process	Reduced sugarcane and cash crop yields, some areas >50% income reduction.  More than one-third of population needed emergency food/water during drought.	1997-1998 drought cost agricultural sector US 65million.	Increased pest outbreaks. Livestock deaths, crop failure.



<b>Agricultural Income Reduction</b>	-	Natural Process	1% reduction in agricultural income can result in 1,000 additional people being pushed into poverty.	-	-
<b>Temperature Increase (Historical)</b>	1950-2022	Natural Process	-	-	Overall +0.27°C (average), +0.29°C (min), +0.33°C (max) per decade (1980-2022). Linked to decreased canopy and tree cover.
<b>Accumulated Precipitation (Historical)</b>	1980-2022	Natural Process	-	-	+81 mm/year per decade. Increased wet days (+3.20/decade) and extremely wet days (+0.65/decade).
<b>Hurricanes (Historical)</b>	1990-2022	Natural Process	-	-	+0.30 hurricanes/year per decade (wind speeds >117 km/hour).
<b>Disaster Risk</b>	2021	Natural Process	Fiji ranked among top 15 countries globally for disaster risk.	-	-
<b>Tree Cover Loss from Fires</b>	2001-2024	Natural Process / Human-induced Driver	-	-	2.98 kha of tree cover lost from fires. 2016: 882 ha lost to fires (11% of total tree cover loss for that year).
<b>Tree Cover Loss from Logging</b>	2001-2024	Human-induced Driver	-	-	35.9 kha of tree cover lost from logging.

### Projected Climate Change Impacts on Communities, Economic Activities, and Ecosystems in Fiji (Until 2100)

Climate Hazard/Event	Period of Impact	Impact Type	Impact on Communities (Quantitative Data)	Impact on Economic Activities (Quantitative Data)	Impact on Ecosystems (Quantitative Data/Description)
<b>Tropical Cyclones &amp; Floods (Poverty Impact)</b>	Projected by 2050	Natural Process	Projected to push >32,000 people annually into poverty.	Annual losses from floods projected to increase from 4.2% to 5.9% of GDP. [1]	Increase in river discharge of 23% by 2050 and 36% by 2100 (pessimistic scenario).
<b>100-Year Tropical Cyclone</b>	Projected	Natural Process	Could force almost 50,000 Fijians (approx. 5% of total population) into poverty.	-	-
<b>Tropical Cyclones (Future)</b>	Future	Natural Process	Increased intensity expected to damage housing stock and critical infrastructure, impact livelihoods.	-	Proportion of Category 4 and 5 tropical cyclones likely to increase.
<b>Sea Level Rise (Projected)</b>	By 2030 (RCP 4.5) & 2090 (RCP 8.5)	Natural Process	Impacts population living at elevations <5 meters (630 km <sup>2</sup> or 3.4% of Fiji's land). Projected 0.09-0.17m by 2030 (RCP 4.5). Projected 38–87 cm by 2090 (RCP8.5).	-	Coastal erosion will worsen. Sea levels may rise by as much as 1.41 meters by 2100.

			<p>Up to 1.7 million people across Pacific Islands could be displaced by 2050.</p> <p>4.5% of buildings inundated by 22 cm rise, 6.2% by 63 cm rise.</p>		
<b>Ocean Acidification</b>	Ongoing /Future	Natural Process	-	Fewer jobs (secondary impact).	<p>Expected to continue increasing, leading to coral reef bleaching and destruction.</p> <p>Effects on fauna &amp; flora, difficult to catch fish (primary impact).</p>
<b>Riparian Ecosystems</b>	Ongoing /Future	Natural Process / Human-induced Driver	-	Reduced revenues in forestry sector.	<p>Changes in rainfall patterns and increased frequency/intensity of torrential rains expected to increase waterlogging, erosion, landslides, damaging riparian tree cover, reducing accessibility.</p> <p>Increased dry spells impact water storage/availability, increasing wildfire risk, altered growth patterns, possible species shift.</p>
<b>Fisheries Sector</b>	Ongoing /Future	Natural Process	-	<p>Coastal fishing production modelled to decrease by 27% by 2050.</p> <p>Freshwater fish production expected to increase by 146% (up to 266% with aquaculture) by 2050.</p>	Shrinking habitats, decreasing primary productivity (phytoplankton / zooplankton die-offs), declining fish stocks.
<b>Tourism Sector</b>	Ongoing	Natural Process / Human-	-	Shoreline/beach erosion, reduced water availability, interrupted supply chain,	Degradation of marine biodiversity.

		induced Driver		coral bleaching, physical damage to property. Smaller operators cannot afford high insurance premiums.	
<b>Overall Economic Impact</b>	Projected by 2100	Natural Process	-	Losses could reach 12.7% of annual GDP for Pacific region. Losses for Fiji could reach 4% of annual GDP.	-

## Appendix 15: Overview on lessons learned on PPPs in Fiji

The key lessons learned from World Bank and IFC projects related to public-private partnerships (PPPs) in Fiji include:

- The Fiji Partnership, involving World Bank and IFC, has been highly successful and well-suited to Fiji's challenges, supporting inclusive private sector-led growth and economic opportunities through direct business support, policy reforms, and targeted PPP investments.
- Strong government ownership and collaboration: Including the Government of Fiji in governance mechanisms, particularly in steering committees, fostered trust, ownership, and day-to-day project effectiveness. Close collaboration among IFC, World Bank teams, government, and donors was critical to success.
- Integrated approach across projects: The Partnership's component projects were designed in synergy without overlap and addressing PPPs in sectors like tourism, renewable energy, and infrastructure.
- Challenges with numerical targets and flexibility: The Partnership lacked detailed logframes linking numerical targets to outcomes, and targets remained preliminary and subject to change throughout the program. This approach allowed flexibility to adapt to evolving country conditions and had hence positive aspects, but complicated precise monitoring.
- Implementation and decision-making delays: Certain projects experienced delays due to lengthy decision processes and site selection issues, highlighting the need for more agile decision-making in PPP development and execution.
- Some challenges appeared in specific sectors, such as health PPP projects, where collaboration was less smooth, indicating sector-specific complexities and the need for tailored approaches. <https://www.dfat.gov.au/sites/default/files/fiji-partnership-review.pdf>

## **Appendix 16: Analysis of changes in soil erosion under climate change in Fiji**