



**GREEN  
CLIMATE  
FUND**

**Meeting of the Board**  
18 – 21 August 2020  
Virtual meeting  
Provisional Agenda Item 11

**GCF/B.26/02/Add.15**

**28 July 2020**

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# Consideration of funding proposals – Addendum XV

## Funding proposal package for SAP016

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### **Summary**

This addendum contains the following five parts:

- a) A funding proposal summary titled “Fiji Agrophotovoltaic Project in Ovalau” submitted by the Fiji Development Bank (FDB);
- b) No-objection letter issued by the national designated authority(ies) or focal point(s);
- c) Independent Technical Advisory Panel’s assessment;
- d) Response from the accredited entity to the independent Technical Advisory Panel’s assessment; and
- e) Gender documentation of the funding proposal.

These documents are presented as submitted by the accredited entity and the national designated authority(ies) or focal point(s), respectively. Pursuant to the Comprehensive Information Disclosure Policy of the Fund, the funding proposal titled “Fiji Agrophotovoltaic Project in Ovalau” submitted by the Fiji Development Bank (FDB) is being circulated on a limited distribution basis only to Board Members and Alternate Board Members to ensure confidentiality of certain proprietary, legally privileged or commercially sensitive information of the entity.

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# Simplified Approval Process Funding Proposal

Project/Programme title: Fiji AgroPhotovoltaic Project in Ovalau

Country(ies): Fiji

National Designated Authority(ies): Ministry of Economy

Accredited Entity: Fiji Development Bank

Date of first submission: [1/23/2020] [V.1]

Date of current submission/  
version number: [6/05/2020] [V.8]

If available, indicate GCF code: *5de5fa1aab532274f6f5a8b2*



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## Contents

### Section A **PROJECT / PROGRAMME SUMMARY**

This section highlights some of the project's or programme's information for ease of access and concise explanation of the funding proposal.

### Section B **PROJECT / PROGRAMME DETAILS**

This section focuses on describing the context of the project/programme, providing details of the project/programme including components, outputs and activities, and implementation arrangements.

### Section C **FINANCING INFORMATION**

This section explains the financial instrument(s) and amount of funding requested from the GCF as well as co-financing leveraged for the project/programme. It also includes justification for requesting GCF funding and exit strategy.

### Section D **LOGIC FRAMEWORK, AND MONITORING, REPORTING AND EVALUATION**

This section includes the logic framework for the project/programme in accordance with the GCF Results Management Framework and Performance Measurement Framework, and gives an overview of the monitoring, reporting and evaluation arrangements for the proposed project/programme.

### Section E **EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA**

This section provides an overview of the expected alignment of the projects/programme with the GCF investment criteria: impact potential, paradigm shift, sustainable development, needs of recipients, country ownership, and efficiency and effectiveness.

### Section F **ANNEXES**

This section provides a list of mandatory documents that should be submitted with the funding proposal as well as optional documents and references as deemed necessary to supplement the information provided in the funding proposal.

### Note to accredited entities on the use of the SAP funding proposal template

- The Simplified Approval Process Pilot Scheme (SAP) supports projects and programmes with a GCF contribution of up to USD 10 million with minimal to no environmental and social risks. Projects and programmes are eligible for SAP if they are ready for scaling up and have the potential for transformation, promoting a paradigm shift to low-emission and climate-resilient development.
- This template is for the SAP funding proposals and is different from the funding proposal template under the standard project and programme cycle. Distinctive features of the SAP funding proposal template are:
  - *Simpler documents*: key documents have been simplified, and presented in a single, up-front list;
  - *Fewer pages*: A shorter form with significantly fewer pages. The total length of funding proposals should **not exceed 20 pages**, annexes can be used to provide details as necessary;
  - *Easier form-filling*: fewer questions and clearer guidance allows more concise and succinct responses for each sub-section, avoiding duplication of information.
- Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other funding proposal documents such as project appraisal document, pre-feasibility studies, term sheet, legal due diligence report, etc.
- Submitted SAP Pilot Scheme funding proposals will be disclosed simultaneously with submission to the Board, subject to the redaction of any information which may not be disclosed pursuant to the [GCF Information Disclosure Policy](#).

**Please submit the completed form to:**

[fundingproposal@gcfund.org](mailto:fundingproposal@gcfund.org)

**Please use the following name convention for the file name:**

“SAP-FP-[Accredited Entity Short Name]-[yyymmdd]”

A. PROJECT/PROGRAMME SUMMARY					
<b>A.1. Has this FP been submitted as a SAP CN before?</b>			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
<b>A.2. Is the Environmental and Social Safeguards Category C or I-3?</b>			Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
<b>A.3. Project or programme</b>	<input checked="" type="checkbox"/> Project <input type="checkbox"/> Programme	<b>A.4. Public or private sector</b>	<input type="checkbox"/> Public sector <input checked="" type="checkbox"/> Private sector	<b>A.5. RFP</b>	Not applicable
<b>A.6. Result area(s)</b>	<p><i>Check the applicable <a href="#">GCF result area(s)</a> that the proposed project/programme targets. Indicate for each checked result area(s) the estimated percentage of GCF budget devoted to it. The summed up percentage should be equal to 100%.</i></p> <p><b>Mitigation:</b> Reduced emissions from:</p> <input checked="" type="checkbox"/> Energy access and power generation: <u>100.00</u> % <input type="checkbox"/> Low emission transport: <u>Enter number</u> % <input type="checkbox"/> Buildings, cities and industries and appliances: <u>Enter number</u> % <input type="checkbox"/> Forestry and land use: <u>Enter number</u> %  <p><b>Adaptation:</b> Increased resilience of:</p> <input type="checkbox"/> Most vulnerable people and communities: <u>Enter number</u> % <input type="checkbox"/> Health and well-being, and food and water security: <u>Enter number</u> % <input type="checkbox"/> Infrastructure and built environment: <u>Enter number</u> % <input type="checkbox"/> Ecosystem and ecosystem services: <u>Enter number</u> %				
<b>A.a.<sup>1</sup> Total investment (GCF + co-finance)</b>	Amount:	<b>A.a.1 Total GCF funding requested</b>	Amount: 5,000,000 USD		
<b>A.b. Type of financial instrument requested for the GCF funding</b>	<input checked="" type="checkbox"/> Grant <input checked="" type="checkbox"/> Loan <input type="checkbox"/> Equity <input type="checkbox"/> Guarantees <input type="checkbox"/> Others:				
<b>A.7. Implementation period</b>	4 years				
<b>A.8. Total project/programme lifespan</b>	20 years	<b>A.9. Expected date of internal approval</b>	10/22/2020		
<b>A.10. Executing Entity information</b>	Executing Entity of Component 1: Fiji Development Bank (FDB) Executing Entity of Component 2: Government of Fiji represented by Ministry of Infrastructure and Transport (MOIT), Ministry of Economy (MOE)				
<b>A.11. Scalability and potential for transformation (Eligibility for SAP, max. 100 words)</b>					
<p>The proposed project aims to shift the paradigm of high-emission power generation through Agrophotovoltaic (APV) system implementation. In addition, the project will establish an innovative APV funding mechanism to promote an enabling environment for the spread of APV project in other regions of Fiji. Unlike the conventional solar photovoltaic (PV) system which often occupy scarce agricultural land, APV system allows solar power plant and agriculture to coexist maximizing the arable land use. Even though this project will be the first APV system in South Pacific small island region, this approach has been implemented in many other countries in Asia and Europe with an estimated total capacity of 2.5 GWp as of 2018. Based on the lesson learned from the successful APV system in other countries, the project will be implemented in a remote island of Fiji called Ovalau, which currently is dependant on 100% diesel generation with limited arable land availability and high climate-vulnerability. Many small islands in Fiji experience similar situations to Ovalau and this project has the potential to be replicated not only in Fiji but throughout other Small Island Developing States (SIDS) in the South Pacific.</p>					
<b>A.12. Project/Programme rationale, objectives and approach (max. 300 words)</b>					

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<sup>1</sup> This fields will be automatically calculated in the OSS system.

Fiji, a SIDS located in the South Pacific, is one of the world's 10th most exposed countries to natural hazards which makes the Fijian people highly vulnerable to natural disasters such as tropical cyclones, floods and climate change<sup>2</sup>. For example, Cyclone Winston, one of the more severe tropical cyclones in the Southern hemisphere, hit the country hard in 2016, with devastating impacts on the livelihoods of the Fijian people. Increased climate change is reported to be amplifying the risks of such natural disasters. Highlighting the nexus between natural disasters and climate change, a recent study recommended improving overall infrastructure--including energy service system--in order to enhance the overall resilience of the country and the society<sup>3</sup>. Fiji has adopted its NDC roadmap to increase its renewable energy (RE) generation capacity from 40% (2014) to 100% by 2035 and to reduce GHG emission and costs associated with the import of fossil fuels which currently accounts for 14~17% of GDP annually. Most of the RE capacity increase is expected from Solar Photovoltaic (PV) with the target installed capacity of 127MWp. The NDC roadmap states that Ovalau island, where the project site resides, is one of the priority areas for 100% renewable energy conversion because the island currently depends on 100% diesel generation with the power station located in the first capital of Fiji, Levuka town, which is classified as a UNESCO heritage site. Due to its urgency, the Fijian government has prioritized a feasibility study for the conversion of Ovalau to 100% renewable energy generation.

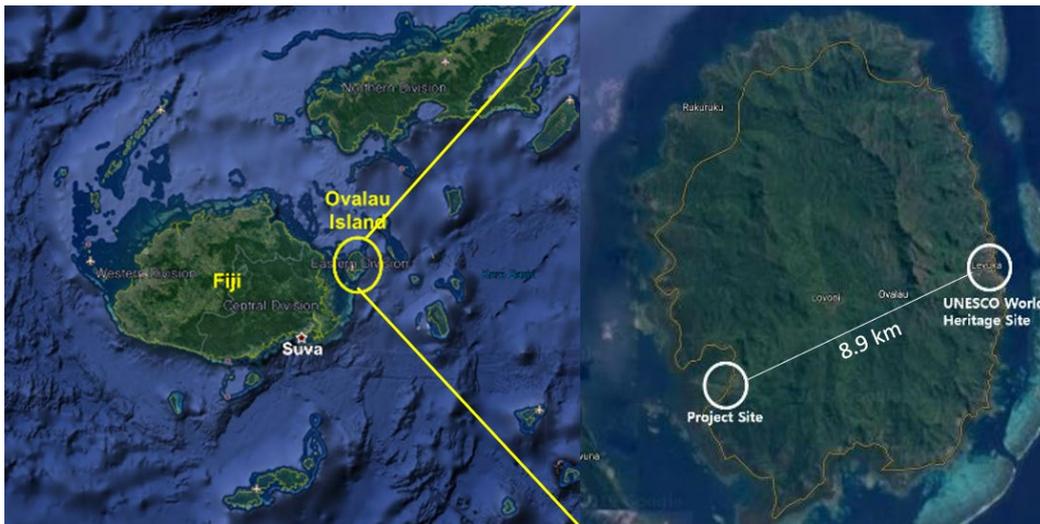


Figure 1. Project Location

Another important recommendation of the aforementioned study is for Fiji to enhance its climate resilience in supporting agriculture and fisheries development to benefit the climate, environment and economy. The agricultural sector in Fiji faces major challenges due to climate change. According to FAO's report in 2019, 65% of Fijians derive at least part of their income from agriculture and the agriculture sector employs 45% of the population<sup>4</sup>. However, the sector has contracted in recent decades due to climate change applying pressure on Fijian agriculture. When Cyclone Winston caused significant levels of damage across Fiji, the agriculture sector was the worst-hit part of the economy with an estimated loss of F\$542 million (US\$ 368 million). Additionally, losses in income and food caused significant hardships, particularly in rural areas. Based on the recent estimates, tropical cyclones cause, on average, an estimated F\$152 million (\$103 million) in asset losses each year<sup>5</sup>.

Fiji is exposed to other natural hazards including intense drought and high temperatures, which pose threats to agricultural production and associated incomes. While climate change is likely to have a significant impact on Fijian agriculture, other issues have also put pressure on the sector. Due to climate change, industrial development, trade and land policy, the arable land in Fiji has been decreasing. Decreasing arable land has resulted in reduced crop outputs and an associated decrease in agricultural investment. Fiji is more food secure than many of its neighbours in the Pacific, but problems persist even with its relatively high level of development. It is reported that Fijians, especially those living in urban areas, are increasingly dependent upon imported food products while also suffering from selective nutritional deficiencies<sup>6</sup>. Worsening food security in the country is another contributing factor to the Fijian climate vulnerability. The Fijian NAP clearly states that in order to combat poor and unbalanced nutrition, natural disasters and agricultural stagnation, Fiji will need to preserve arable land, invest in climate-resilient agriculture, and promote native crops, as well as foster inclusive economic development to ensure its population to afford sufficient healthy foods with the required variety of nutrition.

Most accessible flatlands are already used for industrial, urbanization, and tourism purposes and the development of PV on this land is prohibited. This policy leaves arable land, which plays an important role in the food and nutrition security of Fiji, subject to competition with PV development.

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<sup>2</sup> Germanwatch, Global climate risk index 2020 (2010)

<sup>3</sup> World Bank Group et al. "Climate Vulnerability Assessment of the Republic of Fiji: Making Fiji Climate Resilient"

<sup>4</sup> FAO (2019), Pro-Resilient Fiji

<sup>5</sup> Government of Fiji (2017), Fiji Climate Vulnerability Assessment

<sup>6</sup> <http://www.futuredirections.org.au/publication/fiji-poor-nutrition-and-agricultural-decline-has-caused-food-security-slump/>

Ovalau Island is a small remote island with limited arable land leaving it largely dependent on subsistence farming and food import from the main island. Ovalau is a volcanic island of only 109 km<sup>2</sup> with 9,606 people living in 27 villages. It has steep slopes and a limited area suitable for agricultural production. At present, the island gets the provisions of fresh vegetables and other foods from Suva, the main island. In fact, the only viable site in Ovalau for PV development is agricultural land owned by the nearby village communities. To achieve the NDC target in Ovalau, using traditional PV development systems, the Island's agricultural potential would need to be sacrificed to make room for the PV development. On the other hand, to promote the NAP's directive of protecting arable land, the NDC target on Ovalau is likely to be compromised. The APV system proposed here can be an effective solution in this case by allowing for the sharing of the land for the dual-purposes of agriculture and RE generation.

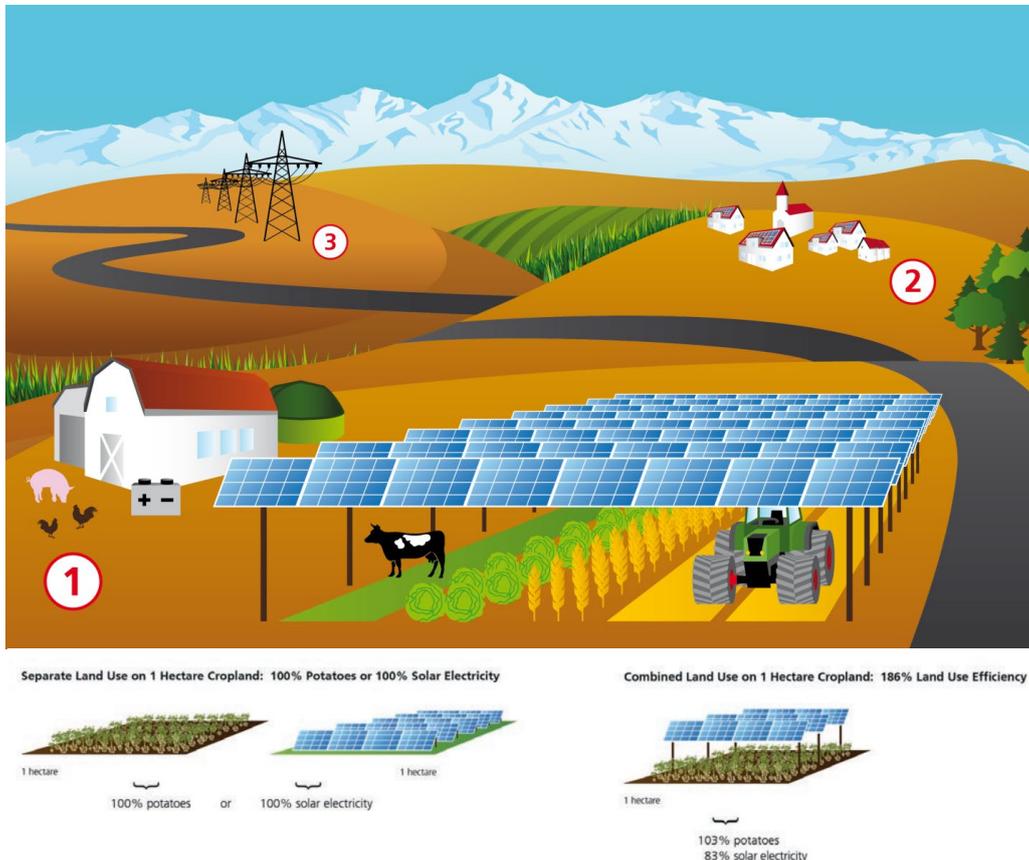


Figure 2. Concept of Agrophotovoltaic (Source: Fraunhofer ISE)

In the South Pacific region, including Fiji, where the crop stress is high due to elevated temperatures and other climatological events, the proper APV shading design can benefit agriculture in terms of increased crop production yield by providing a climate-resilient environment using the PV structure. (a reference to Fraunhofer). Details of the key positive impacts of the APV system on Agriculture are listed below;

- 1) Shading effect enables the crops to better endure the hot and dry climate conditions by shading plants from direct sunlight and controlling soil moisture, which increases moisture in the summer and decreases moisture in the winter<sup>7</sup>
- 2) Shading results in reduced water evaporation from the soil surface leading to reduced agricultural water demand<sup>8</sup>
- 3) Easy access to electricity on cultivation land promotes improved standards of living in rural areas while enabling smart farming that can improve farming productivity and climate change adaptation by predicting abnormal climate patterns and impending natural hazard

Therefore, the proposed APV project has the potential to resolve the conflict of interests inherent in the country's two major climate change targets, NDC (PV development) and NAP (Climate-resilient agriculture development) by promoting interest sharing with the APV's innovative land-sharing model. Not only does this system resolve the conflict between the NDC and NAP but it also provides a potential synergy effect on the increased yield on both crop production and renewable energy.

The project introduces the two elements below:

- 1) Establishing integrated microgrid with 4MWp Solar APV and 5MWh Battery Energy Storage System (BESS) targeting the reduction of GHG emission
- 2) Strengthening technical capacity for APV system and enhancing the project implementation and replication capacity

This project will request GCF financing for the establishment of a solar APV plant, and to provide technical assistance in the form of capacity building for the local community. The BESS will be provided by in-kind contribution from Korea International Cooperation Agency (KOICA).

Separate from this project, KOICA will be financing USD 4 million grant to Fijian government for the development and implementation of climate-resilient agriculture activities under the solar APV. They aim to reduce Fiji’s climate vulnerability and address food security as stated in the country’s NAP. The agriculture development activities will be the co-benefit of this project and will not be included in the scope of the project described herein.

Underpinned by a theory of change, each activity of the project has been carefully designed as illustrated in the figure below to create synergies between individual activities and achieve a paradigm shift.

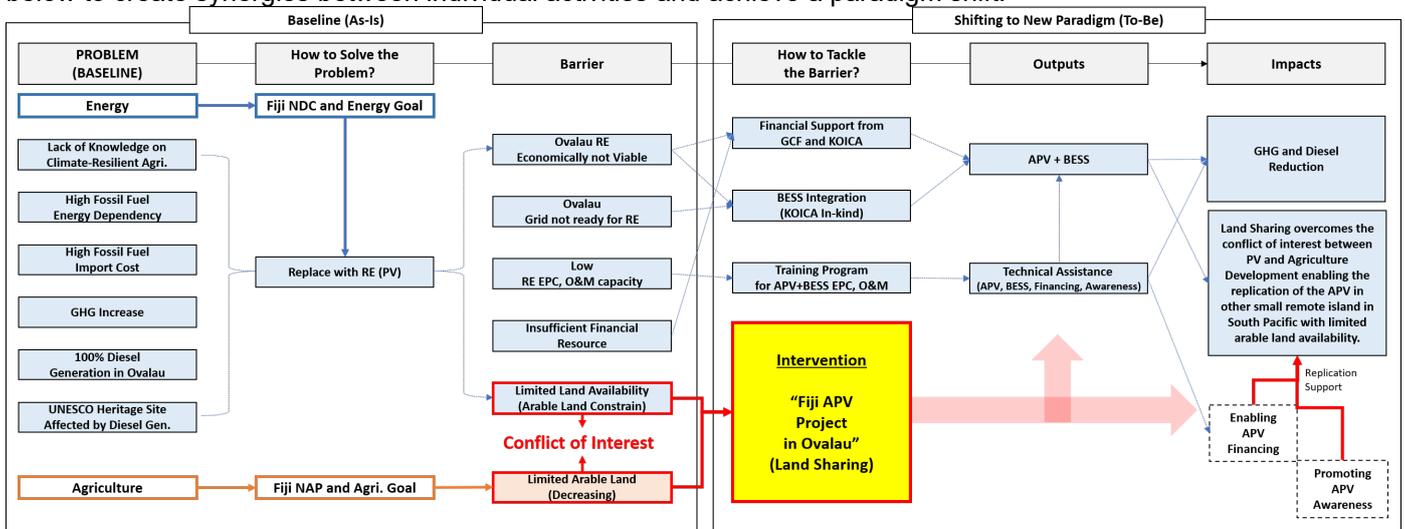


Figure 3. Project Rationalization

Together, the two components of the project are expected to reduce GHG emission and diesel imports while increasing related capacity in Fiji in terms of technical knowledge and the potential for project replicability. Overall, the project will contribute to Fiji’s GHG mitigation agenda. Further, GCF’s financing of the first APV in Ovalau can become a pioneering model, promoting the replication of similar projects in Fiji and other SIDS facing challenges Ovalau has inherited.

<sup>7</sup> Fraunhofer (2019), “Agrophotovoltaics: High harvesting yield in hot summer of 2018” (link: <https://www.ise.fraunhofer.de/en/press-media/press-releases/2019/agrophotovoltaics-high-harvesting-yield-in-hot-summer-of-2018.html>)

<sup>8</sup> H. Marrou, L. Dufour, J. Wery, How does a shelter of solar panels influence water flows in a soil–crop system?, European Journal of Agronomy, Volume 50, 2013, Pages 38-51, <https://www.pv-magazine.com/2020/03/31/a-good-year-for-solar-agrivoltaics-in-vineyards/>

## B. PROJECT/PROGRAMME DETAILS

### B.1. Context and baseline (max. 500 words)

#### ***National and Regional Context***

The Republic of Fiji is an island nation located in the South Pacific consisting of 332 islands that lies at the forefront of climate change impact. With a population of about 900,000, Fiji is a developing country of upper-middle-income level with US\$ 6,267 GDP per capita reported in 2018. As one of the SIDS, Fiji is tasked with delivering climate-resilient development, which seeks disaster risk reduction, climate change adaptation and low carbon development altogether<sup>9</sup>.

#### [1] Energy Sector – Nationwide Mitigation Baseline

As for the low carbon development, Fiji's averaged GHG emission recorded from 2006 to 2011 is approximately 2,500 Gigagrams (Gg) per year of which 1,500 Gg (59%) is from energy, 557 Gg (22%) from agriculture, 380 Gg (15%) from forestry and 130 Gg (4%) from waste<sup>10</sup>. Although Fiji emits only 0.006% of total global emission, Fiji is dedicated to contributing to the reduction of global GHG emission and has communicated in its NDC its goals of generating 100% of electricity from renewable sources by 2035 and of reducing CO<sub>2</sub> emissions by 30% from the energy sector BAU by 2030<sup>11</sup>. As for the mitigation actions to achieve this target, the Fijian NDC Implementation Roadmap 2017-2030 has identified and listed actions for three sub-sectors – electricity generation and transmission, demand-side energy efficiency, and transport. Regarding renewable energy electricity generation, the total capacity of 276 MW is planned. Solar power capacity is expected to increase to become the largest share of Fiji's electricity portfolio, comprising 46% (127 MWp) of all generation.

Fiji's electricity sector already generates a substantial percentage of electricity from renewables. In 2018, Fiji produced over half (57.07%) of its electricity requirements from hydropower, 42.67% from thermal and 0.26% from wind & solar<sup>12</sup>. However, since hydropower is mainly dependent on the annual rainfall, the electricity generation from hydro has recorded a trend of volatility in recent year, generating 527 Gwh in 2013 versus 401 Gwh in 2014, a difference of 24% in just one year. As climate change is expected to increase the climatic variability, the stability and reliability of electricity supply from hydropower becomes more uncertain. Thus, it is required for Fiji's electricity system to increase its resiliency by investing in a more diversified energy portfolio and distributed generation options including increased investment in solar and other RE generation systems.

The need to reduce dependence on imported fossil fuel as a source of energy for electricity generation is very high. Fiji imports 100% of its fossil fuels used, accounting for costs on the order of 14~17% of its GDP<sup>13</sup>. This makes the electricity system highly vulnerable to volatile oil prices, subsequently weakening energy security in Fiji. Therefore, the increase of renewable energy generation in Fiji contributes not only to Fiji's GHG emission reduction as targeted in NDC but also to domestic energy security.

#### [1-1] Ovalau Mitigation Solution – PV Development

According to the NDC, Ovalau, the project site, is a priority region for 100% renewable energy generation target due to its current 100% dependency on diesel generation. Ovalau's electricity is supplied from the mini-grid operated by a government-owned electricity company, EFL (Energy Fiji Limited). The grid is not linked to the main island and generates electricity by five diesel generators located in Levuka town, a UNESCO world heritage site (for being the very first capital city of the country historically), creating noise and other adverse environmental impacts. The total installed capacity in Ovalau is 2.8 MW, but the facility does not operate at 100% capacity. The baseline average monthly electricity demand in 2016 was approximately 756 to 862 MWh per month, an annual total demand of 9,811 MWh, with a standard deviation between 9,350 to 10,272 MWh of annual demand. For the ease of CO<sub>2</sub> emission calculation for the project, the annual generation baseline in Ovalau is set to 10,000 MWh. This accounts for approx. 3 million liters of diesel consumption annually. The expected average future monthly demand in 2035 is approximately 886 to 975 MWh per month, a total of 11,143 MWh of annual demand.

<sup>9</sup> Republic of Fiji (2019), National Climate Change Policy 2018-2030

<sup>10</sup> Republic of Fiji (2017), Tanaloa Dialogue Submission

<sup>11</sup> According to INDC, the electricity sector CO<sub>2</sub> emissions in 2013 were 340 Gg. A business as usual (BAU) scenario for total fossil fuel increases for energy production for extrapolated population and economic growth would give total CO<sub>2</sub> emissions in 2030 from the energy

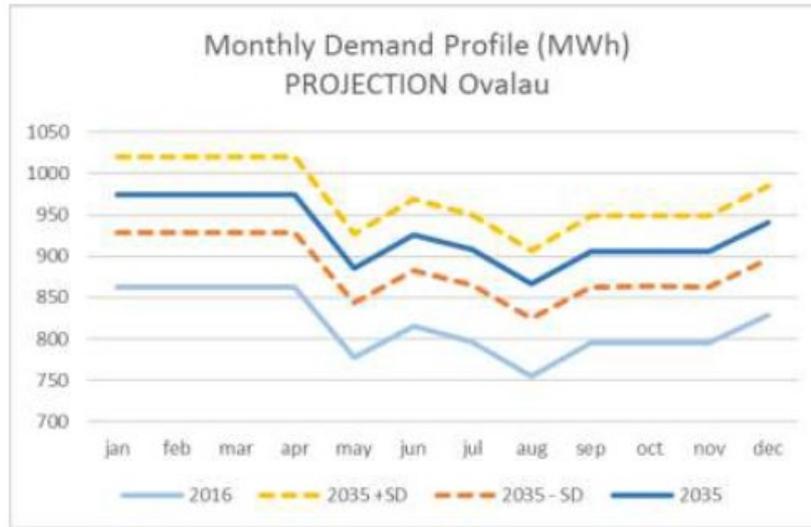


Figure 4. Monthly average demand profile and projection for Ovalau<sup>14</sup>

The 2019 domestic and industrial electricity tariff set by the Fijian Competition and Consumer Commission is outlined in the table below.

Table 1. Comparison of Fiji Electricity Tariff and Generation Cost in Ovalau

Tariff Category	Tariff Price (US cents/kWh)	Current Generation Cost in Ovalau
Domestic	15.64	29.5 US cents/kWh
Commercial	18.86 (up to 14,999kWh/month) 19.76 (over 14,999 kWh/month) 12.79 (for max demand 75kW-500Kw) 13.92 (for max demand 500kW-1000Kw) 15.04 (for max demand over 1000kw)	(* diesel fuel price assumed at 0.9 USD/liter)

As shown above, the tariff in Ovalau is heavily subsidized considering the diesel generation cost in Ovalau, putting significant fiscal burden on the Fijian government.

In an effort to achieve the renewable electricity generation target in the NDC, Fiji's government alongside the Global Green Growth Institute (GGGI) has conducted a pre-feasibility study to adopt 100% renewable energy in Ovalau and Taveuni island. This study made the following recommendations:<sup>15</sup>

- 1) PV is the only viable RE option in Ovalau

sector of around 2500 Gg with an electricity sector CO2 emission level of around 500 Gg. With the energy sector reductions the emissions in 2030 would thus be around 1800 Gg.

<sup>12</sup> Energy Fiji Limited (2019), 2018 Annual Report

<sup>13</sup> Fiji Renewable Assessment, IRENA (2015)

<sup>14</sup> Republic of Fiji and Global Green Growth Institute (2017), Pre-feasibility Study for 100% Renewable Electricity Generation on Ovalau and Taveuni Islands in Fiji

<sup>15</sup> Republic of Fiji and Global Green Growth Institute (2017), Pre-feasibility Study for 100% Renewable Electricity Generation on Ovalau and Taveuni Islands in Fiji

- 2) A phased approach is recommended by installing 50% RE capacity in the first phase and then moving toward 100% RE capacity
- 3) The 7ha Bureta site is the most viable site for the first phase PV considering its suitable land availability
- 4) BESS is required to integrate PV in Ovalau's mini-grid (1.8MW Peak)
- 5) Financial support is required considering the current tariff is not viable for the private investor on PV generation and high cost of BESS making the project not economically viable

### **Barriers to the Solution Implementation**

#### [1] Barriers on the PV Development in Ovalau

To achieve the first phase target--50% renewable energy with PV development in Ovalau--there are several barriers to overcome. In terms of the project financing barrier, the Government of Fiji has already communicated in the NDC that the achievement of the emission reduction target will be through both unconditional and conditional means, based on whether additional external financing is made available to Fiji. From the 30% emission reduction target, 10% will be achieved through the implementation of the Green Growth Framework, utilizing resources available in the country (unconditional). The remaining emission reductions needed to achieve Fiji's target can only be met with the availability of external funding amounting to US\$500 million (conditional). According to more recent data from the NDC Roadmap, the energy sector mitigation is expected to be 627,000 tCO<sub>2</sub> against the BAU baseline in 2030 and the total investment costs to achieve this level of GHG mitigation is estimated to be US\$ 2.97 billion between 2017–2030, with the largest share, US\$ 1.671 billion, used for electricity generation & transmission<sup>16</sup>. The level of investment required for the mitigation actions cannot be sourced fully from Fiji. The size of Fiji's national economy is only US\$ 5.54 billion GDP and tax revenues are about US\$ 1.34 billion (2018). Further, financial markets in Fiji are not developed and the country's access to global financial markets is limited due to country credit and the small economy size.

From a technical perspective, the Ovalau mini-grid with peak load only at 1.8 MW is not ready for high-fluctuating RE such as PV generation. To integrate a RE mini-grid, grid optimization with BESS must be implemented. This is not only to store the excessive PV generation during the daytime but to reliably manage the grid and avoid any blackout when the grid system needs to sustain RE generation levels of 50%. BESS's high cost would put significant weight on the financial burden, restricting the RE target achievement in Ovalau without grant fund. Fiji also lacks in operation, management, and maintenance capabilities, meaning most of this work will have to be outsourced from other countries, making the system less technically sustainable.

#### [1-1] Overcoming the Barriers Hindering PV Development in Ovalau

Overcoming the barriers hindering PV development is straightforward. Private investment can be induced by low-interest loan provision by GCF, and the Ovalau mini-grid optimization with BESS will be provided by KOICA as an in-kind contribution. This will make the project IRR sufficient to incentivise investment in the PV implementation. Another issue is the insufficiency of the PV+BESS technical O&M capacity in Fiji. Considering that utility-scale PV+BESS is the first of its kind in Fiji, there are only a few engineers and technicians with experience in micro-scale, off-grid PV installation and maintenance. Grid-connected utility PV and BESS requires sophisticated management system with proper experience from the operators. This technical capacity gap can be overcome by providing intensive training to transfer knowledge and know-how.

#### [1-2] Barrier between PV and Agricultural Development

Ironically, the Fijian NDC and NAP, both designed to tackle climate change issues, contradict each other when it comes to PV development on the arable land. Most accessible flatlands are already used for industrial, urbanization, and tourism purposes and the development of PV on this land is prohibited. This leaves arable land, which plays an important role in the food and nutrition security of Fiji, subject to competition with PV development.

In fact, over the last two decades, the arable land has been decreased, affecting harvesting area. Fiji has been experiencing a significant reduction in agricultural yield area due to extreme climate events, and it is projected that it will be difficult for the industry to recover. In addition, the arable land in Fiji is projected to decrease at an even higher rate in the future, affecting the food and nutrition security of Fiji.

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<sup>16</sup> 0.15 billion for demand-side energy efficiency and 1.149 billion for transport

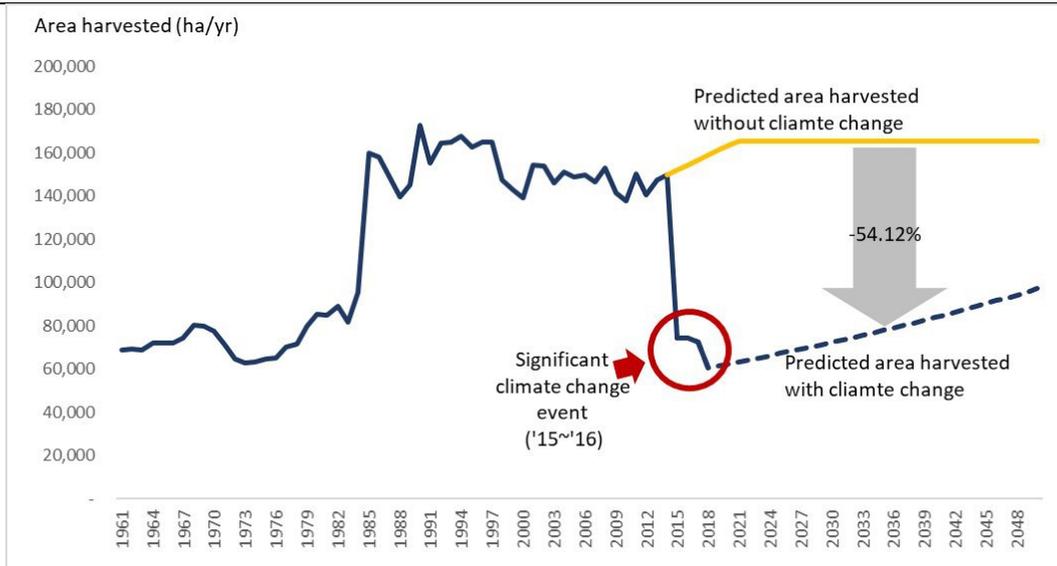


Figure 5. Climate Change Impact on Fiji Harvesting Area<sup>17</sup>

Ovalau Island is a small remote island with limited arable land leaving it largely dependent on subsistence farming and food import from the main island. Ovalau is a volcanic island of only 109 km<sup>2</sup> with 9,606 people living in 27 villages as of 2017. It has steep slopes and a limited area suitable for agricultural production. At present, the island gets the significant provisions of fresh vegetables and other food from Suva, the main island. In fact, the only viable site in Ovalau for PV development is also agricultural land owned by the nearby village communities. The 7-ha site viable for this project is freehold land (privately owned), zoned as rural/agricultural land by the government. The land is owned by three trustees representing Bureta Community Development Committee (BCDC). The land is currently not being used, although there was some effort from the landowners to conduct agricultural activities in the past for rice and other types of farming. The land is covered with grasses and reeds with a few coconut trees. The site owners have a strong will to conduct agricultural activities on the site in the future but the use of the land only for PV development would eliminate the agricultural potential in the site.

To achieve the NDC target in Ovalau, the PV development would sacrifice Ovalau's agricultural potential. On the other hand, to promote NAP protecting the arable land, the NDC target on Ovalau is likely to be compromised.

### [1-3] Overcoming the Cross-sectional Barrier between PV and Climate-Resilient Agricultural Development

The conflict on the land use between PV and agriculture can be resolved by applying the cross-sectional solution, agrophotovoltaic (APV) system. Specially designed PV structure, PV module type, and its orientation can not only allow sharing land with agriculture but also provide a climate-resilient environment for agricultural activities on the same land by reducing water evaporation and heat stress on crops<sup>18</sup>.

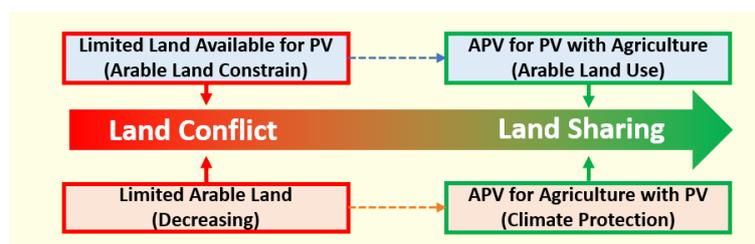


Figure 6. APV intervention for Overcoming Land-use Barrier

<sup>17</sup> Projection based on the past data collocated from FAOSTAT

<sup>18</sup> Marrou, H el ene & Dufour, L. & Wery, Jacques. (2013). How does a shelter of solar panels influence water flows in a soil-crop system?. European Journal of Agronomy. 50. 38-51. 10.1016/j.eja.2013.05.004.

There are already many examples of best practice cases of APV in Germany, France, Korea, and Japan to improve land-use efficiency and rural community income. Internationally, APV systems have been actively installed since 2015, and the total global installed capacity was estimated at 2.5GWp in 2018. Alternative terminologies which frequently characterizing the same or similar technological approaches are: Agrophotovoltaics, Agrivoltaics, Solar Sharing and Agri-Solar.

Table 2. Worldwide APV Implementation

Country	Installed Capacity	Details
Japan	150 MWp	1,680 Solar Sharing system (2013 ~ 2018)
China	2.2 GWp	Agriphotovoltaic system (2016 ~ 2018)
Korea	2 MWp	16 APV system, 8 in plan (since 2018)
France	30 MWp	Agrivoltaic system (since 2018)
Italy	14 MWp	6 APV system (since 2011)
Germany	12 MWp	8 APV system (since 2004)



Figure 7. Agro-photovoltaic Examples

An APV system requires appropriate design to optimize its implementation in a specific climatic condition (irradiation, air temperature, wind, etc.) and in relation to the relevant cropping plan[s] (planned crop, cultivation method, machinery, etc.). For this reason, technical pre-feasibility study for this project was conducted together with Fraunhofer ISE in July 2019 (Annex 15), This study shows that APV in Ovalau appears technically and economically feasible. Fraunhofer ISE estimated that east-west PV orientation with bi-facial module design will provide proper shading and irradiation to the crops underneath, and therefore can increase its crop yield compared to conventional farming. With the benefit of this project on crops, the people in Ovalau can improve their food security and nutrition by supplying fresh vegetables through local organic farming, which is sensitive to climate change. These benefits are expected to be particularly prominent in SIDS where climate stress such as high temperature, drought, flooding and cyclones significantly impact crops.

A PV panel placed above crops stays cooler and therefore thermal losses become lower than in a traditional panel array resulting in higher RE generation performance and decreased thermal loss.

Fiji Agrophotovoltaic Project in Ovalau is designed to provide an innovative intervention to tackle climate mitigation barriers while creating an enabling environment for climate-resilient agriculture in Fiji. Being the first of its kind within SIDS, this can be a pioneering project which can be replicated in Fiji and other SIDS.

**B.2. Project/Programme description (max. 1,000 words)**

### ***Project Objectives***

The basic concept of the project is to enable simultaneous solar power generation and agricultural production in the same area. The objectives of the 4MWp Solar APV power plant in the 7-ha land are:

- 1) to enhance climate change resilience by reducing the carbon emissions and enhancing the energy security in Ovalau Island
- 2) to revitalize community economics by promising additional sources of income from the implementation of the project to the host communities
- 3) to improve the quality of life for the local people by providing more reliable electricity and implementing climate-resilient agriculture

This project will install a 4MWp APV system connected to Ovalau's micro-grid along with a 5MWh BESS for a reliable power supply in the island in order to increase its renewable generation from 0% to about 57.24%. The Fijian government's fiscal burden can be lowered by replacing the high-cost diesel generation in Ovalau. This APV will be the first utility -scale solar PV Independent Power Producer(IPP) model in Fiji contributing to a paradigm shift in PV generation expansion in Fiji, achieving the target stated in the NDC roadmap.

KOICA, separate from this project, plans to provide ODA grant to Fiji for a climate-resilient agriculture project to promote the country's long-term climate-resilience and the sustainability of agriculture paired with APV systems.

### ***Project Components, Outputs, and Activities***

#### **Component 1. Strengthening the National and Community Capacity on the Low-carbon Generation and Microgrid Stabilization (4MWp APV and 5MWh BESS)**

##### Output 1.1 Low-carbon generation

###### *Activity 1.1.1 is to finance the establishment of 4MWp Solar APV plant*

FDB as the EE will, in consultation with OAS, implement the activity including EPC work procurement based on the FDB's procurement policy. This implementation will mainly focus on engineering procurement and the construction of a 4MWp Solar Power plant that has been modified to allow for agricultural activities underneath of the panel. The solar power plant will generate the electricity and be connected into the state-run mini grid to supply the power for people in Ovalau. At the same time, it provides arable land for agricultural activities.

The EPC contractor will be selected in accordance with the AE's procurement policy and the procurement plan during the first year of the implementation period. This activity is designed to reach more than 55% renewable energy power generation by strengthening low carbon generation in Ovalau. The loan will be used to pay for the EPC's work. The O&M cost for the APV plant are not covered by the project.

##### Output 1.2 Build microgrid system for energy security and reliability with 5MWh BESS

###### *Activity 1.2.1 is to finance the installation and connection of 5MWh BESS to the APV plant for the microgrid system*

The purpose of this activity is to stabilize the new hybrid solar power system with 5MWh BESS to the existing grid system in Ovalau, currently running with 100% diesel generators. KOICA will provide 5MWh BESS with an in-kind contribution, and FDB will finance its installation and connection. FDB as the EE will implement this activity in consultation with EFL and OAS. Upon procuring the BESS by KOICA, its ownership will be transferred to FDB, until the installation and connection process is completed. EFL will then take the ownership of the BESS and will be responsible for the O&M of the BESS along with the Ovalau grid which is also owned by EFL. This activity is mainly focusing on the stabilization of the electricity supply through the solar power plant. BESS will moderate the power supplement capacity in the Ovalau grid. With a project agreement between FDB and EFL, EFL will be responsible for

the operation and maintenance of the BESS facility in accordance with FDB's implementation plan and guideline for this project. BESS will not only function as a grid stabilizer but will work as a controller for electricity peak demand, bringing down the overall electricity generation cost by decreasing the usage of the diesel generators by EFL in Ovalau.

## **Component 2. Technical Assistant – Strengthening adaptive capacity and reducing exposure to climate risks of women, men and at-risk communities**

For sustainability, scalability, and replicability of the project, technical assistance is provided in the project. Solar APV, BESS and microgrid systems are not common technologies in Fiji with a low number of technicians and engineers trained in these technologies. The project has high potential to scale-up and replicates in other regions in South Pacific. Awareness and capacity building workshops are to be held to promote the APV system and to maximize the climate change mitigation impact. The Executing Entity of Component 2 will be the Government of Fiji, represented by Ministry of Infrastructure and Transport (MOIT) for Output 2.1, and Ministry of Economy (MOE) for Output 2.2 and 2.3. The Government of Fiji will carry out the all the activities in component 2.

### Output 2.1 Increasing management capacity in microgrid stabilization

EFL engineers and potential engineers/technicians (the latter being youth group aged over 18 under 25) will be trained for the management of a microgrid, O&M of APV arrays and BESS. The target groups include women and girls as, the project aims to promote women and girls enjoying the same benefits of having decent jobs with proper payment equal to that of men and boys with the same skills. One of the important aspects in the grid management with solar system will be a solar prediction method for the grid dispatch purpose. In Output 2.1, the EFL engineers will learn how to assess a range of prediction softwares that are available in the market to identify the most suitable option for EFL's national control centre to adopt for its preliminary study on the potential APV sites in Fiji for the future. Both classroom and field training will be conducted, ensuring trainees get a practical understanding of the technologies. In addition, for the promotion of other solar projects in Fiji, solar plant turn-key contract and IPP contract trainings will be held for the public.

#### *Activity 2.1.1. Enhancing microgrid integration capacity on a microgrid in remote island area and training for reliable grid operation.*

This activity is mainly focusing on microgrid and interconnection study of Ovalau grid management for EFL. The GCF grant will provide funds for microgrid and interconnection assessment (integrated with PV+BESS) for Ovalau for achieving stable grid management by deploying a full-time expert (individual consultant) to EFL. The expert will co-work with EFL engineers/technicians for assisting and exchanging the skills and knowledge for the grid-related fieldwork. When the study is finished, an engineering workshop will be held.

#### *Activity 2.1.2. Classroom and field training on maintenance of PV array and BESS for EFL.*

This activity is mainly focusing on empowering the EFL engineers/technicians with an understanding of PV and BESS technologies. Fiji is now encouraging solar power plant projects to achieve the renewable energy distribution rate targets in the NDC. While many solar projects are proposed to EFL for approval, EFL doesn't have enough capacity to review and respond to the proposals which leads to a low success rate on solar project implementation. By using the grant, full-time expert(s) (individual consultant) in PV systems and BESS engineering will be embedded in EFL for 1 year to run 12 training sessions for EFL engineers/technicians in PV and BESS systems. The training session will be a monthly program and textbook and training material will be developed together with EFL. It will result in the empowering the EFL engineers to increase awareness of the PV and BESS project which will offer benefits for the implementation of future solar projects in Fiji.

#### *Activity 2.1.3. Classroom and field training on maintenance of PV array and BESS for youth groups in affected communities.*

This activity focuses on educating youth groups, especially in the affected community (the villages in Ovalau area) in PV and BESS operation and maintenance skills in coordination with local educational institutes. Empowering youth to

learn PV and BESS technology will support their career development by providing more chances to be hired as technicians / engineers. Through the grant provided by FDB to EE (Government of Fiji represented by MOIT), the 6-month training sessions will be held 2 times per year for the affected group (the villages in Ovalau area). MOIT, the EE for the Output 2.1, will organize and carry out this activity. The trainers for the training session will be the EFL engineers/technicians who have completed the session and the material developed in the Activity 2.1.2. This activity will empower the local people to understand and become a technician/engineer in PV and BESS technology. This activity will mostly target the youth group including women and girls in the community as a major participant.

*Activity 2.1.4. Assessment of various solar prediction software and integrating it to the EFL system for potential PV project evaluation.*

This activity is mainly focusing on providing the solar power prediction tool to EFL engineers. It will support EFL engineers to expand their solar project evaluation abilities and be useful for designing their own PV projects in Fiji. Currently, some prediction software is available in the market but in many instances it is not suitable for Fiji's context. Through this activity, the software available in the market will be evaluated, purchased, and integrated to EFL by a software specialist.

Output 2.2 Promoting Climate-Resilient APV Project by Establishing Specialized Climate Financing Facility and Regulatory Scheme.

Output 2.2 is designed to build an enabling environment for any potential APV project in Fiji in terms of financial and policy aspects. As a result of this output, a specialized financing facility will be established, and related regulatory and policy schemes will be developed which can enhance the APV project's financial replicability in Fiji.

*Activity 2.2.1. Establishment of Specialized Climate Financing Facility.*

This activity is focusing on the establishment of a new loan facility for FDB's provision of climate project finance especially for potential APV projects in Fiji. MoE as the EE for the output 2.2 will design and provide administrative and legal support to operationalize the special loan facility and embed it in FDB's commercial loan system in consultation with FDB. Once it is embedded, private sector entities interested in developing an APV project and other climate finance projects in Fiji can access the loan. The agriculture production under the solar PV which will be financed and implemented by KOICA as a separate project will provide assurance on the climate-resilient agriculture yield in Fiji. This will allow FDB to finance potential APV projects and similar climate-resilient projects. Therefore, the project replicability can be enhanced by enabling the locally-driven financing environment for similar projects in the future.

*Activity 2.2.2. Design and develop regulation and policy for climate financing.*

This activity is focusing on the development of the new policy and regulatory framework for climate financing for relevant government stakeholders. The new policy and regulation framework will stimulate APV project implementation in Fiji and give clear guidance to the relevant stakeholders such as FDB.

Output 2.3 Promoting awareness of climate change threats and related appropriate responses using APV system in the South Pacific region.

*Activity 2.3.1. Develop and disseminate mass/social media content to raise public awareness of the climate change and to promote APV*

This activity is focused on the MoE (EE) promoting awareness of the threats of climate change to climate-vulnerable communities through media advertisement (TV commercial, video clip on media platforms, newspaper columns and others), campaigns, and social movements. There will be different themes related to the climate change issue for every year. Media contents production or a professional conference organizer will be hired to support this activity. Furthermore, the EE can either invite or dispatch the climate change activists for international climate change events such as a GCF conference and COP

**Activity 2.3.2 Training workshops for policy-makers on the APV system**

This activity is focusing on enhancing the general awareness of APV systems among policy-makers. The workshops will be held every 2 years to establish policy-maker engagement for APV system to be expanded to other areas of Fiji and SIDs. The target participants will not be limited to Fiji, but international participants from other SIDs will be invited.

**Activity 2.3.3 Workshops on climate change awareness and the APV system promotion for representatives of the local communities (Provincial level) in Fiji**

Unlike the Activity 2.3.2, this activity is focusing on local communities (provincial level) in Fiji. The workshops will be held every year from the 2<sup>nd</sup> year of the project implementation. The workshop will be composed of presentation, discussion and the APV site field trip to raise awareness of climate change, APV systems and the APV financing facility for replication of the project in the participant's province in Fiji.

**Project management unit and Monitoring and evaluation system**

***The Project Management Unit (PMU) and M&E System establishment***

PMU is hosted by FDB and will become the climate and environmental finance unit of the department after the project ends. The PMU will facilitate the following: (1) Maintain a close working relationship with key stakeholders; (2) Ensure that stakeholder participation follows guidelines appropriate for a participatory and equitable process; (3) Ensure adequate information flow, discussions and feedback among the various stakeholders of the project; (4) Prepare project work plans, ensure adherence to the project's work plans and implement project activities; (5) Ensure compliance with the requirements agreed under the Common Approach and the compliance with GCF and FDB's regulations; (6) Communicate the reports from Project Board meetings as well as general progress and results of the each executing entities. The PMU will be headed by a project manager supported by the following key staff: a financier, an agriculture specialist, a PV specialist, an environmental specialist, a gender and youth specialist and a M&E specialist.

A detailed M&E system is described in the section of D.4. Arrangements for Monitoring, Reporting and Evaluation.

**B.3. Implementation / institutional arrangements (max. 750 words)**

***Project Implementation Structure and Funds Flow***

GCF will provide the loan and grant fund to the AE for the project under the Funded Activity Agreement (FAA) between the two parties. The AE's implementation will be supported by the Project Steering Committee (PSC) involving key public and private stakeholders. For each component, the implementation structure differs. 1) "Component 1. Strengthening the national and community capacity on the low-carbon generation and microgrid stabilization" is designed for solar PV and BESS installation. In component 1, GCF will only provide loan to AE which will be blended with the AE's loan to lend to a Special Purpose Company named Ovalau Agrosolar Pte Limited which is incorporated in Fiji specifically for the Solar APV (activity 1.1.1). The installation and connection of the BESS to the system will be covered by FDB loans (activity 1.2.1). Separately, KOICA will provide an in-kind contribution to the AE for implementation activity 1.2.1. 2) All technical assistants will be implemented under "Component 2. Technical Assistant". GCF's grant financing, through FDB, will go to the Ministry of Infrastructure and Transport (MoIT) for solar PV/BESS O&M capacity building. For other technical assistants, GCF will provide a grant, through FDB, to MoE for establishing a climate financing facility, developing regulatory scheme and promoting awareness. The final beneficiaries for the activities are stated in table 3. Beneficiaries and Selection criteria in B.2 of this funding proposal.

The overall project implementation and governance structure are presented in the diagrams below:

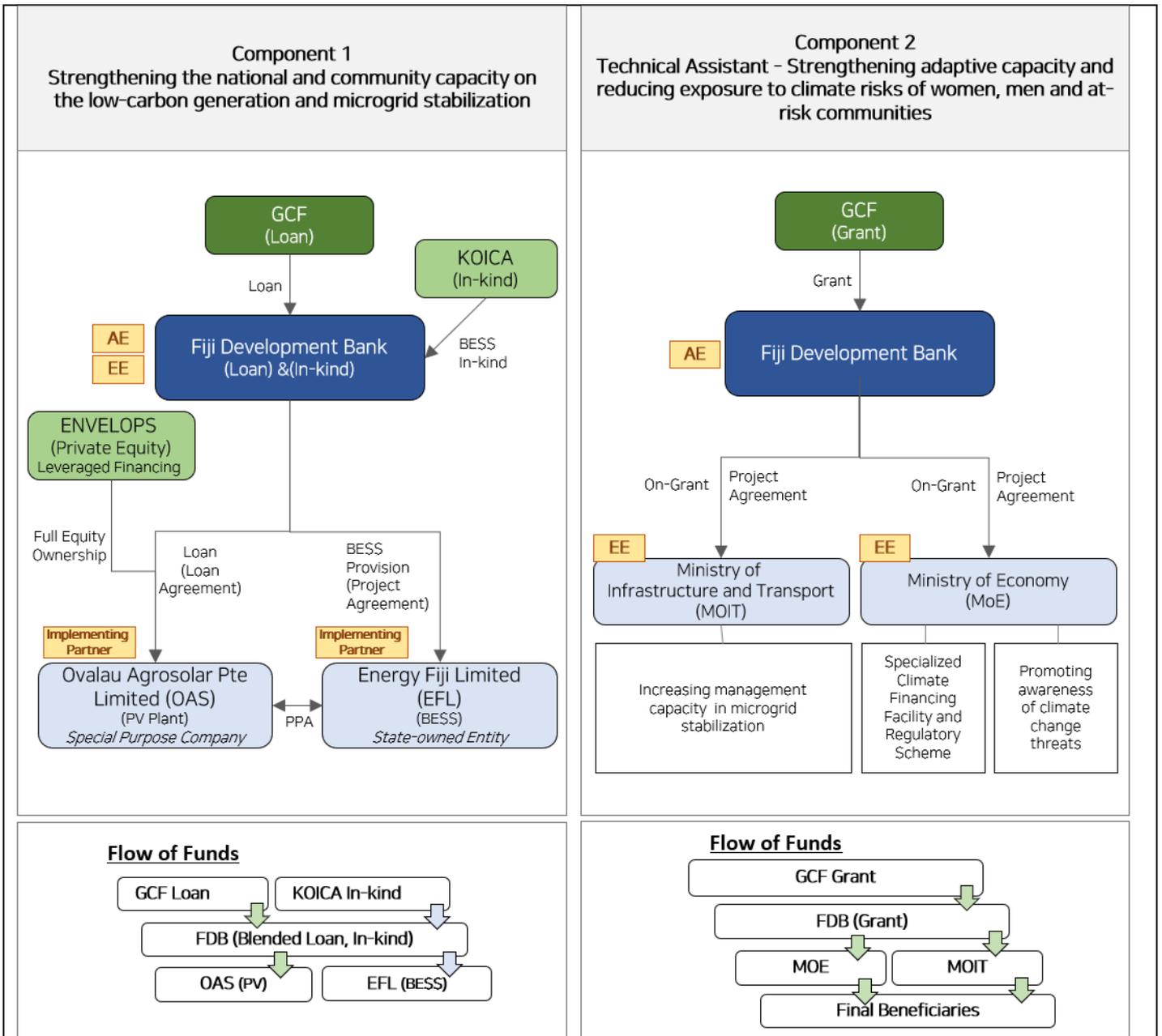


Figure 8. Project Structure and Flow of Funds

**Roles, responsibilities and reporting lines:**

As the project will benefit from respective Fijian government entities and international funders, each with their own guidelines and safeguards, the project will be heavily guided by existing protocols and vigorously overseen by multiple actors. The Government of Fiji represented by the MoE and the MOIT as executing entities shall oversee governance protocols for the project activity implementation; the Ministry of Environment shall oversee environmental and social impact assessment and management. Ultimately FDB, as the Accredited Entity, will have responsibility and oversight for the project including project preparation and implementation, financial management and procurement. FDB will channel the GCF and co-financed funds and execute on the use of the funds in its role as the Executing Entity for

component 1. Executing Entity for each component is described in the following.<sup>19</sup> A project (subsidiary) agreement will be signed between FDB and each EE for legal binding.

Fiji Development Bank (FDB), AE for the Project and EE for Component 1

FDB is the GCF AE selected for the project and will manage all GCF funds, oversee the implementation of the investment in the project and undertake reporting to GCF. FDB as EE of this component shall be exercising discretion in decision making for all the activities. Additionally, FDB will channel all the funding sources and carry out funded activities as the Executing Entity. FDB is an autonomous statutory body, the operation of which are controlled by a Board of directors appointed by the Minister of Economy. It was established in 1967 and has been providing finance for projects that contribute to the development of Fiji's economy and improving the quality of life for the people of Fiji in terms of green projects, agricultural loan, and SME/corporate enterprise projects. The bank is the first development bank in the South Pacific to become a Direct (National) AE. The main purpose of the accreditation is for better access to the critical financing for the government's strategy to climate-proof infrastructure development and boost the resilience of the economy. FDB as the AE and EE will retain full responsibility for any delegated authority over financial management and/or procurement and will ensure that any entity relevant to the project will comply with international accounting standards.

Korea International Cooperation Agency (KOICA), in-kind contribution provider for BESS

KOICA is in-kind contribution provider for BESS, and in addition, will provide a contribution to FDB through the knowledge sharing on grant financing implementation. KOICA is a public agency dedicated to providing grant aid programs whose mandate is officially delegated by the representing the Korea government. It has implemented 5.4 billion USD since 1991 to support the sustainable socio-economic growth of partner countries including Fiji. Recently, KOICA has provided 100% financial resources for PV installation for Taveuni Island in Fiji. With the involvement in this project in Ovalau, KOICA will contribute to converting those two-small islands towards 100% renewable energy generation.

Ministry of Economy (MoE), NDA and EE for Component 2 (Output 2.2 & 2.3)

MoE is a government body of Fiji for the national budget and economy management. MoE has robust capacity and expertise in establishing financing facility and related regulatory schemes. In addition to its main role as the NDA for the project, it will take on the role of managing output 2.2 "Promoting Climate-Resilient APV Project by Establishing Specialized Climate Financing Facility and Regulatory Scheme" and output 2.3. "Promoting awareness of climate change threats and related appropriate responses using APV system in South Pacific region".

The Ministry of Infrastructure and Transport (MoIT), EE for Component 2 (Output 2.1)

The TA Output 2.1 "Increasing management capacity in microgrid stabilization" will be managed by MoIT. The Ministry oversees national infrastructure management including energy and transport.

FDB, the Accredited Entity, will carry out a full capacity assessment of the Executing Entities under Components 2 and submit the assessment report to GCF, as per requirements of the AMA, prior to the execution of the Funded Activity Agreement with the GCF.

Energy Fiji Limited (EFL), Beneficiary (Output 1.2 - BESS)

EFL is the only state-owned electricity utility in Fiji with a total peak load of about 150MW supplying more than 750 GWh per annum. EFL is the government counterpart for Power Purchase Agreement (PPA) and will be the off-taker to purchase the electricity generated in this project. Another role of EFL in the project, as the grid owner and operator, is to upgrade the Ovalau grid with BESS to ensure a reliable power supply to the island based on 50% PV and 50% diesel generation.

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<sup>19</sup> Capacity Assessment for executing entities will be the pre-requisite for the signing of Funded Activity Agreement (FAA) between GCF and FDB.

Ovalau Agrosolar Pte Limited (OAS), Sub-borrower, (Output 1.1)

OAS is a special purpose company particularly for the PV activity (1.1.1) incorporated in Ovalau, Fiji. OAS is fully owned by Envelops Co., Ltd. (the original project sponsor based in Seoul, Korea, with experience on renewable energy project development focusing on social impact generation). OAS will provide support and contributions to increase community capacity in low-carbon generation through solar PV as described in Component 1. For the implementation of the output 1.1, OAS will directly own the PV plant and sell generated solar power to EFL through PPA as an Independent Power Producer (IPP). Forming the structure of integrated solar and agriculture will increase local ownership and oversight at the community level.

***Project Management Arrangement***

For supervision and oversight of the project, a Project Steering Committee (PSC) will be established by FDB with strategic involvement of inter-agency within related Ministries and other government and non-government entities and individuals. FDB will be the chair of the PSC. PSC will include stakeholders such as relevant government entities at national and sub-national levels; civil society; project developers; private sector actors and financial institutions. The PSC will also encourage the consultation of such stakeholders in preparing the project. Joint and coordinated efforts of the stakeholders in different stages will lead towards success in achieving the intended results while providing opportunities for input to all the concerned actors. FDB shall provide to the GCF the following reports prepared in a form and manner compliant with the practices and procedures of the GCF fund:

- 1) Annual performance reports on the status of each activity throughout the Project's lifespan, including a narrative report on implementation progress and considerations on the ongoing performance of the project against Grant's investment framework criteria, and a report on environmental and social safeguards (ESS) as well as gender action plan implementation.
- 2) Interim and final evaluation reports, setting out any necessary corrective measures (in the case of interim reports), an assessment of the performance of this Project in comparison to the expectations set by the Fund's investment framework criteria. This assessment will include the financial/economic performance of the Funded Activities, efficiency and effectiveness criterion, as well as the sustainability and scalability of results, impacts and lessons learned.
- 3) From time to time, FDB may discuss the above matters with the PSC.

Project Management Unit (PMU) will be established within FDB to oversee the overall implementation arrangement of the project with specialists and experts. PMU will prepare annual work plans and budgets which will be reported to FDB management and GCF. One of its key functions will be monitoring and evaluation of the project's activities, outputs and impacts. Key roles and responsibilities of PMU include:

- 1) Project Coordinator (from AE) – Climate change financing specialist for the disbursement and monitoring of funds. Coordinating between other officers in PMU
- 2) Monitoring and Evaluation Officers – APV technical officers with solar PV/BESS and agronomy background for monitoring and evaluation of technical properness and performance of the project.
- 3) Financing Specialist – Preparation of annual budget and work plan aligning with the project purpose and GCF guideline

Name	Purpose	Members	Frequency
<b>Project Steering Committee (PSC)</b>	<ul style="list-style-type: none"> <li>Project Implementation Oversight</li> <li>Assessment of PIU's monitoring and evaluation reports</li> </ul>	<ul style="list-style-type: none"> <li>Chaired by MOE</li> <li>The members includes KOICA, FDB, MOA, MOIT, MOEW, Ministry of Women, SPC, CSO, BCDC, and others</li> </ul>	<p>Bi-Annual Meeting (Mandatory)</p> <p>As When Needed (Optional)</p>
<b>Project Management Unit (PMU)</b>	<ul style="list-style-type: none"> <li>Oversea Implementation Arrangement</li> <li>Preparing annual work plan and budgets</li> <li>Reporting project activities, output, and impacts monitoring and evaluation to PSC</li> </ul>	<ul style="list-style-type: none"> <li>Project Coordinator to manage PMU</li> <li>Monitoring and Evaluation Officers</li> <li>Financing Specialist</li> </ul>	Continuous

Figure 9. Project Management Arrangement

## C. FINANCING INFORMATION

### C.1. Total financing

<b>(a) Requested GCF funding (i + ii + iii + iv + v + vi)</b>	5.00		million USD (\$)			
<b>GCF Financial Instrument</b>	<b>Amount</b>	<b>Currency</b>	<b>Tenor</b>	<b>Pricing</b>		
(i) Senior loans	Enter amount	million USD (\$)	Enter years	Enter % in USD		
(ii) Subordinated loans	Enter amount	Options	Enter years	Enter %		
(iii) Equity	Enter amount	Options		Enter % equity return		
(iv) Guarantees	Enter amount	Options	Enter years	Enter %		
(v) Reimbursable grants	Enter amount	Options				
(vi) Grants	Enter amount	million USD (\$)				
<b>(b) Co-financing information<sup>20</sup></b>	<b>Total amount</b>		<b>Currency</b>			
	Enter amount		million USD (\$)			
<b>Name of institution</b>	<b>Financial instrument</b>	<b>Amount</b>	<b>Currency</b>	<b>Tenor</b>	<b>Pricing</b>	<b>Seniority</b>
Fiji Development Bank	Senior Loans	Enter amount	million USD (\$)	Enter years	Enter% in FJD	<u>senior</u>
Korea International Cooperation Agency	<u>In kind</u>	Enter amount	million USD (\$)	Enter years	Enter%	Options

<sup>20</sup> If the co-financing is provided in different currency other than the GCF requested, please provide detailed financing information and a converted figure in the GCF requested currency in the comment box. Please refer to the date when the currency conversion was performed and the reference source.

			million USD (\$)	Enter years	Enter%	Options
Click here to enter text.	Options	Enter amount	Options	Enter years	Enter%	Options
<b>(c) Total investment (c) = (a)+(b)</b>	<b>Amount</b>		<b>Currency</b>			
			million USD (\$)			
<b>(d) Co-financing ratio (d) = (b)/(a)</b>						
<b>(e) Other financing arrangements for the project/programme (max ½ page)</b>	Leveraged equity financing will be occurred by a private party for the solar PV SPC in the output 1.1 (not reflected in Section C.1.(b) Co-financing information). KOICA will provide parallel financing for the agriculture related activities which are separate from this proposed project.					

**C.2. Financing by component**

Component	Output	Indicative cost (USD)	GCF financing		Co-financing			
			Amount (USD)	Financial Instrument	Type	Amount (USD)	Financial Instrument	Name of Institutions
1. Strengthening the national and community capacity on the low-carbon generation and microgrid stabilization	1.1 Low-carbon generation			Senior Loan	Public		Senior Loan	FDB
	1.2 Build microgrid system for energy security and reliability with 5MWh BESS		Enter amount	Choose an item.	Public		In-kind	KOICA
					Public	(to cover the installation and connection of the BESS)	Senior Loan	FDB
2. Technical Assistant – Strengthened adaptive capacity and reduced exposure to climate risks of women, men and at-risk communities	2.1 Increasing management capacity in microgrid stabilization			Grants				
	2.2 Promoting Climate-Resilient APV Project by Establishing Specialized Climate Financing Facility and Regulatory Scheme			Grants	Choose an item.	Enter amount	Choose an item.	Click here to enter text.
	2.3. Promoting awareness of climate change threats and related appropriate			Grants	Choose an item.	Enter amount	Choose an item.	Click here to enter text.

	responses with sustainable agriculture using APV system in South Pacific region							
PMC				Grants	Public Source			
<b>Indicative total cost (USD)</b>								

**C.2.1 Financing structure (if applicable, mandatory for private sector proposal (max.300 words))**

**Loan Resources**

Component 1: Strengthening the national and community capacity on the low-carbon generation and microgrid stabilization

GCF loan resources to FDB in USD and FDB will lend the resources blended with FDB's co-financing in local currency to OAS (Solar PV SPC) at circa. The blended interest which is subject to FDB's internal approval. The total loan to be lent to the OAS for the purpose of 4MWp solar power plant. The leveraged equity financing will be invested by the private investor(s) completing the SPC financing structure. The loan repayment will be made from the SPC's revenue generated from the power generation sales to EFL under the PPA. The repayment schedule of the GCF loan will be aligned with the repayment schedule of FDB loan to OAS, and the repayment schedule will be included in the FAA. KOICA's in-kind contribution will be used to procure 5MWh BESS and provided to EFL through FDB for Ovalau microgrid stabilization.

**Grant Resources**

Component 2: Technical Assistant – Strengthened adaptive capacity and reduced exposure to climate risks of women, men and at-risk communities; and Project Management Cost – establishment of a project management unit and monitoring and evaluation system. Total grant resources is requested to GCF. The executing entities will perform the activities in different components and details are in the table below.

Table 3. Executing Entities for Grant Resources

Component	Sub-Component	Executing Entities	Funds	Sources
Component 2	2.1 Increasing management capacity in microgrid stabilization	Government of Fiji represented by the Ministry of Infrastructure and Transport		GCF
	2.2. Promoting Climate-Resilient APV Project by Establishing Specialized Climate Financing Facility and Regulatory Scheme	Government of Fiji represented by the Ministry of Economy		GCF
	2.3. Promoting awareness of climate change threats and related appropriate responses using APV system in the South Pacific region	Government of Fiji represented by the Ministry of Economy		GCF
PMC	Project Management Unit and monitoring and evaluation system	FDB		GCF

<b>C.3 Capacity Building and Technology development/transfer</b>	
C.3.1 Capacity building	Amount:
C.3.2. Technology development	Amount: ____ Choose an item.
<b>C.4. Justification for GCF funding request (max. 500 words)</b>	
<p><b>Absence of alternative sources of financing</b></p> <p>Though the government of Fiji is ambitious to expand the nation’s renewable energy capacities, governmental financial resources to carry out such projects are very limited, as stated in the B.1. Context and baseline. In order to address this barrier, EFL (Energy Fiji Limited), the statutory electricity company, is working to attract private sector investors into the electricity generation industry, through Independent Power Producers (IPPs). However, the low electricity tariff rates in Fiji and the absence of a clear renewable energy tariff system for IPPs makes engagement by the private sector in the electricity industry unprofitable and, therefore, often unsuccessful. For example, EFL has received many EOIs (Expression of Interests) and/or signed many PPAs with potential IPPs in recent years but only two of those IPPs, one for biomass power generation and the other hydro power, have been successful<sup>21</sup>.</p> <p>A solar power plant in Ovalau is expected to contribute to Fiji’s NDCs and to alleviate the cost burden on EFL of operating Ovalau’s 100% diesel power plants, whose fuel costs currently outstrip the electricity tariff revenues from end-users. Further, solar power generation in Ovalau has been shown to have very high costs of electricity generation by GGGI’s pre-feasibility report<sup>22</sup>. GGGI estimated high generation cost with regular private funding condition of a 10-year loan at 7.5% interest rate, due to the BESS cost and small scale. Considering the BESS is indispensable for solar power adoption in Ovalau’s small grid capacity, greening Ovalau’s electricity grid, as targeted in NDC, is impossible to achieve without significant concessionality and external aid.</p> <p>Therefore, GCF’s financial support to provide long-term concessional loan will enable the 1st private solar project in Fiji, in the form of the proposed APV system. Moreover, the grant provision on Component 2, solar PV and BESS installation and connection to the microgrid system as well as the operation &amp; management, will enhance the technical and institutional capacity in Fiji and build a foundation to scale up APV implementation in adjacent SIDS. FDB’s APV financial facility, supported by the grant, will provide loans for those seeking to implement an APV system, playing a significant role in the scale-up of RE implementation.</p>	
<b>C.5. Exit strategy and sustainability (max. 300 words)</b>	
<p>The exit/sustainability strategy of the project is provided below according to each component. This project consists of 2 Components.</p> <p>For Component 1, the solar power plant will be owned, managed and operated by SPC as a solar IPP. The GCF loan is requested to address the financial barrier to attract private equity investors’ participation in the project. Once the concessional loan and private equity investment on Component 1 have been secured, the solar power plant can be sustainably operated with BESS for 20 years.</p>	

<sup>21</sup> EFL (2019) – Energy Fiji Limited Tariff Revision Submission

<sup>22</sup> GGGI (2017) – Pre-Feasibility Report: Pre-feasibility Study for 100% Renewable Electricity Generation on Ovalau and Taveuni Islands in Fiji

Component 2 will contribute to the sustainability of both Components 1 and 2 with the capacity-building and training for engineers and local trainees on solar PV and BESS. Component 2 will ensure that appropriate measures are put in place for the maintenance and the long-term operation of installed solar PV and BESS beyond project completion. Moreover, through Component 2, a financing facility for the dissemination of APV systems into other regions of Fiji will be established and policy and regulation to stimulate climate financing will be developed to achieve the sustainable uptake of APV technology in the long term. Through the project, better understanding of risk/return profiles related to APV operation will be acquired, enabling the upscaling and replication of similar projects.

The financial exit of GCF will be made through loan repayment, as FDB will be directly paying the GCF back for the loan from SPC's repayment, based on the terms and conditions of FAA. The repayment conditions in FAA will be aligned with those in the loan agreement between FDB and SPC. And FDB will take on 100% of the loan risks, with no risk to the GCF. Hence, the exit risk of GCF is minimal.

Upon completion of the project, it is expected that relevant stakeholders such as FDB, the Government of Fiji and others involved will build sufficient capacity to keep implementing similar projects across Fiji with minimal external help. However, it should be noted that FDB will still have to rely on concessional financial resources from international climate funds such as GCF to provide affordable pricing to the private sector interested in developing similar projects going forward.

#### **C.6. Financial management/procurement (max. 300 words)**

FDB will be responsible for the overall financial management and procurements of each funded activity. Funding approval, both for the FDB and GCF Loan Component rests with the FDB Board as the Loan Amount exceeds USD 900k<sup>23</sup>.

The Bank complies with the International Financial Reporting Standards (IFRS) and this project will accordingly be managed under the same standards. Fund flow from GCF will be directed to a special account opened specifically for GCF funded projects that are managed by the FDB's Finance Department, headed by the General Manager Finance & Administration. The Green Banking Unit of the FDB that is directly involved with this project will manage and monitor the day-to-day operation of the fund. It includes the disbursement, reconciliation and reporting to the Finance Department as articulated in the Bank's Accounting Manual. This reporting is carried out on a monthly basis – prepared by the Green Banking Unit, verified and signed off by the Manager Marketing & Business Development prior to submission for final sign-off by the Chief Executive Officer<sup>24</sup>.

Disbursement of funds is covered under the Bank's lending policy whereby the first disbursement requires the approval of the Chief Executive Officer as the loan was approved by the FDB Board. A request is submitted to Team Leader Green Banking, Manager Marketing & Business Development, Manager Credit Risk & Approval – Corporate and General Manager Business Risk Services for verification and sign off prior to it being submitted to the Chief Executive Officer for decision. Subsequent disbursements will be subject to a satisfactory project report that includes a site inspection to ensure that funds were utilized for their approved purpose as well as copies of receipts/confirmation of payment according to the disbursement schedule provided. The subsequent disbursements are approved by Manager Marketing & Business Development after verification by the GCF Finance Officer and Team Leader Green Banking.

All procurement of assets, equipment and/or services is governed under the FDB's Procurement Policy. See details in Annex 8. This project will also be implemented through the Bank's other fiduciary standards such as anti-money laundering, anti-terrorist financing, etc.

On a monthly basis, the GCF Finance Officer provides reconciliation and a report articulating how the fund/grant was disbursed and whether internal controls were observed. The Bank's Enterprise Risk & Management Unit (independent Unit) also conducts a periodic review to ensure all internal controls are adhered to. The findings are discussed with the

<sup>23</sup> Discretionary Authority for the FDB Board is >FJD 2,000 whereby the value of the total relationship is taken into consideration.

<sup>24</sup> The Green Banking Unit is one of the Units under the Marketing & Business Development Department that is under the responsibility of the Chief Executive Officer.

Marketing & Business Development Team, the Executive Committee and the Board ERM Sub-Committee. All efforts are made to correct any deviation and significant risk matters are addressed through disciplinary action of the responsible staff. The third line of defense is carried out by the Internal Audit Department. An annual audit of the entire process to ensure compliance is carried out. The audit finding is discussed with the Marketing & Business Development Unit, the Executive Committee prior to the Board Audit Committee considering the findings. Any deviation without proper authorization is taken seriously and can lead to disciplinary actions. External Audit is conducted by an independent Audit Firm and the findings are submitted to the Fijian Government Auditor General. Similar to the ERM and Internal Audit, the Bank is expected to take appropriate action should there be any deviation. On an annual basis, the Bank's Financial Statement is reviewed by the Fijian Government Parliamentary Economic Sub-Committee prior to being endorsed by Parliament.

Any variation to project cost require prior approval of the Bank if it is within the approved limits. Any excess will require the approval of the Bank and the GCF. Reallocation within the approved limits will be processed for approval by the Bank's Credit Risk & Approval.

The Bank, through its Finance Department, in addition to the Bank mandated financial reporting discussed above, will submit mandated financial report/statements to the GCF. This is specific to the Fiji Agrophotovoltaic Project in Ovalau for both the loan and grant component.

### **Sustainable Project Management**

For the sustainable management of the project, FDB will be the project's lead agency as AE. A project steering committee (PSC) and project management unit (PMU) will be established with the strategic involvement of an interagency mechanism of related Ministries and other government and non-government entities and individuals. FDB will work as a core interface between Fiji and GCF aligning with strategic national objectives and priorities. PSC will include stakeholders such as relevant government entities at national and sub-national levels; civil society; project developers; private sector actors, financial institution; and communities, including affected groups (including women and indigenous people) . PSC will encourage the consultation of such stakeholders from the preparation stage of the project.

For this project, Environment and Social Action Plan (ESAP) and Gender Action Plan are designed to screen, scope, and assess the project's environmental, social and gender impacts and manage the expected relevant issues that may arise during implementation.

## **D. LOGIC FRAMEWORK AND MONITORING, REPORTING AND EVALUATION**

### **D.1. Paradigm shift objectives (max.200 words)**

<p><i>Shift to low-emission sustainable development pathways</i></p>	<p>The project objective is to contribute to the paradigm shift toward low-emission sustainable development pathways with Component 1 by tackling barriers on the PV development in the small remote island in Fiji such as Ovalau. The unviable private financing and public investment in the region due to the high cost and limited government budget can be offset by low-interest loan provision by GCF and KOICA's in-kind contribution. This financial model can be replicated for a similar project in other region based on the rationality and positive impact on mitigating climate change. Integrating BESS in the mini-grid will create an enabling environment for utility PV interconnection by removing high PV generation fluctuation. The sustainability of the PV, BESS, and microgrid operation and maintenance can be achieved via training and vocational education in the TA program in Component 2.</p> <p>Finally, the land competition issue between PV and agriculture becomes a land-sharing benefit with APV, removing one of the biggest barriers to achieving a low-emission paradigm shift in the region. Regarding Component 2, FDB's capacity building on the APV financing facility will promote awareness amongst decision makers for the Fijian government's APV regulation</p>
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	scheme of their power to increase local financing and promote APV in other regions of Fiji that this action will result in reduced dependency on external financial resources.
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**D.2. Impacts measured by GCF indicators**

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
	*Tonnes of carbon dioxide equivalent (tCO2eq) reduced or avoided as a result of Fund-funded projects/programmes	Plant operation sheet (including power export meter data)  Grid operation sheet from EFL (including power import meter data from the PV plant)	0 tCO2eq	9,158 tCO2eq (3 <sup>rd</sup> year of project implementation & after 2 years of PV plant operation)	13,737 tCO2eq (4 <sup>th</sup> year of project implementation & after 3 years of PV plant operation)	Lifetime reduction (20 years): 91,584 tCO2eq  Annual power generation in Ovalau: 10,000 MWh/yr (currently 100% diesel)  Annual diesel generation reduction by this project: 5,724 MWh/yr  Ovalau Grid Emission Factor (efficient diesel generator): 0.8 tCO2eq/MWh  Annual CO2 reduction by this project: 4,579 tCO2/yr
	*Cost per t CO2eq decreased for all Fund-funded mitigation projects/programmes	Plant operation sheet (including power export meter data)  Grid operation sheet from EFL (including power import meter data from the PV plant)	0			The cost and CO2 reduction does not vary annually for the duration of the project target period
	*Volume of finance leveraged by Fund funding	For KOICA (in-kind for BESS): Fiji government certification of Construction Completion  For FDB : bank confirmation (fund	0			KOICA (in-kind): US\$ 4 m provided  FDB (loan): US\$ 1.00m provided

		certificate) on transferring of the fund from FDB to OAS  For private leveraged financing: Fiji Revenue and Customs Service's certification on paid-in equity				Private leveraged(equity): US\$ 2.1m provided
<i>M1.0 Reduced emissions through increased low-emission energy access and power generation</i>	1.1 *Tonnes of carbon dioxide equivalent (tCO2eq) reduced or avoided as a result of Fund funded projects/programmes – gender-sensitive energy access power generation (sub-indicator)	Plant operation sheet (including power export meter data)  Grid operation sheet from EFL (including power import meter data from the PV plant)	0 tCO2eq	9,158 tCO2eq (3 <sup>rd</sup> year of project implementation & after 2 years of PV plant operation)	13,737 tCO2eq (4 <sup>th</sup> year of project implementation & after 3 years of PV plant operation)	Lifetime reduction (20 years): 91,584 tCO2eq  Annual power generation in Ovalau: 10,000 MWh/yr (currently 100% diesel)  Annual diesel generation reduction by this project: 5,724 MWh/yr  Ovalau Grid Emission Factor (efficient diesel generator): 0.8 tCO2eq/MWh  Annual CO2 reduction by this project: 4,579 tCO2/yr

**D.3. Outcomes measured by GCF indicators**

Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
M5.0 Strengthened institutional and regulatory systems	M5.1 Institutional and regulatory systems that improve incentives for low-emission planning and development and their effective implementation	Scorecard results  Data on loan programme disbursement	No loan program Exists  Score 0	The FDB APV loan program is established  Score 1	The FDB APV loan program is operational  Score 3	The coordination mechanism is to establish APV loan program in FDB. This new loan program will provide financial access to the people/organizations in Fiji to

						<p>develop APV project in other locations in Fiji. This is to enhance the replicability of this project in Fiji.</p> <p>Score 0 means APV loan facility is not existing in FDB</p> <p>Score 1 means the completion of APV loan facility establishment in FDB (output 2.2)</p> <p>Score 2 means minimum of 1 potential APV project in Fiji signs a letter of intent for a loan via the APV loan facility (output 2.2)</p> <p>Score 3 means for minimum of 1 potential APV project in Fiji signed a loan agreement via the APV loan facility (output 2.2)</p>
M6.0 Increased number of small, medium and large low-emission power suppliers	M6.1 Proportion of low-emission power supply in a jurisdiction or market.	<p>Plant operation sheet (including power export meter data)</p> <p>Grid operation sheet from EFL (including power import meter data from the PV plant)</p>	0%	57.24%	57.24%	<p>Annual power generation in Ovalau: 10,000 MWh/yr (currently 100% diesel)</p> <p>Annual RE generation increased by this project: 5,724 MWh/yr</p>

<p>M6.0 Increased number of small, medium and large low-emission power suppliers</p>	<p>M6.2 Number of households, and individuals (males and females) with improved access to low-emission energy sources</p>	<p>Independent Survey</p>	<p>0 household  0 female  0 male</p>	<p>2,088 households  4,736 females  4,870 males</p>	<p>2,088 households  4,736 females  4,870 males</p>	<p>The population of Ovalau is 9,606 include 49.3% of females.</p> <p>All population is connected to Ovalau grid</p> <p>The individuals will access the low-emission energy sources through the implementation of the project.</p> <p>One household size assumed at 4.6 members <a href="https://population.un.org/Household/index.html#/countries/242">https://population.un.org/Household/index.html#/countries/242</a></p>
<p>M6.0 Increased number of small, medium and large low-emission power suppliers</p>	<p>M6.3 MWs of low emission energy capacity installed, generated and/or rehabilitated as a result of GCF support</p>	<p>Interconnection permit, Generation license</p>	<p>0MWs</p>	<p>4MWp</p>	<p>4MWp</p>	<p>After the 12months of construction of PV plant, Energy Limited Fiji will issue the interconnection permit and generation license of 4MWp installed PV plant.</p>

**D.4. Arrangements for Monitoring, Reporting and Evaluation (max. 300 words)**

***Monitoring, Reporting, and Evaluation Period and Steps***

Annual Performance Review

FDB will undertake annual performance reviews to assess the progress of project implementation activities, be in compliance with covenants and project agreements, monitor progress in achieving project outputs and agree on and carry out accordingly any required changes as appropriate. The annual performance review will include:

- 1) an overview of the project's lifespan, including a narrative report on the progress status of the implementation based on the logical framework; and
- 2) assessment of the ongoing performance of the project against the Fund's investment framework criteria, and a report on ESS as well as gender.

Interim / Mid-term review

FDB will undertake a mid-term review within 3 years from the commencement of the project implementation and at any time that FDB and the government of Fiji consider it necessary. The midterm review will:

- 1) review the institutional, administrative, organizational, technical, environmental, social, economic, and financial aspects of the project based on the assumptions and risks included in the design and monitoring framework
- 2) review covenants to assess whether they are still relevant or need to be changed or waived due to changing circumstances; and
- 3) assess the need to restructure or reformulate the project and the effects of this on the immediate purpose and long-term goals of the project

All EEs in each component and output will provide FDB through PMU with:

- 1) annual progress reports in a format consistent with FDB's project performance reporting system.
- 2) consolidated annual reports including
  - (a) progress achieved by output as measured through the indicator's performance targets, key implementation issues and solutions; and
  - (d) updated implementation plan for the next 12 months
- 3) a component and output completion report within 6 months of physical completion of the component.

#### Final evaluations

An independent final evaluation will be carried out three months prior to the completion of the project, undertaken in accordance with FDB and GCF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The final evaluation will look at the impact and sustainability of results, including the contribution to capacity development and the achievement of benefit and co-benefits. The final evaluation will also provide recommendations for follow-up activities and recommend a management response.

#### **Methods, Tools, and Techniques**

Weekly staff meetings, and monthly management-level meetings will be organized for effective monitoring and evaluation. The result of the meetings will be briefed to GCF on a quarterly basis to receive feedback for any further improvement. For performance monitoring, all indicators of the log frame and milestones in the timetable will be analyzed to evaluate the overall results and impact of the project. FDB will monitor such progress based on the progress reports. The significant discrepancy between the target and the actual result of the indicators will be questioned on the cause for mitigation measures. The finding and mitigation measures will be incorporated for recommendations if any change is needed on the indicator with reasonable rationalization. IPs and EE will submit to FDB their M&E report for their respective components of the project. The project M&E reports will be independently prepared by PMU based on the IP's and the EE's M&E report provisions.

#### **Measures to Prevent Prohibited Practices**

FDB adopted "Insider Trading & Countering the Financing of Terrorism Policy" to follow transparent process applicable for any FDB's director, employers, employee, related person, and all sections of FDB's operations including GCF project or project implementation. FDB's anti-money laundering and countering the financing of terrorism policy also covers prohibited practices including but not limited to corruption, bribery, collusion, fraud, and other unlawful activities. The Whistle Blower Policy contained in the Bank's General Instruction Manual which can be applied for the monitoring and evaluation of the project to encourage and protect any person with the information regarding any prohibited practice. FDB will be responsible for all activities' compliance with the policy.

## **E. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA**

### **E.1. Impact potential (max. 300 words)**

	Annual	4,579 tCO <sub>2</sub> eq
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E.1.1. Expected tons of carbon dioxide equivalent (t CO <sub>2</sub> eq) to be reduced or avoided (Mitigation and cross-cutting)	Lifetime	91,584 tCO <sub>2</sub> eq
E.1.2. Expected total number of direct and indirect beneficiaries, disaggregated by gender (Adaptation and Cross-cutting)	Direct	N/A
	Indirect	N/A
<i>*For both, Specify the % of female against the total number.</i>		
E.1.3. Percentage of beneficiaries relative to total population	Direct	N/A
	Indirect	N/A

**Mitigation Impact Potential**

The project will deliver access to clean energy leading to 91,584tCO<sub>2</sub>eq emission avoided over the lifetime of the project. The sustainability of the systems is ensured by a cohort of newly trained technicians.

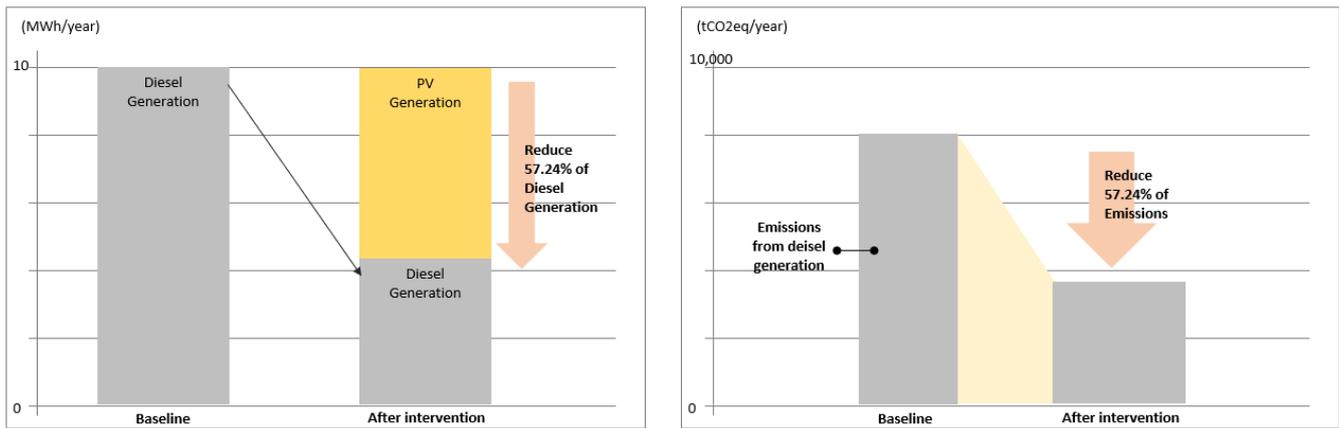


Figure 10. Mitigation Impact potential

The tCO<sub>2</sub>eq mitigation impact from the project is calculated by applying the CDM methodology as follows.

$\text{Total CO}_2 \text{ reductions (tCO}_2\text{eq)} = \text{Baseline Emission (tCO}_2\text{eq)} - \text{Project Emissions (tCO}_2\text{eq)}$
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Where:

1) Baseline Emissions (BE): Amount of emission generated by grid-connected power plants when generating the same amount of power as the RE power plants

$$BE = EG \times EF_{\text{grid}}$$

EG = Annual electricity generated by the RE project, MWh/yr

EF<sub>grid</sub> = combined emission factor for the grid, tCO<sub>2</sub>/MWh

2) Project Emissions (PE): PE is the amount of emissions generated by the RE power plant using solar, wind, and small hydro resources. For the applicable RE projects, PE is considered zero

\* Current generation in Ovalau consists of 100% diesel generation.

The assumptions and detailed calculations are as below:

Table 4. CO<sub>2</sub> Calculation

Contents	Unit	Assumptions	Note
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Total CO2 reductions for lifespan	tCO2eq	91,580	Lifespan : 20 years
Total CO2 reduction per year	tCO2eq/yr	4,579	[BE] – [PE]
[BE] Baseline Emissions per year	tCO2eq/yr	4,579	[EG] * [EF <sub>grid</sub> ]
[EG] Annual Electricity Generated by the Project (Solar generation)	MWh/yr	5,724	Ovalau Grid w/ 100% diesel
[EF <sub>grid</sub> ] Grid Emission Factor (Ovalau Grid w/ 100% Diesel)	tCO <sub>2eq</sub> /MWh	0.8	Efficient Diesel genset
[PE] Project Emissions per year	tCO2eq/yr	0	
[PE] Annual Emission Generated by the Project (Solar generation)	tCO2eq/yr	0	

**E.2. Paradigm shift potential (max. 300 words)**

**Paradigm Shift**

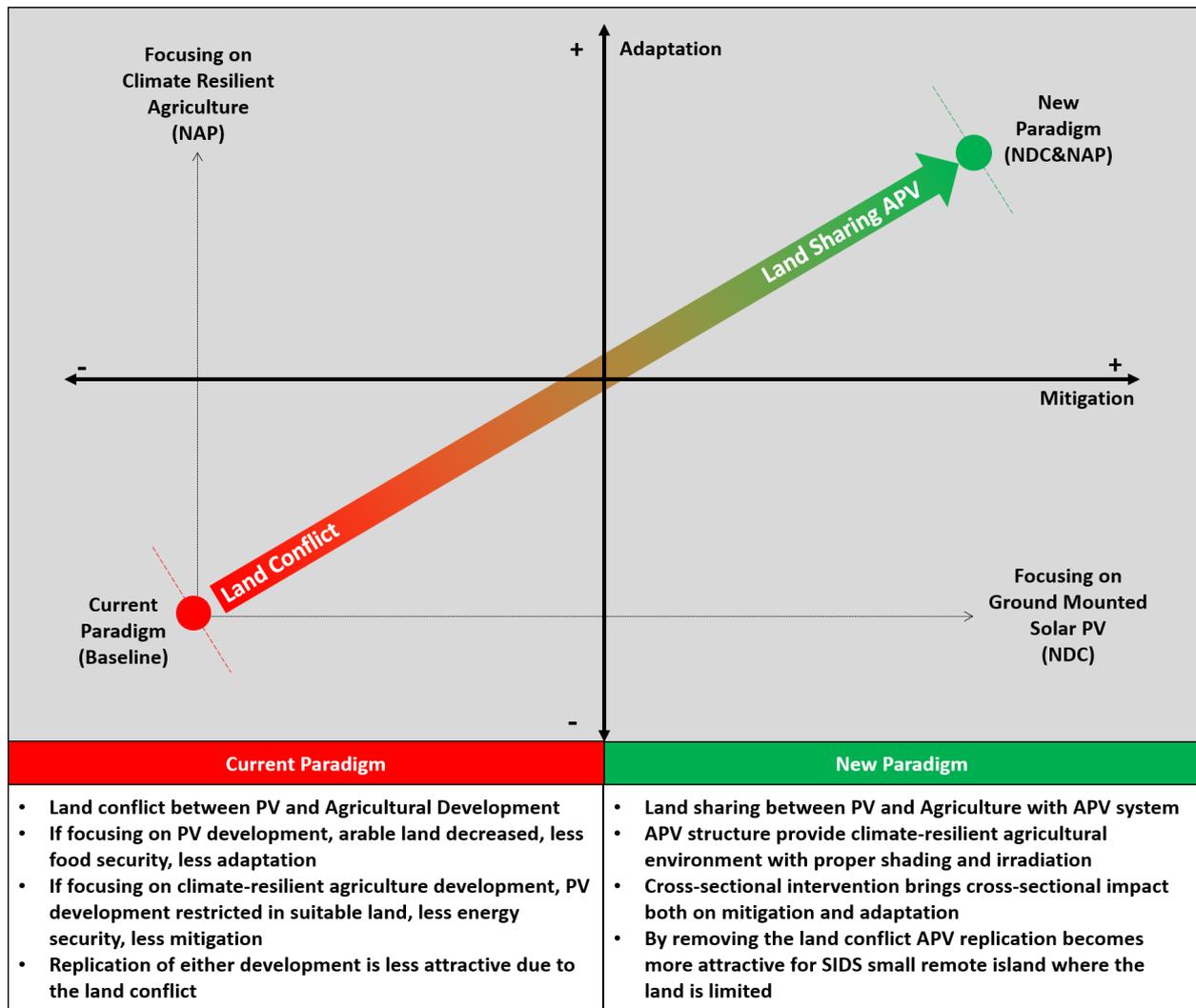


Figure 11. Project Paradigm Shift

Fiji introduced its NDC policy to promote the use of renewable energy to support climate change mitigation. A substantial amount of the ground-mounted solar PV installation is planned, causing the emergence of conflict in land use especially on arable land which is essential for the food security of Fijians, who are highly vulnerable to climate change. Most of the suitable land for ground-mounted utility Solar PV (flat and grid accessible) in Fiji is arable land, especially in small remote islands such as Ovalau. Converting agricultural land can create a food-energy conflict and impose loss of livelihoods and source of income on farmers and potentially force physical and economic dislocation. This conflict can be a key barrier to developing and replicating solar PV project in Fiji. Considering Fiji's high vulnerability of crop production yield and arable land reduction trends due to climate change events, it's important to achieve the two main policy agendas of promoting climate-resilient agriculture on one hand, which includes preserving arable land, and increasing renewable energy generation on the other, primarily through Solar PV. However, the current paradigm of treating those two agenda separately causes conflict. Thus applying agrophotovoltaic systems would precipitate a paradigm shift in land utilization creating an enabling environment to link the two conflicting agenda together, creating a synergy effect in both renewable energy and agriculture production.

In addition, the project is expected to trigger a paradigm shift through the scaling-up and replication of this single project into many others in Fiji and other SIDS. It seeks to enhance the sustainability of agriculture and the current energy infrastructure settings towards enhanced self-sufficiency and climate-resilience. The GCF's financing the first APV in Fiji is to materialize and accelerate such intended scale-up and replication. The project success bolstered by the GCF co-financing will clearly demonstrate that APV projects will be feasible broadly in the South Pacific region. With the establishment of FDB's APV financing facility through this project, quantified outputs through APV, in terms of energy and agricultural generation, can be guaranteed to become the basis of low-interest loan mechanism accessible to Fijians to replicate this APV project which could also be replicable to other areas across the South Pacific SIDS. The built confidence will contribute to enlarging climate finance from the private sector and public sector as well, which will eventually help the South Pacific community achieve the paradigm shift goal.

Above all, sustainable climate-resilient agriculture established in Fiji is expected to play an important role in showing the potential for scaling up and replication of RE projects combined with agriculture in isolated areas of South Pacific SIDS which cannot currently afford connection to the main grid for power generation. The integration of agriculture and PV systems not only improves the energy security while ensuring CO<sup>2</sup> emission reductions but also promotes climate-resilient agriculture.

### ***Knowledge sharing and learning***

Technical assistant including a range of capacity building and knowledge sharing activities will act as a lubricant that keeps all the parts of the project aligned and moving smoothly without any friction. The requested GCF grant will finance the TA activities to be designed and properly integrated into "Increasing management capacity in microgrid stabilization" so that they could contribute to enhancing the potential for the scale-up and replication of this project.

The TA of the project has three outputs, expected to present the substantial potential for knowledge and learning by targeting broader region-wide stakeholders as well as local beneficiaries in the countries of operation.

### ***Capacity building and technology transfer***

Capacity building sessions will be organized engaging the project's managerial personnel, local engineers, other public officials and international professionals. Various training will be carried out on technical, environmental, social, and gender capacities as well as project management skills including project monitoring, evaluation, and auditing. All the capacity building training will encourage active participation of women and girls from the affected communities to ensure gender equality. Each training session will be monitored and evaluated by respective executing entity on its effectiveness and the participants' satisfaction. Any feedback received from the participants will be reflected in the following training sessions.

A ten-day technical training course will be organized in Fiji targeting key managerial personnel to increase their capacity by learning more about the APV and power generation market in the South Pacific region. The training will include site

visits to APV system installation in Ovalau. During the ten-day course, another session will specifically focus on the technical skills required for operation, management, and administration, as well as auditing of PV, associated facilities, and equipment.

Another tentative capacity building activity is a biennial four-day-session that helps local engineers/technicians and administrative staffs enhance their capacity on APV and BESS operation and maintenance. It aims to avoid heavy dependence on technology sources from outside and to gradually increase the share of the local workforce.

### ***The Spread of knowledge***

Knowledge sharing events will also be organized at the local, national, and regional levels. These events aim to share the progress being made and benefits the project delivers to Fiji and South Pacific SIDS as well as the covered countries. Demonstration of the project as a best practice will encourage increased awareness of the innovative APV system as an attractive alternative, and of financial synergy through the GCF investment.

One example of the knowledge sharing events is a region-wide workshop in Fiji. TA consultants will organize knowledge-sharing workshops targeting local and regional stakeholders to present on the progress of the project. The program of the workshop may include among others: the construction and O&M, implementation of the GCF Environmental and Social Safeguards and stakeholder engagement and its reflection on the project preparation and implementation. The workshop materials that will be produced by the project's TA consultants will be disseminated to the participants, which will strengthen knowledge sharing for a more sustainable future of the region.

### ***Study supporting Mitigation Impacts***

The study on CO<sup>2</sup> saving potential from the project is expected to result in significant growth in knowledge and learning. Estimating carbon emission reduction potential from "Component 1: Strengthening the national and community capacity on the low-carbon generation and microgrid stabilization" has not been carried out before. The study supported by the GCF grant will produce concrete analysis and tangible findings that are specific to the project activities.

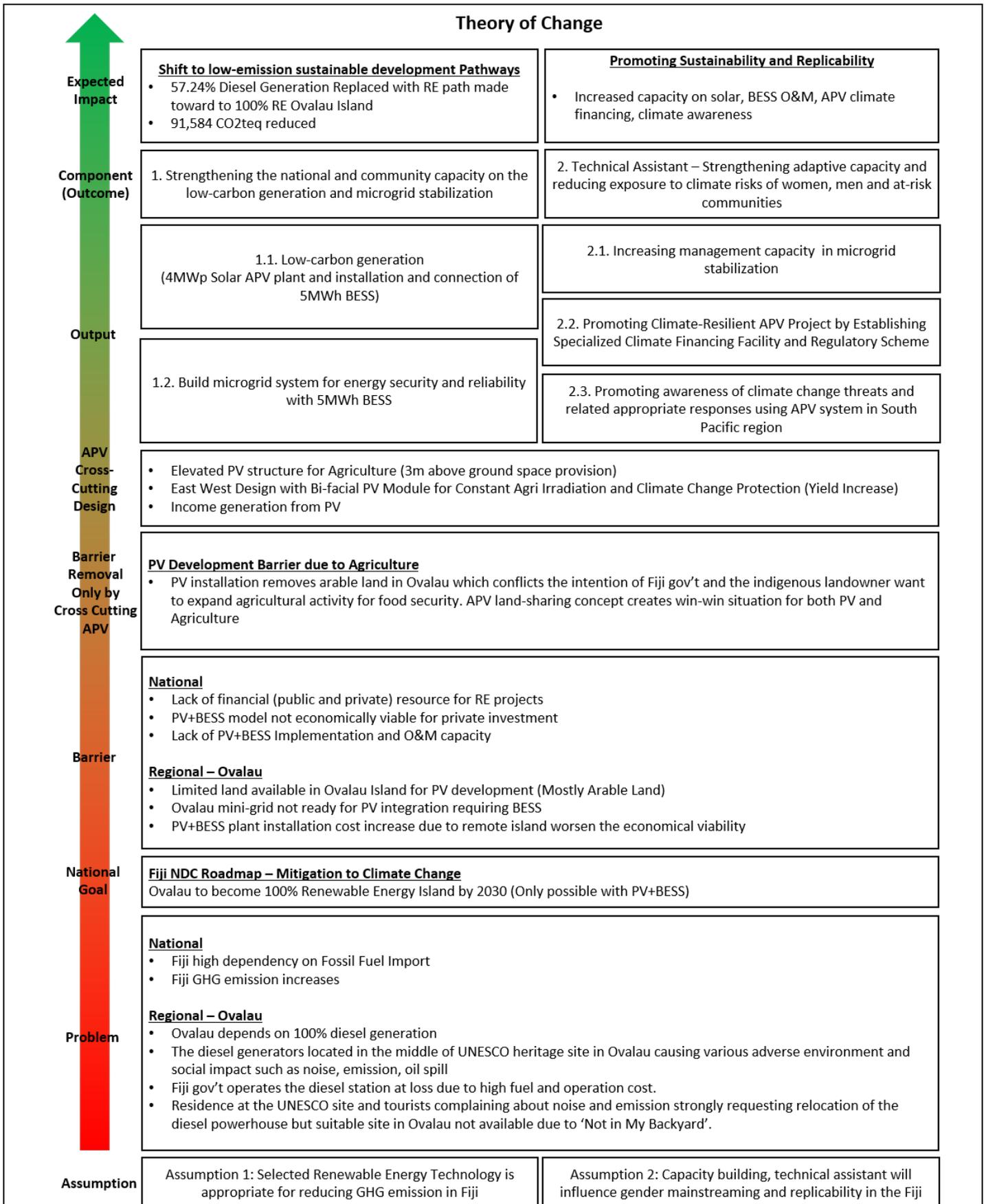


Figure 12. Project Theory of Change

**E.3. Sustainable development (max. 300 words)**

The project has significant social, economic, environmental, as well as gender-sensitive development co-benefits. It will contribute to six Sustainable Development Goals (SDGs) as follows. In addition to its contribution to the SDGs, the project will yield numerous environmental, social and economic co-benefits. These are described below.



Figure 13. SDGs contributed by the project

**Environmental co-benefits**

1. Reducing air pollution. 100% diesel generation not only emits carbon dioxide but also causes local air pollution through the emission of nitrogen oxides, carbon monoxides, hydrocarbons and particulate matters. While measurement data is unavailable, it is believed that emissions from the diesel generators have an adverse impact on the ambient air quality of Ovalau, Fiji.
2. Reducing noise pollution. These diesel generators also cause noise pollution. Reduction of diesel generation resulting from the project will also reduce such harms.
3. Reduced use of diesel will lower the risk of fuel spills and land/water contamination (both at sea when transporting the fuel and on land when stored or being used).
4. Sustainability of the project's positive impact on climate change by reducing carbon dioxide emission.
5. APV system will lead to improved water availability, enhanced soil quality, reduced erosion and sustainable agricultural practices. This will result in a sustained increase in agricultural productivity, leading to food security and reducing the need for the expansion of agricultural land and imports of agricultural goods
6. The unsafe disposal or elimination of batteries that have been disposed of and which have been causing soil and water pollution can be constrained as described in the ESAP (Annex 12).

**Social co-benefits**

1. Materials for project-related training and knowledge sharing in the maintenance of a PV array and BESS system, financial service access, climate and environment risk and impact assessment and management could be used as a toolkit for FDB's other financing.
2. Gender inclusive development can be promoted in Fiji by hiring women and girls and engaging them as active partners for training and project implementation.

**Economic co-benefits**

1. The project will reduce the fiscal burden of the Fijian government on energy generation in Ovalau.
2. The project will create job opportunities for the local labour force, especially youth and women
3. The project will reduce importation of diesel fuel from abroad, which will reduce the national bill of payments and improve national energy security.
4. The project will contribute to improved financial access for APV projects via FDB's financing facility

**Gender co-benefits**

1. The Gender Action Plan (GAP) is designed to ensure equal opportunity for both men and women in training and employment (for APV system maintenance and operation). Thus, the project will extend chances for local women and girls to share the benefits of the project on equal terms as men. This, in the long term, may contribute a change of perception of the local communities and Fijian people in gender roles, which will empower women and girls for better participation in the formal economy and development activities in the future.
2. In particular, special consideration for training and employment shall be made targeting woman-headed households in affected community.

**Other co-benefits**

1. Through this APV project providing climate protection for agriculture, KOICA will provide grants to the Fijian government to implement a climate-resilient agriculture project under the solar APV. KOICA's project will include organic-farming, processing, storage, marketing of the essential crops and vegetables in Fiji which are susceptible to climate change-induced natural and other types of disasters (such as long drought, floods, typhoons and other kinds of extreme weather conditions). Establishment of a climate-resilient agricultural research station will be another activity of the climate-resilient agriculture project to promote the country's long-term climate resilient agriculture utilizing the APV system. This will contribute to improving the country's food security in the long term.

**E.4. Needs of recipient (max. 300 words)**

***The vulnerability of the country and beneficiary groups***

Fiji is exposed to a wide variety of natural hazards, including cyclones, droughts, electrical storms, extreme winds, floods, landslides, storm surges, tsunami and temperature rise. The vulnerability is attributed to the country's geographical condition of being located in a remote and isolated area, where small islands are dispersed across a large area in the Pacific Ocean. The country's coping mechanism is rather weak due to the unique economic and social challenges and degradation of natural resources.

Fiji is one of the most vulnerable countries to climate change, the German Watch released<sup>25</sup> the Climate Risk Index (CRI) for 2018 citing Fiji as the tenth most climate vulnerable country in the world with a total CRI score of 22.50. In particular, Fiji receives one of the highest score in deaths per 100,000 inhabitants (ranking the third after Germany and Japan) and in losses per unit GDP (in %) (also ranking the third after Madagascar and Sri Lanka).

Table 5. Climate Risk Index Ranking by Country

<sup>25</sup> Global Climate Risk Index 2020 (link: <https://germanwatch.org/sites/germanwatch.org/files/20-2-01e%20Global%20Climate%20Risk%20.pdf>)

Ranking 2018	Country	CRI Score	Death toll	Deaths per 100 000 inhabitants	Absolute losses (in million US\$ PPP)	Losses per unit GDP in %	Human Development Index 2018 Ranking12
1	Japan	5.5	1 282	1.01	35 839.34	0.64	19
2	Philippines	11.17	455	0.43	4 547.27	0.48	113
3	Germany	13.83	1 246	1.50	5 038.62	0.12	5
4	Madagascar	15.83	72	0.27	568.10	1.32	161
5	India	18.17	2 081	0.16	37 807.82	0.36	130
6	Sri Lanka	19.00	38	0.18	3 626.72	1.24	76
7	Kenya	19.67	113	0.24	708.39	0.40	142
8	Rwanda	21.17	88	0.73	93.2	0.34	158
9	Canada	21.83	103	0.28	2 282.17	0.12	12
10	Fiji	22.50	8	0.90	118.61	1.14	92

Fiji is expected to see long-term change in a number of key climate variables, specifically an increase in mean and extremely high temperatures, sea levels, ocean acidification, heavy rainfall and drought. Climate change is most likely to affect agricultural production through those change. Agricultural crops could also be affected by rising temperatures, climate variabilities – such as more intense cyclones and El Niño/La Niña conditions<sup>26</sup>

While the need is great, the resources to address this are limited. Fiji is no stranger to severe weather events, as recently witnessed by the Category 5 Tropical Cyclone (TC) Winston, which hit Fiji's islands in February 2016. TC Winston is estimated to have impacted 540,000 people, representing as much as 62% of Fiji's population, and caused damage and loss of US\$ 995 million (GOF, 2016b). At the same time, it slowed down GDP growth by over 4%, weakening further the capacity of the government to respond to the needs.

It is imperative that the proposed development investments develop, implement, replicate, and upscale mitigation strategies that are technically, financially and economically achievable. The project seeks to incorporate climate-proofing measures into the agriculture sector and to integrate climate change considerations into national development plans and sector development plans.

### ***Economic and social development level of the country and the affected population***

Fiji has a population of approximately 845,309 people (as of 2015). The majority of the permanent population (over 90%) resides on the five main islands of Viti Levu, Kadavu, Vanua Levu, Ovalau and Taveuni. Given its tropical marine climate, and location in the South Pacific Convergence Zone, Fiji faces the impacts of climate variability. In connection to long-term global climate change, annual average temperatures and sea level have increased each decade in Fiji, and sea level is projected to rise 7–17 cm by 2030. In addition, it's economy is composed of various economic sectors, of which the top seven are manufacturing, wholesale and retail, transport and storage, government, agriculture, financial services, accommodation and food services<sup>27</sup>. During 2009-2019, Fiji's economy sustained uninterrupted positive economic growth, with an average annual growth rate during 2011-2015 of nearly 4%<sup>28</sup>. With its growing economy, Fiji has estimated its GHG emissions to be approximately 2,700 Gg CO<sub>2</sub>e in 2011, of which 59% comes from the energy sector, 22% from agriculture, 15% from forestry, and 4% from waste. In relation to the energy sector, Fiji is currently highly dependent on the import of fossil fuels, which amounts to a 30% share of total merchandise imports for Fiji<sup>29</sup>. Only for grid-connected electricity generation, fuel oil consumption in 2015 was as high as 104,000 tons at a cost of US\$ 70 million.<sup>30</sup> In relation to the agriculture sector, Fiji is facing increasing difficulties in securing safe and healthy food production, resilient agriculture and balanced diet of its people.

<sup>26</sup> World Bank (2000), *Cities, Seas, and Storms: Managing Change in Pacific Island Economies* (link: [http://siteresources.worldbank.org/INTPACIFICISLANDS/Resources/Summary\\_Volume\\_IV\\_%28for\\_the\\_Hague\\_LATEST%29.pdf](http://siteresources.worldbank.org/INTPACIFICISLANDS/Resources/Summary_Volume_IV_%28for_the_Hague_LATEST%29.pdf))

<sup>27</sup> FBOS. (2017a, Aug 15). *Statistics*. Retrieved from Fiji Bureau of Statistics: <http://www.statsfiji.gov.fj/statistics>

<sup>28</sup> GOF. (2017c). *DRAFT Third National Communication to the UNFCCC*. Suva: Government of Fiji

<sup>29</sup> IRENA. (2015). *Fiji Renewables Readiness Assessment*. Abu Dhabi: International Renewable Energy Agency

<sup>30</sup> FEA. (2016). *Annual Report 2015*. Suva: FEA

Fiji was one of the recipients of the lowest amount of climate finance for SIDS in the South Pacific Ocean, with US\$ 32 million contributed by partners during 2010-2014<sup>31</sup>. Despite the fact that Fiji has a relatively small size of economy and low level of per capita carbon emissions compared to neighbouring advanced countries, the assessment of the NDC Implementation Roadmap indicates that at least US\$ 119 million in total investment has been made in the energy sector during the period of 2014 through mid-2017, with an estimated direct impact on GHG mitigation of at least 33,000 tCO<sub>2</sub>/yr.

Fiscal deficit and trade imbalance in recent years, combined with heavy subsidy for the costly fossil fuel imports, are hampering the pace of required socio-economic development in Fiji. Among the urban population in Fiji, incidence of obesity and diseases related to the dietary imbalance (malnutrition in selective food intake) are reported to be rising. Increased frequency of extreme weather conditions and large-scale disaster, as shown in TC Winston in 2016, is likely to further aggravate the already vulnerable population in Fiji even more in the future, unless timely mitigation efforts and investments are not made.

#### ***Absence of alternative sources of financing***

Fiji has limited access to sources of finance. Access to private sector finance, in particular, is very limited for innovative investments, as the perceived risks for private sector investment are generally high. The government of Fiji has a limited budget to carry out actions to tackle climate change and energy-related challenges. The country's financial markets are not mature enough to attract private investments. Many investment projects in Fiji have failed to secure finance due to the difficulties in attracting private investment. In this context, GCF grant and loan, as well as KOICA's in-kind contribution, can play a significant role in countering such hardships, paving the way for further renewable investments, and enabling the Fijian government to move forward in achieving their mitigation targets and sustainable development goals.

The Government revenue is limiting the potential for government investments. Like other Pacific island countries, Fiji is highly dependent on funding from multi-development banks and bilateral partners. With its low GDP, Fiji can quickly reach its debt ceiling and the government has little borrowing capacity. Thus, like most Pacific SIDS, Fiji has difficulties to take on extra loans – even highly concessional - to finance investments in the energy sector. Most countries in the region are heavily weighted towards grants and Fiji is not an exception. This constitutes a significant barrier to the country's required green transformation in its electricity generation. Considering this, this project will fill an important financing gap and facilitate the country's transition to an economy based on renewable energy.

This project may help reduce the cost of supply of energy, with renewable energy displacing expensive alternatives such as power generated based on costly fossil fuels; this could result in a reduction of the subsidies required from the government, and thus reduce the fiscal deficit. In addition, to the extent that the project displace imports of fossil fuels, there could also be a trade and balance of payments benefit.

#### ***Need for strengthening institutions and implementation capacity***

Fiji has limited human resource pool, and in turn, limited technical and managerial capacity and limited institutional capacity. This can be exacerbated by out-migration of its population.

Accordingly, capacity development and institutional strengthening have been included in the project. The process leading to financial closing of the projects with the contractual regime, as well as their subsequent operation and supervision, will provide insights into aspects in need of adjustment or capacity building (at the planning, and project financing levels). Some of the technical cooperation activities included as part of this program will help address those needs. And the process leading to develop and manage the agriculture by setting a model framework for enhancing the governmental system by grant, the local community and government officials will be able to gain insight and knowledge related to agriculture.

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<sup>31</sup> SEI. (2017). *Climate finance in the Pacific: An overview of flows to the region's Small Island Developing States*. Stockholm: Stockholm Environment Institute.

Fiji's government has undertaken a range of sector reforms in recent years and has a relatively strong regulatory capacity. The government and local community could build on this capacity through various capacity building and training sessions which will be provided regarding the development of regulatory framework. Beyond regulatory capacity building, trainings will also focus on technical capacity building to manage the project.

### E.5. Country ownership (max. 500 words)

Fiji builds onto existing mitigation and adaptation actions that are being undertaken by the Fijian government and will report Fiji's future Nationally Determined Contributions (NDCs) to the United Nations Framework Convention on Climate Change (UNFCCC). The NDC Implementation Roadmap 2017-2030 will be a key tool, a guiding light, and a fundamental pillar to enhancing and raising ambition in Fiji's NDCs. Fiji's NAP influences and accelerates the national development pathway towards climate-resilient development. It seeks to improve resilience against changes in climate, the extremity and frequency is expected to increase under the future scenario.

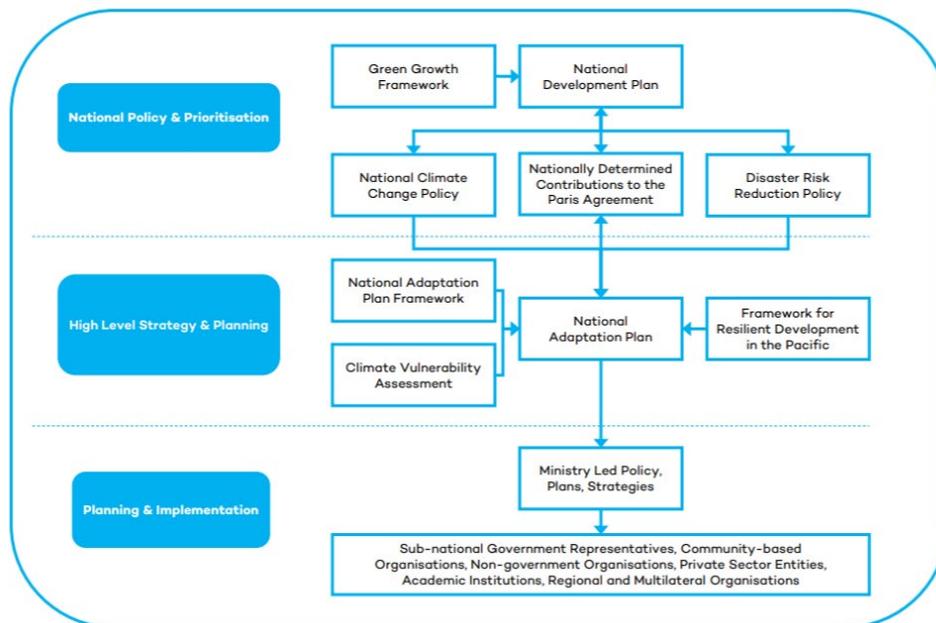


Figure 14. Climate change-related planning processes.

Source: National Climate Change Policy 2018

### **Nationally Determined Contribution (2017-2030)**

Fiji's NDC is specific to the energy sector both in terms of a GHG baseline, with 2013 as the reference year, and in terms of potential mitigation actions. The overall mitigation target in the NDC is to reduce CO<sub>2</sub> emissions by 30% from a BAU (Business As Usual) baseline scenario of 2030, by striving to reach 100% renewable energy power generation and through economy-wide energy efficiency. The goal of the NDC Implementation Roadmap 2017-2030 is to provide a temporal pathway with concrete mitigation actions and financing needs to achieve the transformational change called for under the NDC. In the NDC Implementation Roadmap, mitigation actions under the energy sector are divided between the three sub-sectors of Electricity Generation and Transmission, Demand-Side Energy Efficiency and Transportation. The implementation of the identified mitigation actions under the Roadmap is divided into short-term (2017-2020), medium-term (2021-2025), and long-term (2026-2030) action periods, whereas all mitigation actions in the Roadmap are closely aligned to existing national policies, strategies and plans.

Increasing renewable power generation capacity through a 4MWp PV with 5MWh BESS has been proposed as a short-term mitigation action (2017 – 2020) for the Fijian Government. APV system development and the increasing of its capacity over time are repeatedly highlighted as medium-term and long-term mitigation actions in this Roadmap as a primary consideration for Fiji to achieve the NDC target.

### ***Fiji National Climate Change Policy (2018-2030)***

The interlink between the two policies, namely the National Climate Change Adaptation Strategy (NCCAS) and the National Climate Change Policy (NCCP), allows direct support of the implementation of proposed mitigation activities of the project. In addition, the project will be timely in piloting and demonstrating on-the-ground mitigation infrastructure development with complementary supporting institutional changes for future replication in the country.

### ***Engagement with NDA, AE, EE and Governmental Agencies***

The project was initiated in 2018 with the Fijian Government (NDA) requesting GGGI to assess on the feasibility on making Ovalau a 100% renewable energy island as it is one of the targets in Fiji NDC Roadmap. Expansion of solar energy has been strongly supported by the Fiji NDC Implementation Roadmap 2017-2030<sup>32</sup>. Increasing renewable power generation capacity through solar PV power plants has been proposed as a short-term to long-term mitigation action (2017 – 2030) for the Fijian Government. In addition, GGGI, upon the request from Fiji MoE, has completed the pre-feasibility study for 100% renewable island for Ovalau and Taveuni. The study concluded that various financing mechanisms are needed including international financing, in-kind contribution, and IPP attraction in order to achieve the 100% renewable energy in Ovalau islands with a staged development approach.

Based on the study of the needs and financing for the required activities in Ovalau, FDB (AE), MoE (NDA), KOICA, GGGI, and project developers initially gathered to design a suitable GCF project to achieve the first stage renewable energy target of Ovalau by 50%, while enhancing climate resilience of the Island through improved energy and food security. With the AE's small-scale solar PV financing experience, the project was well suited for the FDB as its first GCF project. During the concept note and funding proposal preparation stage, various consultations were conducted, and other key stakeholders such as the BCDC, MoIT, and EFL were involved. Below is the brief description of the key stakeholders:

Table 6. Key Stakeholders

Stakeholder	Description and Roles
<b>Fiji Ministry of Economy(MoE), GCF National Designated Authorities (NDA, EE for Component 2)</b>	NDA is the focal point of the country's GCF project/ to make sure it aligns with its national policies and targets. The GCF approval process requires a non-objection letter from NDA for any project submitted from the country. The Ministry completed the pre-feasibility study for 100% renewable energy island with Solar PV for Ovalau Island via GGGI. For this project, the NDA has been involved from the early stages of the project identification and preparation to align the project with the government's agenda and policies. The Official grant request has been submitted to KOICA in Oct 2019 and the Ministry plans issued the NOL in Jan 2020.

<sup>32</sup> GGGI (2017) Fiji NDC Implementation Roadmap 2017-2030 *Setting a pathway for emissions reduction target under the Paris Agreement*

<p><b>Fiji Development Bank (FDB), GCF Accredited Entity (AE&amp;EE for Component 1)</b></p>	<p>FDB is a state-owned financial institution for the economic development of Fiji focusing on agriculture, commerce, and industry. FDB has become the national accredited entity (AE) of GCF in 2017. FDB plans to be an AE, EE for Component 1, and a loan provider taking the overall responsibility in this project. In Dec 2019, the FDB board has approved on the proceeding of the project.</p>
<p><b>Korea International Cooperation Agency(KOICA) (In-kind contribution provider for BESS)</b></p>	<p>KOICA's role is designed to provide in-kind contribution for BESS. KOICA has received the official grant request from the Fiji government (NDA) in Oct 2019.</p>
<p><b>Fiji Ministry of Infrastructure and Transport (MoIT)</b></p>	<p>The Ministry plays a key role as an executing entity in the Component 2 of the project. The ministry will be responsible for increasing the management capacity in microgrid stabilization through training for PV and BESS system.</p>
<p><b>Energy Fiji Limited (EFL) (Beneficiary and Owner of BESS)</b></p>	<p>EFL is the only state-owned electricity utility in Fiji with a total peak load of about 150MW supplying more than 750 GWh per annum. EFL is the government counterpart for Power Purchase Agreement (PPA), the off-taker, to purchase the electricity generated in this project. Another role of EFL in the project is to upgrade of the Ovalau grid, as the grid owner and operator, with BESS for the reliable power supply in the island based on 50% PV and 50% diesel generation.</p>
<p><b>Ovalau Agrosolar Pte Limited (OAS) (Sub-borrower and Owner of Solar APV)</b></p>	<p>OAS is the Special Purpose Company established in Ovalau taking the role as an sub-borrower and owner of the 4MWp solar APV activity in the project. Private investor(s) will be invited to OAS for leverage equity financing and the power plant ownership.</p>

### **Multi-Stakeholder Engagement Plan and Consultation**

For the project discussion, the NDA organized two government stakeholder meetings in Nov 2018 and July 2019 in Fiji. All relevant government and other stakeholders participated in the meetings to ensure the project was aligned with the vision and strategies of the government in regard to its land use, renewable energy, and benefits to the community. During the meetings, it was ensured that all the participated ministries and other public and international agencies would support the project and work together in the future for the successful implementation.

From 2020 onwards, the Project Steering Committee (PSC) will be established by the AE and NDA to coordinate the final stage of the GCF proposal preparation. Once the project is approved by the GCF Board, the same committee will be taking the role for oversight of the project implementation.

Several hearings and meetings have been and will be carried out to ensure that the proposed project is implemented with sufficient participation of and engagement with the stakeholders. Several consultation meetings have also been convened in Oct 2018 and May and July 2019 with a range of local stakeholders including BCDC community representatives (including women) to discuss the environmental and social issues related to the project implementation, particularly focusing on utilizing land and road access, and benefit arrangements such as training and employment. AE is willing to continue its regular *ad hoc* consultation activities with the local stakeholders over the entire period of the project implementation. Other consultant partners include Town Councils and Rural Local Authority in project site location.

Several rounds of consultation sessions were also held with the BCDC, including the representatives of the owners of the land subject to the project site development, one of the key stakeholders of the project. In these meetings, the landowners and directly affected residents articulated their expectations for benefit sharing of the project and requested for proper management of the land. They expected the land subject to the long-term lease for the APV system installation and operation, currently abandoned, to be transformed into productive land for plantation.

In due course of time, FDB (AE) shall establish a comprehensive stakeholder engagement plan. The FDB will make endeavors to establish a constructive partnership with government bodies in relation to the GCF-funded activities. The project preparation team is also in continuous consultation and communication with the Fiji Ministry of Environment to fulfill the requirement of environmental impact assessment per Fiji's environmental safeguard system.

### **Women's Active Engagement**

The project recognizes the importance of gender mainstreaming. Thus, prior to the proposal submission, a focus group meeting and strategy setting for active engagement and participation of women and girls are under preparation in consultation with the Fiji Ministry of Women, Social Welfare, and Poverty Alleviation. The discussion entails capacity building activities targeting women and girls (both native and Indo-Fijian) in the affected local communities, particularly targeting vulnerable group such as women-headed households.

### **Miscellaneous Remarks**

A communication mechanism for grievances and queries raised by local communities, stakeholders, and the government will be established. Throughout the construction and operation phases, grievance mechanism shall be operationalized with a form of "Complaint Register" installed at a project site to register complaints regarding the noise, dust and surrounding environmental degradation and other complaints lodged by the affected communities. AE and EEs shall be responsible for the timely management and resolution of the raised concerns and issues, which will be documented and reported on a regular basis through the M&E reporting mechanism throughout the entire cycle of the project implementation.

FDB also has an information disclosure policy and implementation system for its projects on its website where stakeholders can have access to information related to the projects. The system was established to enhance communication with borrowers and promptly respond to the complaints and disclose the essential information of the project to the public and the stakeholders in an open and timely manner.

## **E.6. Efficiency and effectiveness**

E.6.1. Estimated cost per t CO <sub>2</sub> eq, defined as total investment cost / expected lifetime emission reductions (Mitigation and Cross-cutting)	(a) Total project financing	US\$
	(b) Requested GCF amount	US\$ <u>3</u>
	(c) Expected lifetime emission reductions	<u>91,584</u> tCO <sub>2</sub> eq
	<b>(d) Estimated cost per tCO<sub>2</sub>eq (d = a / c)</b>	US\$ / tCO <sub>2</sub> eq
	<b>(e) Estimated GCF cost per tCO<sub>2</sub>eq removed (e = b / c)</b>	US\$ / tCO <sub>2</sub> eq
E.6.2. Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (Mitigation and Cross-cutting)	(f) Total finance leveraged	US\$
	(g) Public source finance leveraged	US\$
	(h) Private source finance leveraged	US\$ <u>2</u>
	<b>(i) Total Leverage ratio (i = f / b)</b>	
	(j) Public source leverage ratio (j = g / b)	
	(k) Private source leverage ratio (k = h / b)	

### **Financing structure with existing bottlenecks and/or barriers**

The financing structure of this project is designed to leverage the GCF finance to fill the financing gap, and to attract more private fund to enable the project.

Specifically, the market rate presented below indicates that the debt to equity and the minimum simple DSCR are not attractive enough to invite private sector investments in the project. The pricing and funding size of the GCF loan plays a decisive role in achieving the minimum level of financial requirements under which commercial banks may consider loan provision.

GCF grants will be used mainly for capacity building of relevant stakeholders as well as awareness-raising and knowledge sharing.

### ***Effective Reduction of Fiscal Burden of Fiji Government***

The electricity generation of Ovalau is operated by EFL at a loss due to the high cost of diesel generation compared to the consumer tariff. This can pressure EFL to increase the tariff in the future transferring the burden to the consumer level. This project can reduce the financial burden by reducing the equivalent amount of diesel generation.

### ***Industry best practices***

In 1981, the founding fathers of Fraunhofer ISE, Mr. Goetzberger and Mr. Zastrow, were the first who proposed the concept of Agrophotovoltaics (APV) outlining the various advantages of this system-technology. APV focuses on overcoming conflict in land use by combining the land use for food and electricity production. Opportunities range from a significant raise of land-use efficiency, and increased added value for rural areas, and opportunities of how elements of the PV layer can support farming practices and plant growth.

The beneficial character of APV depends on the shade tolerance of cultivated plants, farming practices, and climatic conditions. Concerning characteristics of Fiji's cropping systems, local weather conditions are a crucial factor regarding synergies between agriculture and the PV layer. In hot and sunny semi-arid climatic zones, shadowing effects of PV modules lead to less evaporation and therefore lead to higher soil moisture and potentially better crop health. More moderate temperatures of air and soil might reduce stress on crops and can improve the growing conditions. Being confronted with the consequences of climate change, these effects suggest that APV systems might contribute to not only for climate change mitigation but potentially also adaptation.

While solar power is one of the more developed renewable technologies worldwide, PV IPP with agriculture activities on the same site is certainly "innovative". This project would be the first utility-scale PV project as an IPP in Fiji and South Pacific area. The following list is the technologies and innovative approaches to be carried out in this project.

- Solar diesel hybrid system feeds into the grid that promotes improved air quality, reduced noise pollution, biodiversity, conservation and ecotourism.
- Optimization of APV system, identified in the feasibility study, for synergy effect on cultivated crops as well as PV electricity yield. The optimized APV design is expected to enhance crop yield by 17.8% on average compared to conventional farm, while PV electricity yield is remaining.
- Application of semi-transparent bifacial PV modules allows lights going through the module and therefore can help homogeneous light distribution on crops underneath.
- Applying a decentralized inverter that requires less expertise to replace and repair. This can reduce travel from outside of the island and can improve expertise within local workers.
- Project Management Unit (PMU) led by FDB will bridge the stakeholders and provide evidence-based practices. PMU pays attention to sustainable development and decision making according to the analysis and experiments.

- Promoting the technical expertise at the local level will improve the livelihoods in the local rural area by increasing job opportunities for local communities as well as for vulnerable groups including women.
- Promoting private investment on small/large scale APV system through regular programs such as workshops. The raised awareness of climate change, APV system, and the APV financing facility for replication of the project will catalyze the replication of this project.
- Exploring enhanced irrigation and water management while APV's shading effects enhance crop productivity.
- Exploring shading effects on plants and identifying the appropriate crops to the APV application in Fiji and SIDS to promote the benefits of APV in the local market.
- Applying the sustainable organic farming system to maintain sustainable agriculture and improve soil fertility and biodiversity.
- Systematic agriculture management using monitoring data and accumulative analysis.

Taking into account all the potential obstacles together with specialists in this field at the early stages of the project will allow little to no variations as well as a smooth execution. Fraunhofer ISE, the largest solar research institute in Europe with a strong track records in APV has been contracted to provide consulting service for the project design in technical aspects.

## F. ANNEXES

### F.1. Mandatory annexes

- Annex 1 NDA No-objection Letter(s) ([Template](#))
- Annex 2a Example project level logframe ([Example](#))
- Annex 2b Example timetable ([Example](#))
- Annex 3 Budget plan that provides breakdown by type of expense ([Template in excel sheet](#))
- Annex 4 Gender assessment and action plan ([Template](#))
- Annex 5 Co-financing commitment letter
- Annex 6 Term sheet and evidence of internal approval
- Annex 7 Risk assessment and management ([Template](#))
- Annex 8 Procurement plan model ([Template](#))
- Annex 9a Legal Due Diligence (regulation, taxation and insurance) ([Template](#))
- Annex 9b Legal Opinion/Certificate of Internal Approvals ([Template](#))  
**ANNEX 9B - TO BE SUBMITTED BY 10/22/2020**

### F.2. Other annexes to be submitted when applicable/requested

- Annex 10 Economic and/or financial analysis  
(mandatory for private-sector proposals)
- Annex 11 Appraisal, due diligence or evaluation report for proposals based on up-scaling or replicating a pilot project
- Annex 12 Environmental and Social Action Plan (ESAP) ([Template](#))
- Annex xx Other references
  - 14. Letter (FDB)
  - 15. Pre-feasibility Study

*\* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*



# MINISTRY OF ECONOMY

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 Ro Lalabalavu House, 370 Victoria Parade, Suva

22 April 2020

**By Email:** [countries@gcfund.org](mailto:countries@gcfund.org)

The Green Climate Fund  
 Songdo Business District  
 175 Art Center-daero  
 Yeonsu-gu, Incheon 22004  
**South Korea**

Dear Sir/Madam

## **Letter of No-Objection for the Fiji AgroPhotovoltaic Project in Ovalau Funding Proposal**

We refer to the Fiji AgroPhotovoltaic Project in Ovalau, Fiji as included in the funding proposal submitted by the Fiji Development Bank to the Ministry of Economy in April, 2020.

The undersigned is the duly authorized representative of the Ministry of Economy, the National Designated Authority of Fiji.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project as included in the funding proposal.

By communicating our no-objection, it is implied that:

- (a) The Fijian Government has no-objection to the project as included in the funding proposal;
- (b) The project as included in the funding proposal is in conformity with Fiji's national priorities, strategies and plans; and
- (c) In accordance with the Green Climate Fund's environmental and social safeguards, the project as included in the funding proposal is in conformity with relevant national laws and regulations.

We confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed. We also confirm that our no-objection applies to all projects or activities to be implemented within the scope of the project and that this letter will be made publicly available on the Green Climate Fund website.

Thank you.

Mamereta Konrote  
**Permanent Secretary for Economy**

## Independent Technical Advisory Panel's assessment of SAP016

Proposal name:	Fiji Agrophotovoltaic Project in Ovalau
Accredited entity:	Fiji Development Bank (FDB)
Project/programme size:	Micro

### I. Assessment of the independent Technical Advisory Panel

#### 1.1 Impact potential *Scale: N/A*

##### 1.1.1. General background

1. Fiji is a small island developing State (SIDS) located in the South Pacific. According to the Germanwatch Global Climate Change Risk Index, Fiji is the tenth most exposed country to natural hazards in the world and as such is considered to be highly vulnerable to climate change, which is generally understood to exacerbate these hazards, especially in that region of the world. The Government of Fiji, in recognition of the country's responsibility to contribute to the global efforts to ameliorate the effect of climate change, sees climate change mitigation as a key area where it can effectively direct its national interventions. According to country information presented in the funding proposal, the average of the greenhouse gas (GHG) emissions from economic activities in Fiji during the period 2006–2011 was 2,500 gigagrams per year. Approximately 59 per cent of GHG emissions during this period was contributed by the energy sector. The country's power sector, especially in stand-alone islands like Ovalau, where the proposed project will be sited, is dominated by fossil fuel power generation, with great reliance on foreign exchange to import the fuel to fire these plants. The main power grid in Fiji, which is not extended to Ovalau, is also dominated by fossil fuel. Although the Government of Fiji has made some efforts in recent years to adopt non-fossil-fuel power generation systems, as of 2019, when the idea behind this project was being finalized, the energy system of the country and particularly Ovalau was still dominated by a very high dependence on fossil fuel.

2. The aspirational goal of the Government of Fiji to contribute as a nation to the global efforts to mitigate climate change through reductions in GHG emissions from its energy sector is very well articulated in the country's nationally determined contribution (NDC). To mitigate global climate change impacts, Fiji has adopted its NDC roadmap, which aims to increase its renewable energy generation capacity from 40 per cent (2014) to 100 per cent by 2035 and to reduce GHG emissions and its import bill from fossil fuels that currently accounts for 14–17 per cent of its gross domestic product (GDP). Most of the renewable energy capacity increase is expected from solar photovoltaics (PV), with a target installed capacity of 127 megawatt peak (MWp). The NDC roadmap states that Ovalau island, where this proposed project will reside, is one of the priority areas for 100 per cent renewable energy conversion because the island currently depends on 100 per cent diesel generation, with the existing power station located in the first capital of Fiji, Levuka. The cardinal aim of the Government of Fiji is that the success of this first project will create a catalytic environment for the replication of its success in the other island areas in Fiji.

3. Another important country consideration that had an influence on the structure of the proposed project is the vital importance of agriculture to the economics of Fiji. Agriculture in Fiji, apart from helping meet the demand for food in the country, provides full employment for

about 45 per cent of the country's population, and at least about 65 per cent of Fijians derive part of their income from agriculture. The sector has, however, been facing serious problems arising from the negative impacts of natural disasters and extreme events, which have caused loss of production in recent years. For example, Tropical Cyclone Winston caused USD 368 million in losses in Fiji in 2016. A recent estimate established that tropical cyclones cause on an average about USD 103 million in asset losses each year, with a substantial portion of these losses occurring in the agricultural sector of Fiji. It can be concluded that intense drought and high temperatures pose threats to agricultural production and incomes in Fiji. Many of these natural hazards and extreme events are also exacerbated by climate change and variability. Resulting significant losses include a reduction in arable land available for agriculture. Climate change and land use for industrial and residential needs have been identified as major causes of decreasing arable land in Fiji. Being a SIDS, the country is characterized by inadequate land mass to cover the competing use. This realization is the driving force behind why Fiji's national adaptation plan (NAP) explicitly included a cardinal policy to preserve arable land to combat poor nutrition, loss from natural disasters and agricultural stagnation. According to Fiji's NAP, this will call for investment in climate-resilient agriculture; programmes that promote native crops; and programmes that foster inclusive economic development to enable its population to afford healthy food.

4. While Fiji's NAP calls for the preservation of arable land, the country's NDC calls for increased generation of energy (from 40 per cent in 2016), especially power from renewable energy resources, particularly solar PV. This will enable Fiji to meet its GHG emission reduction goals and reduce its fossil fuel imports that currently account for 14–17 per cent of the country's nominal GDP. However, to achieve the goals of the NDC – increased use of solar PV systems in Fiji's electricity supply will have to be ramped up. This will require the use of the scarce remaining arable land for agricultural production. Ironically, the Fiji NDC and NAP that are both designed to tackle climate change issues contradicts each other when it comes to PV development on the arable land. This is because the traditional implementation of solar PV farms will preclude the use of the same land for other land use, including agriculture. The proposed project structure was chosen as it will allow Fiji to meet its national ambition of installing a capacity of about 127 megawatts (MW) of solar PV on available arable land, while agricultural production can also be carried out on the same arable land. Thus, the agrophotovoltaic (APV) technology was adopted for this project. APV will be a new technology in the South Pacific region and SIDS countries, as it has never been implemented in the region or in any SIDS country. It is, however, not new globally as it has been successfully implemented in a few countries in Asia (Republic of Korea) and Europe (France and Germany). According to a recent study report, it has been estimated that approximately 2,200 APV systems have been installed worldwide since 2014, leading to a capacity of about 2.8 gigawatt peak as of January 2020.<sup>1</sup>

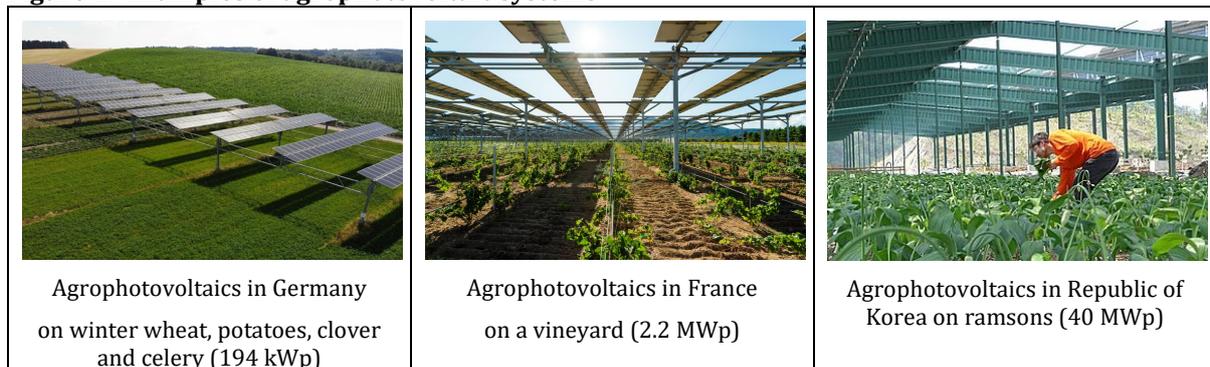
5. The proposed APV project can convert the conflict of interest between the country's two major climate change targets (NDC (PV development) and NAP (climate-resilient agriculture development)) to a sharing of interest with the land-sharing value of the APV. Not only will a successful implementation of the APV system eliminate the conflict, but it will provide a potentially synergistic effect in terms of the increased yield of both crop production and renewable energy. An APV system will be implemented in this project instead of the more common ground-mounted photovoltaics (PV-GM) to achieve the synergy described above. The APV is different in structure compared to the PV-GM in that the solar modules of an APV are raised on higher holding platforms that will allow farming, including the use of tractors, to be conveniently carried out around and under the solar modules (see figs. 1 and 2 below).

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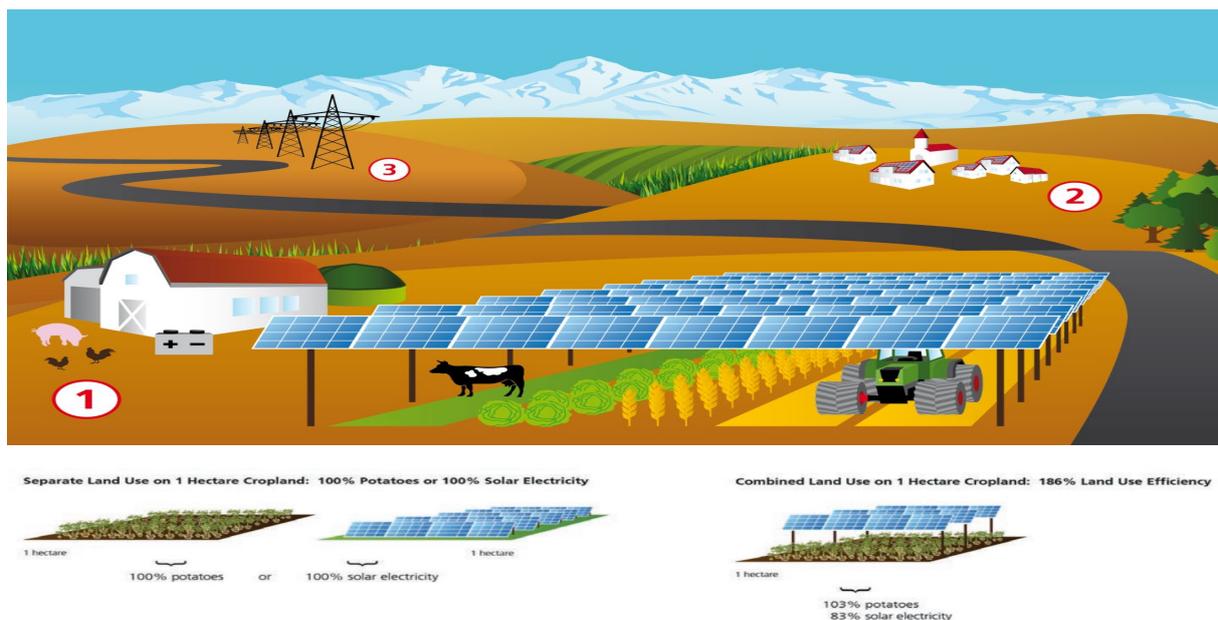
<sup>1</sup> Stephen Schindele et. al., "Implementation of agrophotovoltaics: Techno-economic analysis of the price-performance ratio and its policy implications", *Applied Energy* 265 (2020) 114737  
<[www.elsevier.com/locate/apenergy](http://www.elsevier.com/locate/apenergy).

6. In order to test-run the implementation of the APV technology on arable lands in Fiji, the plan is to implement this proposed project on Ovalau Island. This is a small remote island in Fiji with limited arable land and with most of the inhabitants dependent on subsistence farming and food imports from the main island for the vast number of agricultural products that cannot be produced in Ovalau. With Ovalau having limited land space suitable for agricultural production, it was considered a suitable candidate site for this project. It aims to fulfil the objective of the NDC – increased deployment of solar PV systems on arable land – while still facilitating the focus of the NAP, which is to utilize the arable land where the APV will be implemented for specific crops. It is expected that the successful implementation of this project in Ovalau will provide a sound pedestal for generating project performance metrics (characteristics) that will facilitate its replication in other parts of Fiji and other SIDS with similar characteristics. The pre-feasibility study carried out for this project showed that proper design for the APV on the Ovalau site will increase crop productivity, which can average about 17.8 per cent for crops such as taro, tomatoes, capsicum, lettuce; etc. It will also provide a climate-resilient environment for agriculture that does not exist in the baseline in Ovalau. In addition, it creates a situation where the albedo from the crop leaves under the solar PV will increase the PV generation by 7 per cent through the adoption of bi-facial PV modules for the APV.

**Figure 1: Examples of agrophotovoltaic systems**



**Figure 2: Concept of agrophotovoltaics (Source: Fraunhofer Institute for Solar Energy Systems)<sup>a</sup>**



<sup>a</sup> The lower diagram shows the relative use of land for farming for PV-GM and for APV, with APV allowing the same area of land to be used for both electricity generation and farming.

7. The proposed APV project has been conceptualized, designed and engineered to have the following two components:
- (a) Component 1: Strengthening the national and community capacities on low-carbon power generation and micro-grid stabilization (4 MWp APV and 5 megawatt-hour (MWh) battery energy storage system (BESS) to achieve 57.24 per cent renewable energy generation in Ovalau from the current 100 per cent fossil fuel generation (diesel) through an APV system, with the following outputs:
- (i) Output 1.1: Low-carbon generation:
- Activity 1.1.1: Finance the establishment of an integrated microgrid with a 4 MWp solar APV farm; and
- (ii) Output 1.2: Integrated microgrid system for energy security with a 5 MWh BESS:
- Activity 1.2.1: Finance the installation and connection of a 5MWh BESS to the APV plant for the microgrid system; and
- (b) Component 2: Technical Assistant – Strengthening adaptive capacity and reducing exposure to climate risks for women, men and at-risk communities to achieve the sustainability, scalability and replicability of the project since APV and BESS are not common technologies in the country:
- (i) Output 2.1: Increased management capacity in microgrid stabilization:
- Activity 2.1.1: Enhance microgrid integration capacity on a microgrid in a remote island area and provide training for reliable grid operation;
  - Activity 2.1.2: Provide classroom and field training on the maintenance of PV arrays and BESS for Energy Fiji Limited (EFL);
  - Activity 2.1.3: Provide classroom and field training on the maintenance of PV arrays and BESS for youth groups in affected communities; and
  - Activity 2.1.4: Assess various types of solar prediction software and integrate it into the EFL system for potential PV project evaluation;
- (ii) Output 2.2: Promotion of a climate-resilient APV project by establishing a specialized climate financing facility and regulatory scheme to build an enabling environment in terms of financial and policy aspects for any potential APV project in Fiji:
- Activity 2.2.1: Establish a specialized climate financing facility; and
  - Activity 2.2.2: Design and develop regulations and policies for climate financing; and
- (iii) Output 2.3: Awareness-raising on climate change threats and related appropriate responses using the APV system in the South Pacific region:
- Activity 2.3.1: Develop and disseminate mass/social media content to raise public awareness of climate change and promote APV;
  - Activity 2.3.2: Hold training workshops for policymakers on the APV system; and

- Activity 2.3.3: Hold workshops on climate change awareness and the promotion of APV systems for representatives of the local communities (provincial-level) in Fiji.

8. A project management unit (PMU) and a monitoring and evaluation system will be established. The PMU will be hosted by the Fiji Development Bank (FDB) and will become the climate and environmental finance unit of the department after the project ends.

9. Once these two components are implemented and the solar farm is constructed, the cultivation of carefully selected crops (taro, tomatoes, capsicum, lettuce, etc.) under the solar APV modules will be carried out to optimize the use of the arable land for both electricity generation and agriculture. The crop cultivation is not part of the component funded by this project.

10. The total cost of this project has been estimated to be USD 10 million and is expected to be contributed as follows:

(a) GCF: USD 5 million, made up of:

- (i) Senior loans: USD 3.9 million with a 15-year tenor and a concessional interest rate of 0.75 per cent per annum; and
- (ii) Grants: USD 1.1 million; and

(b) Co-financing: USD 5 million, made up of:

- (i) Senior loan: USD 1.0 million from FDB with a 15-year tenor and an annual interest rate of 8 per cent in FJD; and
- (ii) In-kind contribution: USD 4.0 million from the Korean International Cooperation Agency (KOICA).

11. Table 1 below provides information on which components and outputs the funds will be spent on.

**Table 1: Project Funding by Components and by Outputs**

Component	Output	Indicative cost (USD)	GCF financing		Co-financing			
			Amount (USD)	Financial instrument	Type	Amount (USD)	Financial instrument	Name of institutions
1. Strengthening the national and community capacity on the low-carbon generation and microgrid stabilization	1.1 Low-carbon generation	4,880,000	3,900,000	Senior Loan	Public	980,000	Senior loan	FDB
	1.2 Build microgrid system for energy security and reliability with 5MWh BESS	4,020,000	Enter amount	Choose an item.	Public	4,000,000	In-kind	KOICA
					Public	20,000 (to cover the installation and connection of the BESS)	Senior Loan	FDB
2. Technical Assistant – Strengthened adaptive capacity and reduced exposure to climate risks of women, men and at-risk communities	2.1 Increasing management capacity in microgrid stabilization	480,000	480,000	Grants				
	2.2 Promoting Climate-Resilient APV Project by Establishing	310,000	310,000	Grants	Choose an item.	Enter amount	Choose an item.	Click here to enter text.



	Specialized Climate Financing Facility and Regulatory Scheme							
	2.3. Promoting awareness of climate change threats and related appropriate responses with sustainable agriculture using APV system in South Pacific region	260,000	260,000	Grants	Choose an item.	Enter amount	Choose an item.	Click here to enter text.
PMC		50,000	50,000	Grants	Public Source			
<b>Indicative total cost (USD)</b>		10,000,000	5,000,000				5,000,000	

Acronyms: USD: United States Dollars, BESS: Battery Energy Storage System

### 1.1.2. Potential mitigation impacts and co-benefits

12. This is a mitigation intervention that is expected to deliver reduced GHG emissions through increased energy access and power generation. The GHG emission reductions will be delivered when the baseline 100 per cent use of diesel fuel to generate power is replaced by the generation assets of this project (APV + BESS) to the tune of displacing about 57 per cent of diesel fuel in the project scenario. A summary of the climate mitigation impacts that the project will deliver is presented below:

- (a) Clean electricity that will be delivered to the Ovalau grid: 5,724 MWh/year, which will displace slightly over 57 per cent of the baseline diesel fuel;
- (b) Total CO<sub>2</sub> emission reductions delivered: 4,579 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>eq)/year; and
- (c) Project lifetime GHG emission reductions (20 years): 91,580 tCO<sub>2</sub>eq.

13. The project proposal does not argue that that it will deliver adaptation impacts through increased resilience. However, given the major challenges being faced by the agricultural sector of Fiji (see page 6 of the funding proposal), especially from frequent natural disasters, which are expected to be exacerbated by climate change in future, the successful development of the APV system in Ovalau and eventually its replication in other regions of Fiji will contribute to the amelioration of these negative impacts on the agricultural sector while also enhancing livelihoods in the areas where these APV systems will be implemented. Thus, apart from delivering the mitigation impacts, the project should also strengthen adaptive capacities as a co-benefit.

14. The co-benefits of this proposed project, including the adaptive capacity strengthening, are summarized as follows:

- (a) First and foremost, arable lands where this APV system will be implemented will also be available for the agricultural production of carefully selected farm products. This effect can be strongly demonstrated when we refer to the land that has been identified for this project in Ovalau. Ovalau Island is a small remote island with limited arable land, and the few farmers practice subsistence agriculture, which is unable to meet food demand on the island. As such, in the pre-project scenario, the island's food demand is met by

imports from Suva, the main island of Fiji. As discussed in the funding proposal (see page 13), the only arable land available for farming is seven hectares of agricultural land that is privately owned. The owners tried rice farming on this land unsuccessfully in the past. According to feedback provided to the independent Technical Advisory Panel (TAP) during the review process, subsistence farming was once practised by the owner on this land. The failure of the past rice farming was associated with poor farming practice, which was exacerbated by the negative impacts of extreme climate events (heat, drought, wind, etc.). The APV system, when implemented, can provide the climate protection structure (shade, lower evapotranspiration, wind, etc.) that will ameliorate climate and other stresses that have prevented farming from thriving on the selected arable land for this project. While rice may not thrive on this land, the presence of APV will enable the growth of other new crops, which are presently being imported into Ovalau, constituting a very important co-benefit;

- (b) During the feedback component of the independent TAP review of this submission, it was also learned that KOICA, apart from providing in-kind funding for the BESS part of the micro-grid, will also contribute grants for a separate climate-resilient agriculture project that utilizes this APV system. This will work synergistically with an activity that will be part of this GCF funded project: capacity-building on climate-resilient farming to improve the farmers' skill and knowledge. This will eventually promote and catalyse the landowners' investment in the farming of agricultural products, such as taro, tomatoes, lettuce, capsicum, etc. (which are mostly imported into Ovalau) under the APV and adjacent lands. It can therefore be concluded that the successful implementation of the APV project as proposed in this submission will create an enabling environment for climate-resilient agriculture as a co-benefit to the delivery of GHG emission reduction benefits;
- (c) Although the APV system will be a new technology for electricity generation in Fiji, there are best practices from its successful implementation in other countries including France, Germany, Japan and Republic of Korea. In all of these countries, reports have shown that they improved land-use efficiency compared to the implementation of solar PV-GM systems, thereby boosting the income of rural communities. It is expected that the proposed project in Ovalau will deliver similar improved livelihoods for people living in and around the project area through improved income from farming and related activities; and
- (d) The various capacity-building activities built into the proposed project will also deliver co-benefits. Key among these will be:
  - (i) Building the capacity of relevant technical and management personnel at power utilities in Fiji on issues such as the APV technology, BESS and its role in stabilizing microgrids, and the operations and maintenance of the new system; and
  - (ii) Establishing relevant institutions to set policies and regulate the activities of APV-BESS-dominated microgrids through the grant-funded capacity-building activities of the proposed project, and raising awareness of climate change, APV technologies and their relevance to agricultural production. All of these will be co-benefits to the climate change mitigation benefits that are the focus of this project.

15. The independent TAP therefore concluded that the proposed project has sound climate change impact potential, while also delivering relevant co-benefits, some of which are described further in paragraph 14 above. The GHG emission reductions of the project, coupled with the fact that the project as proposed will provide an effective platform for the replication of this

project in wider locations in Fiji and hopefully in similar SIDS in the future, led the independent TAP to assess the project as having high impact potential.

## 1.2 Paradigm shift potential

*Scale: N/A*

### 1.2.1 Comprehensiveness

16. A key paradigm shift expected to be delivered by this project is from an electricity supply matrix dominated by fossil fuels to a greener one through the effective penetration of renewable electricity generation. The project to be implemented in Ovalau to prove the concept is expected to displace more than 57 per cent of the diesel fuel used to generate the electricity that is distributed by the microgrid in Ovalau with electricity from the proposed APV-BESS system. The successful implementation of this project in Ovalau will not only prove the concept; it will also deliver a paradigm shift.

17. There was a conflict in the baseline between a cardinal objective of Fiji's NDC (which was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) as a national policy), which calls for ramping up the implementation of renewable energy systems as a source of electricity supply to the existing grid. A collaborative study carried by the Government of Fiji in collaboration with the Global Green Growth Institute<sup>2</sup> showed that the best candidate for realizing this NDC objective was solar PV, and given the commercial market evolution, the most cost-effective option was pencilled in as a solar PV-GM system. This NDC objective would enable the Government of Fiji to achieve its mitigation policy objective, which is the country's national contribution to global climate change action. Solar PV-GM technology, which would require the exclusive use of a parcel of land for electricity generation, would have been pursued to satisfy this objective. The implementation of solar PV-GM would mean that agriculture could not be practiced on such solar PV farms. Another baseline reality in Fiji is the scarcity of arable land, which has started to result in lower agricultural productivity. Industrial as well as residential areas have taken up available lands that could be used as arable land. Climate change and variability, according to many country studies, also contribute to the scarcity of arable lands. This baseline situation caused the Government of Fiji to come up with a NAP (also submitted as a national policy to the UNFCCC) with a cardinal objective of reserving available arable lands for agriculture. Thus, in the baseline, these two national policies (NDC and NAP) conflicted as the use of scarce arable lands in the country cannot be optimized to meet one of the policies without contravening the objective of the other. The implementation of the proposed project using the novel solar APV technology, which is just emerging in a few developed countries and emerging economies, will deliver a paradigm shift. The paradigm shift will be created as the policy conflict between the NAP and the NDC in the baseline will be remedied by a policy alignment, as both goals will be met. The identified arable land in Ovalau where this project will be implemented will deliver green electricity from solar APV technology and also allow for the use of the identified arable land for relevant agriculture production.

### 1.2.2 Innovation

18. In 2018, according to the information made available in the funding proposal, only about 0.26 per cent of the electricity production mix in Fiji was from renewable energy sources (wind and solar PV). Ovalau, the island where this first-of-its-kind project will be implemented, has an existing mini-grid that has an electricity generation component that relies 100 per cent on fossil fuels. Thus, it can be safely concluded that solar PV technology, whether ground-mounted or APV, is not common in Fiji. The APV technology proposed for this project is very new to the

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<sup>2</sup> Republic of Fiji and Global Green Growth Institute (2017), Pre-feasibility Study for 100% Renewable Electricity Generation on Ovalau and Taveuni Islands in Fiji.

country. Therefore, the successful implementation of this project in Ovalau, as currently proposed and when successfully implemented, will be an innovative intervention in Fiji. The recognition of the newness of the technology in Fiji is the driving force behind the emphasis on the various capacity-building components of the proposed project. These components are expected to focus on training local engineers and planners on:

- (a) The planning of such systems;
- (b) The engineering design of such systems (covering solar APV-BESS systems); and
- (c) Agricultural practices under the APV system.

19. In-kind contributions from KOICA for the BESS and other grant funding for capacity-building on relevant farming techniques and extension services will ensure the successful delivery of clean electricity and robust farming on the same arable land and thus create a very innovative paradigm shift in Fiji. The replication of the project concept, which would be based on the successful implementation of the Ovalau project intervention (serving as the proof of concept), will improve project quality (solar APV-BESS along with agricultural production) in other parts of Fiji and beyond. This will further expand the paradigm shift capacity of the project.

20. It can therefore be concluded that innovation (as far as Fiji and the South Pacific Region are concerned) will not be lacking if this proposed project is successfully implemented. The project is a well-structured, innovative approach to addressing conflict between the implementation of solar PV to generate clean electricity and agricultural production in a place where there is scarcity of arable land.

### **1.2.3 Enabling environment/sustainability of outcomes**

21. FDB, the AE for this project, will also be responsible for providing co-financing for part of the systems that will be implemented at the Ovalau site. Capacities of relevant FDB staff members will be built through some component 2 activities. Some of these activities will be focused on developing their capabilities to understand the solar APV-BESS facilities. These staff members will be part of the new PMU that will be based within the FDB, and they will eventually become the pioneer staff members of the department for climate financing within the post-project FDB. Although information obtained from the GCF Secretariat review of this project mentioned the weakness of the project financing capacity of FDB, there is comfort that this weakness will be ameliorated by the proposed capacity-building activities included in some of the project components. The independent TAP is therefore of the opinion that this proposed project will create an enabling environment for the sustainable planning and implementation of this project and its replication candidates.

22. It was noted that the utility-scale APV-BESS that will be implemented by the proposed project in Ovalau will be a first-of-its-kind in Fiji and also in the South Pacific region. Therefore, in the baseline situation, there are only a few indigenous engineers and technicians who have gained experience from operating and maintaining a few existing micro-scale, off-grid PV installations in Fiji. Yet the experience garnered by these professionals is inadequate for handling the various types of expertise needed for the new solar APV-BESS system to be implemented in Ovalau. Therefore, it is comforting that many of these professionals who currently work at EFL will be among the stakeholders whose training is intended to bridge the existing capacity gap. Specifically, the relevant components of the capacity-building measures, which will target EFL engineers/technicians and potential engineers/technicians, will include training on:

- (a) Systems planning, covering solar APV-BESS;
- (b) The design of such systems;

- (c) The construction and commissioning of such systems;
- (d) The management of the process of implementing such systems; and
- (e) The operations and maintenance of the solar APV-BESS.

23. This will empower the EFL engineers to increase awareness of the APV-BESS project, which will have a positive impact on the development of more solar projects in Fiji. Other relevant agencies whose capacity will be built by activities of the proposed project will include Ovalau Agrosolar (OAS), which will receive a loan from FDB for the implementation of the proposed 4 MWp solar APV in Ovalau. The capacity of OAS will be built for the successful implementation of the solar APV project in Ovalau and its replication in other parts of Fiji. In addition, many of the activities under component 2 of the proposed project will be targeted at relevant public sector actors, whose capacity will be built on policy and regulatory frameworks, as they affect the development and scaling up of solar APV-BESS in Fiji and beyond.

#### **1.2.4 Replicability and scalability/knowledge and learning**

24. The proposed project will be implemented in Ovalau Island, which has a functional microgrid with a 100 per cent diesel fuel electricity generation system. Ovalau is characterized by the scarcity of arable land, with the only available land already earmarked for agricultural production. Thus, the successful implementation of the proposed project will deliver a proof of concept, whose resultant performance metrics will be very important to the replicability and scalability of the project in other parts of Fiji and even to other SIDS in the South Pacific region. Lessons learned and knowledge/experience gained from this project can also be replicated in other countries with similar baseline characteristics as Fiji, as described in this evaluation report.

25. The proposed project will deliver a clear sharing of knowledge for local stakeholders in Fiji: government parastatals (policymakers), technical workers (engineers and technicians in electricity generation and distribution) and direct beneficiaries (representatives of the local communities at provincial level). According to the information included in the reviewed funding proposal, the knowledge-sharing and learning for local communities will include workshops, which will be composed of presentations, discussions and the APV site field trip to raise awareness of climate change, the APV-BESS system and the financing facility for the replication of the project in other provinces in Fiji. Experiences and knowledge generated from the Ovalau project on creating an enabling environment, which will be shared throughout the workshops, will form a necessary body of knowledge to contribute to the successful replication and/or upscaling of inputs of this project in other parts of Fiji and other similar SIDS in the South Pacific Region. The AE (FDB) should also be encouraged by the Secretariat to ensure that the experiences from this proposed project are documented and shared locally and internationally, at least in the region, to enhance the replication of the project in other countries.

26. Section D4 of the funding proposal presented an elaborate monitoring, reporting and evaluation (MRE) system that will be followed throughout the duration of the project. The MRE system description covered the production of reports of annual performance review processes, the interim and mid-term reviews (to be undertaken not more than three years after an effective project take-off) and the final evaluation (to be undertaken not more than three months before closure). This elaborate project review is very well conceptualized and structured to ensure the effective review of the progress and performance of the project. However, the entire description of this review process did not explicitly mention the monitoring and reporting of the climate change mitigation impact to be delivered by this project. A review of the pre-feasibility study (Annex 13 of the submission by the accredited entity (AE)) provided the details of the monitoring data that will be assessed (see page 79 of Annex 13). Although not explicitly stated, it is expected that data that can be used for monitoring and reporting GHG

emission reductions will be generated in each year of project operation. This is necessary information that must be archived and reported to the GCF Secretariat, as it is an important metric for supporting its financial intervention in mitigation projects. The independent TAP will recommend that the GCF Secretariat ensure that the reporting of these monitoring results are explicitly included in the annual performance reports.

27. The independent TAP concludes that given the metrics discussed above, when the proposed project is successfully implemented, it will deliver a paradigm shift. Such metrics discussed above include: the comprehensiveness to deliver a paradigm shift; innovative characteristics, given the greenfield nature of the APV technology in that country and region; the ability of the activities planned for the project to produce an enabling environment and deliver sustainable outcomes; and the replicability, scalability and knowledge-sharing potential of the proposed intervention. Given the fact that the proposed project components will cover activities that will ensure the successful implementation of the project, the independent TAP concludes that this project, as proposed, scores very high on its ability to deliver a paradigm shift. In the financial closure agreement, the GCF Secretariat should include the need to have the following in the annual performance report that will be submitted to the GCF Secretariat:

- (a) A report on lessons learned by stakeholders during project implementation. These lessons learned should be publicized nationally and internationally in order to serve as a testament to the replicability of this “proof of concept” in other parts of Fiji and beyond; and
- (b) A GHG emission reduction monitoring report that will cover the relevant parameters (e.g. diesel consumption, etc.); the quality assurance and control of the monitored parameters; and the method and assumptions used in calculating the GHG emission reductions delivered by the project in a given year.

### 1.3 Sustainable development potential

*Scale: N/A*

#### 1.3.1 Environmental co-benefits

28. It has been estimated that about 2,411,828 litres of diesel fuel for electricity generation in the microgrid of Ovalau will be eliminated by the proposed project over its lifetime. This will not only fulfil the mitigation metrics of this proposed intervention – over 91,000 tCO<sub>2</sub>eq of GHG emissions reductions – but also other environmental co-benefits from the reduced combustion of diesel fuels such as reduced emissions of noxious gases; reduced emissions of particulates; reduced noise pollution; and reduced black carbon emissions. All of these co-benefits will contribute to the improvement of the health and safety of direct beneficiaries who are living in Ovalau and also contribute to the preservation of the historical site, the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage site located close to the site of the power plant.

#### 1.3.2 Economic and social co-benefits

29. The first economic benefit of this proposed project will come from the reduced need to import diesel fuel for electricity production to generate electricity for the Ovalau microgrid. The implementation of the solar APV-BESS project will displace diesel fuel, which would have been imported. This will result in a savings of the scarce foreign exchange needed to import this fuel into Fiji. It has been estimated that about USD 0.70 million per year will be saved by this displacement of slightly over 57 per cent of the diesel that would have been used in the absence of this project. This will translate to about USD 14 million during the lifetime of the project. This will have a positive impact on the balance of payment of the country.

30. In the baseline, the microgrid in Ovalau, with its 100 per cent diesel-fuelled electricity generation, is characterized by power shortages. In similar systems in developing economies, such shortages are usually caused by issues such as inadequate availability of imported fuel; vintage of generation and distribution assets; and forced maintenance. The situation with the Ovalau microgrid is not different and results in economic losses for customers who are connected to the unreliable system. With the implementation of the solar APV-BESS system – the electricity storage system – will confer on the microgrid system, a stability status that will ensure a reduced power shortages and hence minimize the economic losses of customers connected to the microgrid. This is another co-benefit to be delivered by the proposed project.

31. There will also be economic co-benefits delivered after the solar APV-BESS project is implemented, as the project will enhance the livelihoods of the farmers who will have the rights to farm on the arable land where the power system will be implemented. Such farmers, who will plant crops that can thrive well under the APV system, will be able to earn increased income compared to the baseline. The farming system that will be enhanced as a result of this solar APV-BESS system will also create indirect livelihoods for people living near the micro-grid, who will have access to many jobs associated with the farmland.

32. Social co-benefits that will be delivered by the proposed project will include:

- (a) Better lighting, which will result in better living conditions due to increased access to electricity;
- (b) Better access to electricity, which will also deliver educational co-benefits associated with students having light to study and do their homework; and
- (c) Better health delivery services (better and durable cold storage of drugs and medical equipment).

33. Our review of the relevant project documents showed that through the capacity-building component of the proposed project, job opportunities for which the training will include the management of the microgrid system and of the Solar APV-BESS system. It is stated that the training will also cover highly technical skills and given that the invitation to participate in these capacity building activities will be extended to women, signifies a high gender inclusion. To ensure this actually happens, the Ministry of Women, Social Welfare and Poverty Alleviation has been engaged to develop stakeholder engagement for women. This will deliver very cogent gender inclusion as an important social co-benefit of the project.

### **1.3.3 Gender**

34. Gender inclusion in the planning and implementation of this project was carefully considered, as demonstrated by two carefully prepared project documents:

- (a) Gender assessment for the Fiji Agrophotovoltaic Project in Ovalau (see Annex 4a); and
- (b) Gender action plan for the Fiji Agrophotovoltaic Project in Ovalau (see Annex 4b).

35. A review of these two documents showed that not only was the role that gender can play in the sustainable development of the proposed project carefully analysed, an implementable plan for gender mainstreaming was put in place. The gender action plan listed specific intended changes in different spheres of project delivery and management to achieve better gender equality that will enhance gender awareness of both men and women at different levels of decision-making (at government, PMU and community level) and support the required capacity-building (technical, management, etc.) at all levels for gender mainstreaming. Key aspects of project delivery that will enhance gender mainstreaming listed in the document include:

- (a) Women's participation in all types of project-incurred employment and training opportunities;

- (b) Better and more frequent political representation and decision-making by women at local governance and community level;
- (c) Assurance that project benefits and compensation are evenly shared between women and men, especially by the vulnerable women in the community; and
- (d) Project design, planning, implementation and operation processes that are systematically gender-mainstreamed.

36. As discussed in this section 1.3, the project will not only deliver significant social, economic, environmental and gender-sensitive development co-benefits, it will thereby also contribute to six Sustainable Development Goals (SDGs) as adopted by Fiji as follows:

- (a) SDG 4: Quality Education;
- (b) SDG 5: Gender Equality;
- (c) SDG 7: Affordable and Clean Energy;
- (d) SDG 8: Decent Work and Economic Growth;
- (e) SDG 9: Industry, Innovation and Infrastructure; and
- (f) SDG 13: Climate Action.

37. Given the strong gender inclusion and mainstreaming, the 'good' score, with regard to the environmental, economic/social co-benefits and the fact that the intervention is aligned with the country's SDGs 4, 5, 7, 8, 9 and 13, convinced the independent TAP to conclude that this intervention has high sustainable development potential..

## 1.4 Needs of the recipient

*Scale: N/A*

### 1.4.1. Economic and social needs and climate vulnerability

38. A key economic need of the Government of Fiji is to reduce its import budget so that the available funds can go towards other sectors in dire need of funding. In the baseline scenario, the country's high bill for importing diesel for electricity and the transportation and other sectors has a very negative impact on economic growth. This proposed programme will go a long way to help Fiji reduce its foreign exchange bill for the import diesel fuel that would have been needed if this project were not implemented. The implementation of this project as proposed would lead to a reduction of about 57 per cent in diesel fuel that would be needed to generate electricity each year compared to the baseline year consumption, in which 100 per cent of the electricity came from diesel-fired generators. Given the need of the Government of Fiji to reduce its diesel import bill, the successful implementation of the proposed project would respond to an important need of the country.

39. Funds saved from diesel imports can be channelled to social needs that, in the absence of this project, will continue to lack sufficient funding if they must compete for scarce public funds for the provision of electricity. It can be argued that the implementation of the project will release the funds needed to fulfil social needs.

40. According to the Germanwatch Global Climate Change Risk Index, Fiji is the tenth most exposed country to natural hazards in the world, and as such is considered to be very vulnerable to climate change, which is generally understood to exacerbate these hazards. In response to this level of climate change risk on the country's economy, the Government of Fiji has committed to contributing its own quota to the international climate agreements managed by the UNFCCC. To this end, the Government of Fiji recently submitted its national aspiration for mitigation interventions within its geographical boundary through its NDC to the UNFCCC. The

NDC places its mitigation actions into the following categories : those that the Government of Fiji will utilize domestic funds (public and private finance) to implement; those that will require partial support from international funding sources; and those that will require 100 per cent foreign funding support to implement. A key action in the NDC that will require international collaboration in order to fund it is the substitution of the current high amount of carbon fuels in its electricity generation for its grid by renewable energy, especially solar PV, which has been evaluated by an international/Government of Fiji collaborative study as the best renewable energy candidate to be deployed in the country. This plan will require a large land area, which is a key barrier in a land-constrained country. The country also submitted another aspiration document to the UNFCCC that detailed the country's plan to increase the resilience of its economic sectors to the negative impacts of climate change. A key objective of this document (the NAP) is the preservation of scarce arable lands in Fiji for agricultural activities. Given the scarcity of land in general in Fiji, achieving the core objective of the NDC will mean not achieving that of NAP, and vice versa, due to the conflict in the objectives. The implementation of the solar APV-BESS system as proposed in this project will enable the country to meet the two needs as the system will allow for the development of a renewable energy facility on the same land where agricultural production will occur.

#### **1.4.2. Financial needs**

41. A key barrier that has prevented the development of renewable energy facilities on the grids in Fiji from proceeding as quickly as intended by the country planners has been the inability to source the financing needed. Through the concessional funding from GCF, the proposed project will help to mobilize funding from FDB, a government-owned development bank, and in-kind funding from KOICA (dedicated to funding the very important BESS component of the project). By so doing, the project intervention will meet the financial needs for the “proof of concept” project that will be sited in Ovalau, which has been designed to displace over 57 per cent of the diesel consumption of the Ovalau microgrid. It is expected that the project itself will build capacities in FDB, which should emerge from the successful implementation of this facility as a local financial institution with competency to lead in the financial origination of such renewable energy projects that can be replicated in other parts of Fiji and in the region later. This will further satisfy the financial needs for such projects in the country and beyond.

#### **1.4.3. Institutional needs**

42. The capacity-building component of this project is hinged around activities that will be covered in component 2 of the project. Specifically, the project will build the capacities of selected professionals from:

- (a) FDB so it can finance such projects in the future;
- (b) OAS, which will receive the loan from FDB for the implementation of the proposed 4 MWp solar APV in Ovalau. Staff capacity will be built and strengthened for the successful implementation of the solar APV project in Ovalau and its replication in other parts of Fiji;
- (c) EFL, which currently runs the baseline microgrid in Ovalau and will buy electricity under a PPA from OAS. Staff capacity will be built on operating and maintaining solar APV-BESS electricity generation assets connected to such grids;
- (d) Public sector actors such as the Ministry of Economy (MOE) and Ministry of Infrastructure and Transport (MOIT), etc., whose capacities will be built on policy and regulatory frameworks, as they affect the development and upscaling of solar APV-BESS in Fiji and beyond; and

(e) The Ministry of Women, Social Welfare and Poverty Alleviation so it can plan gender inclusion in such projects in the future.

43. The independent TAP believes that many of the institutional needs of Fiji relating to planning the development of solar APV-BESS facilities and their connection to micro and other grids in Fiji will be adequately addressed by this proposed intervention.

44. The independent TAP therefore concluded that the various needs of this project and the requirements needed to replicate this project in other areas of Fiji have been adequately included in the project planning. Proper reporting of project achievements in the various areas of activity will enable experiences and lessons learned to be available when the project is to be replicated in Fiji and beyond.

## 1.5 Country ownership

*Scale: N/A*

### 1.5.1. Alignment with climate change policies

45. The climate change policies of Fiji are well articulated in two key documents: its NDC and NAP. The proposed project is aligned with the key objectives of both national climate change policies, which can be summarized as follows:

(a) NDC: the clearly stated roadmap in this national document aims to increase renewable energy generation capacity in the country from 40 per cent (2014) to 100 per cent by 2035. The intention is to reduce GHG emissions from electricity generation and reduce the import bill for diesel, which is the main fuel for electricity generation and currently accounts for 14–17 per cent of GDP. Most of the renewable energy capacity increase is expected from solar PV, with a target installed capacity of 127 MWp. The NDC roadmap states that Ovalau island, where the project site resides, is one of the priority areas for 100 per cent renewable energy conversion, as the island currently depends on 100 per cent diesel generation with the power station located in the first capital of Fiji, Levuka, which is a UNESCO heritage site; and

(b) NAP: Fiji is exposed to natural hazards, including intense drought and high temperatures, which pose threats to agricultural production and incomes. While climate change is expected to significantly impact Fijian agriculture in the future, the scarcity of land has been exacerbated by the fact that available land has been used in the development of residential areas and industry, including tourism, with minimal arable land left for agricultural production. Climate change and land-use changes as a result of the expansion of industrial and residential areas are likely to continue to exert stress on the availability of arable land in Fiji. Decreasing arable land has therefore been stifling crop production and investment in agriculture. Therefore, the major objectives of Fiji's adaptation plan as described in the country's NAP can be summarized as follows: In order to combat poor nutrition, natural disasters and agricultural stagnation, Fiji will need to preserve arable land, invest in climate-resilient agriculture and promote native crops, as well as foster inclusive economic development that would allow its population to afford to eat healthy food. Given the scarcity of arable lands in most parts of the country, a key objective of the country's NAP is to preserve available arable land exclusively for agricultural activities. Given the scarcity of land in Fiji in general, the key objectives of the NDC are in conflict with the objective of NAP, since the development of solar PV-GM will preclude agricultural activities on the land used for such infrastructure.

46. The adoption of the solar APV-BESS generation asset to supply electricity to the microgrid of Ovalau, which is currently supplied electricity from a 100 per cent diesel-fuelled system, will enable the activities to be aligned with the climate change policies of Fiji as presented in the NDC and NAP. The adoption of the solar APV-BESS infrastructure will enable

Fiji to invest in climate-resilient agriculture and promote native crops on the same arable land where the solar APV-BESS infrastructure will be located. Thus, the project will deliver outputs that are in alignment with the key climate change policies of Fiji.

#### 1.5.2. Implementation capacity: accredited entity

47. FDB will serve as the AE and one of the executing entities (EEs) of this project. FDB is the development bank of Fiji and has a strong track record in financing development investments in areas including renewable energy, agriculture and infrastructure. The proposed project will complement the readiness programme, which was approved in December 2019, as one of the activities aimed at strengthening the capacity of this AE to deliver GCF projects.

48. In addition to the capacity-building carried out for FDB as part of its previous activities and the GCF Readiness and Preparatory Support Programme and that which will be developed during the implementation of the proposed project, FDB is also expected to benefit from the experience of KOICA, the in-kind contribution provider of this project which, through interactions as part of this proposed project, will be able to share its knowledge on grant implementation with this AE.

49. The PMU, whose establishment and capacity-building will be funded under this proposed project, and its status as a department within FDB at the conclusion of this project will allow FDB to build its capacity to oversee the overall implementation of the programme, including monitoring, reporting and evaluation, and to become an effective carbon finance department of FDB in later years.

#### 1.5.3. Implementation capacity: executing entity

50. Apart from FDB, who will serve as the EE for the component 1 of this project, the EE for component 2 will be the Government of Fiji, which will be ably represented by MOE and MOIT. According to information obtained from the GCF Secretariat, FDB will be carrying out a full capacity assessment of these EEs and submitting the assessment report to the GCF, as per the requirements of the accreditation master agreement, prior to the execution of the funded activity agreement with the GCF. This will identify areas where these Government of Fiji agencies will need capacity strengthening to be able to perform the EE roles effectively. FDB will therefore be in a position to ensure that these government agencies are equipped with sufficient technical support to perform their roles effectively. Furthermore, it is expected that the capacity-building activities of component 2 will enhance the capabilities of selected professionals from these entities during the project lifetime.

51. According to the proposal submitted, the independent TAP understands that consultations have taken place with relevant stakeholders in the designing of activities that will be carried out under each component of the project. Furthermore, as a follow-up to the consultations, a programme steering committee (PSC), which will include relevant government entities (including the EEs), civil society, project developers, private sector and financial institutions as its members, will be established to oversee the implementation of the project. The information disclosure system for this project was created on the website of the AE to enhance communications with the stakeholders. The no-objection letter from Fiji was received for this programme.

#### 1.5.4. Ownership

52. The following are key country ownership metrics for this proposed project:

- (a) All important stakeholders are in-country – FDB (the direct access entity (DAE) and one of the EEs for this project) will be responsible for component 1, while the Government of

Fiji is ably represented by MOIT. MOE will be responsible for component 2 of the project;

- (b) The AE is a DAE that was established by the Government of Fiji. FDB has a strong track record in financing development investments, including renewable energy, agriculture and infrastructure. It will have the lead decision-making responsibility for this project;
- (c) This project will establish a PMU consisting of local professionals;
- (d) The interventions, which are at the centre of this project concept, draw their driving objectives from the need to satisfy the core objectives of two specific climate change policies of Fiji, namely the NAP and the NDC;
- (e) Extensive consultation carried out with key country stakeholders during the planning and design of this project also lend strong credence to the country ownership of this project; and
- (f) A PSC, which will include relevant government entities, civil society, project developers, private sector and financial institutions as its members, will be established to oversee the implementation of the programme. This will strengthen the country ownership characteristics of this project.

53. Most of the interventions and project management, monitoring and reporting will be carried out by national actors, with the only exception being the in-kind funding of the BESS, which is contributed by KOICA. FDB is therefore expected to benefit from the experience of KOICA and its knowledge on grant implementation, which further strengthens the ability of FDB to lead the country ownership structure of the project.

#### **1.5.5. Stakeholder consultations**

54. As stated earlier, relevant stakeholders beyond the government entities who will serve as EEs were consulted during the design and planning of this project. Many of these stakeholders will also be members of the PSC, further strengthening the ability of project stakeholders to implement the project.

55. A specific focus of this project is gender mainstreaming. For this to happen robustly, the project planners have engaged the participation of another key stakeholder, the the Ministry of Women, Social Welfare and Poverty Alleviation, to develop and strengthen the capacity for planning gender inclusion in this project and other such projects in Fiji in the future. This is another level of activity that has strengthened the stakeholders consultation process for this project.

56. The independent TAP concludes that the country ownership of this proposed project is high.

## **1.6 Efficiency and effectiveness**

*Scale: N/A*

### **1.6.1. Financial structure**

57. The total funding for this project of USD 10 million is expected to be provided by GCF, FDB (co-financing) and KOICA (in-kind contribution). The in-kind contribution from KOICA will be utilized for the BESS part of the project and to build the capacities of FDB on BESS. The breakdown of the funding contribution by source, type of fund and total that will be provided for the project are presented in table 2.

**Table 2: Project funding details**

	Source	Type of fund	Amount (USD million)
1.	Green Climate Fund	Loan	3.90
		Grant	1.10
2.	Fiji Development Bank	Loan	1.00
		Grant	0.00
3.	Korean International Cooperation Agency	In-kind	4.00
TOTAL			10.00

58. GCF is requested to provide 50 per cent of the total funding of the project, with 78 per cent of the GCF contribution as a senior loan at a concessional interest rate of 0.75 per cent per annum and a tenor of 15 years. The balance of 22 per cent of the GCF contribution will be provided as grant funding. The need for grant funding from GCF can be justified by the fact that the funding is expected to support the building and, in some cases, the strengthening the capacities of the country stakeholders who will implement several activities of the project. As the capacity-building activities that will be funded by the grant are not revenue-generating activities, the request for partial grant funding from GCF is justified according to TAP.

#### 1.6.2. Co-financing/leveraging

59. The co-financing from FDB, which will have an interest rate of 8 per cent per annum and a tenor of 15 years, will be partly blended (98 per cent) with the GCF senior loan to fund the implementation of the low-carbon power generation asset. The remaining 2 per cent of the senior loan from FDB will be blended with the entire in-kind funding contribution from KOICA to support the connection of the BESS, while the full design and acquisition of the BESS will be funded by the KOICA in-kind contribution. The BESS is an important component that will ensure the sustainability of project in that it will provide the technical wherewithal to provide stability to the grid in spite of the fluctuations usually experienced with solar radiation. Although the energy that will be stored in the BESS will come from a combination of the solar resources as well as from the remaining fraction of diesel generation that has not been displaced (in this project in Ovalau, only slightly above 57 per cent of baseline diesel generation will be displaced), BESS will contribute to the GHG emission reductions that will be delivered by the project system.

60. The successful implementation of this project will benefit all customers who are connected to the baseline microgrid in Ovalau and new customers who will be added to the microgrid each year of the project lifetime.

#### 1.6.3. Financial viability/best practices

61. The financial viability of the project beyond GCF support has been designed around the proper capacity-building needed in-country for different aspects of project planning and implementation. These capacities will include:

- (a) FDB/PMU: the ability to finance, plan and implement such projects, which will be developed among the professionals who will form the core of the PMU for the project.

The continuity of their work is expected to be enhanced when the PMU transitions into the Climate Finance Department of the FDB at the close of this GCF support. It is expected that these professionals will learn the best practices in project financing during the implementation of the system in Ovalau;

- (b) OAS: Will be funded through a loan from the blended financing to implement the solar APV system in close collaboration with and supervised by the PMU. It will also sign an operations and maintenance contract with EFL (the operator of the baseline microgrid in Ovalau) for the operation and maintenance of the solar APV-BESS system. The capacity of OAS professionals to design, build and implement the solar APV system will also be part of the capacity-building programme for this proposed project. The training that professionals from OAS will receive during the component 2 of this project will include the incorporation of international best practices in all aspects of their work;
- (c) EFL: Which is in charge of the existing Ovalau microgrid will, under the operations and maintenance contract with OAS, operate and maintain the entire solar APV-BESS system that will inject clean electricity to the microgrid and dispatch it to connected consumers. Again, the technical team from EFL will work with the FDB/PMU to deliver these activities. They will also work with FDB/PMU and KOICA in all aspects of BESS development and deployment, using international best practices. Staff of EFL will also have their capacity built through learning by doing as well as training during the capacity building of component 2.

62. The interconnected structure of work described above, the capacity-building activities that will be carried out as part of this proposed project and the fact that in all the activities, international best practices will be invoked, will ensure that the financial viability of the project as demonstrated in the financial and economic analysis carried out on the project (see Annexes 10a and 10b) submitted with the funding proposal is achieved.

63. Based on the discussions presented above, the independent TAP concludes that the efficiency and effectiveness of this proposed solar APV-BESS project that will be connected to the microgrid in Ovalau is high.

## II. Overall remarks from the independent Technical Advisory Panel

64. The independent TAP recommends that the GCF Secretariat include in the funded activity agreement with the AE the requirement:

- (a) For the AE to report to the GCF in the annual performance reports (APRs) on the lessons learned by the key stakeholders who will be involved in and/or carry out all project activities, in order to ensure that the lessons learned can be applied during any subsequent replication of the project in Ovalau, in other parts of Fiji and outside of Fiji; and
- (b) For the AE to report annually to the GCF on the GHG emission reductions achieved during the project's lifetime. This emission reduction reporting should cover:
  - (i) Project parameters monitored by name, value and confidence interval;
  - (ii) Emission reduction calculation methodologies utilized;
  - (iii) The procedure used to develop the database; and
  - (iv) The quality assurance/quality control methods used in preparing and reporting the data and the emission reduction calculations.

65. The independent TAP would like to recommend that the GCF Board approve this funding proposal.

## Reply to the Independent Technical Advisory Panel assessment findings (SAP016)

Proposal name: Fiji Agrophotovoltaic Project in Ovalau  
 Accredited entity: Fiji Development Bank (FDB)

<b>Impact potential</b>
We concur with independent TAP's assessment.
<b>Paradigm shift potential</b>
We concur with independent TAP's assessment.
<b>Sustainable development potential</b>
We concur with independent TAP's assessment.
<b>Needs of the recipient</b>
We concur with independent TAP's assessment.
<b>Country ownership</b>
We concur with independent TAP's assessment.
<b>Efficiency and effectiveness</b>
We concur with independent TAP's assessment.
<b><i>Overall remarks from the independent Technical Advisory Panel:</i></b>
We concur with independent TAP's assessment.

# Simplified Approval Process

## Annex 4a: Gender Assessment

**“Fiji Agrophotovoltaic Project in Ovalau”**



GREEN  
CLIMATE  
FUND

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## Abbreviations

AE	Accredited Entity
BCDC	Bureta Community Development Committee
CAAF	Civil Aviation Authority of Fiji
CBOs	Community-Based Organizations
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CSW	Commission on the Status of Women
EES	Executing Entities
FDB	Fiji Development Bank
GAP	Gender Action Plan
GDP	Gross Domestic Product
ILO	International Labor Organization
NGO	Non-Governmental Organization
NGP	National Gender Policy
PPA	Pacific Platform for Action
PLGED	Pacific Leaders Gender Equality Declaration
PV	Photovoltaic
SAMOA	SIDS Accelerated Modalities of Action
SDGs	Sustainable Development Goals
SGBV	Sexual Gender-Based Violence
SIDS	The small Island Developing States
SPC	Secretariat of the Pacific Community
UN	United Nations
UNCRC	UN Convention on the Rights of the Child
WB	World Bank

## I. Introduction

The Republic of Fiji is one of Pacific Island states, consisting of over 300 islands, of which 106 have permanent residents. The total population recorded 884,887 in 2018 and the sex ratio stood at 1.03 male(s) to one female<sup>1</sup>. When viewed from the age perspective, the young people aged 24 years and under account for almost half of the total population<sup>2</sup>, and it showed that more boys lived in the rural area and more girls living in urban areas, implying that young women move to urban areas earlier than young men.

This assessment aims to provide an overview of the gender situation in Fiji, identifying gender issues and necessary interventions in relation to the proposed Agrophotovoltaic Project in Ovalua, Fiji<sup>3</sup>. As the nature of this project providing co-benefit to the climate-resilient agriculture project separately funded by KOICA, this assessment includes not only the mitigation activity aspect but also the agricultural aspects. For the assessment, relevant data and reports available from the Fiji government and international reports from such organizations as World Bank were studied. An interview with the local women's group representative was carried out as well. The research mainly covered Fiji, the country of this project implementation at large, but, where necessary, zoomed into the local scale of the island of Ovalau, where the project is to be implemented, to be able to understand the circumstances specific to the local area.

This document investigated into existing gender inequality in Fiji in various socio-economic areas including employment, poverty, education and health as well as political and cultural dimension such as women's participation in politics, government as well as in traditional decision-making bodies with communities and families. In addition, special attention was made to Fijian women's vulnerability to violence and climate change and natural disasters. International, regional and national committees and institutional setup by the Fiji government, was also examined together with a preliminary analysis of the local governance in Ovalau Island, with qualitative analysis of its capacity and strengths. In the last section, the report summarises the key findings on Fiji women's conditions in terms of gender equality. In view of these, the report predicts the possible positive and negative impacts of the proposed project in terms of gender equality and empowerment.

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<sup>1</sup> Fiji Bureau of Statistics (2018) Population and Housing Census 2017

<sup>2</sup> CIA World FactBook: <https://www.cia.gov/library/publications/the-world-factbook/geos/fj.html>

<sup>3</sup> The proposed programme for this gender assessment includes both the PV installation and operation component which is proposed for GCF's financing and the agricultural development component which is to be separately financed by KOICA.

In a nutshell, the report finds that due to the nature of the components of the project, the proposed project is unlikely to exacerbate the gender (in)equality and vulnerability of women or girl children (or men or boy children either.) Benefits of clean renewable energy will benefit both men and women in the entire Island. The proposed project has a potential to enhance gender equality and capacitate girls and women to fully enjoy the benefits of the project: This requires the following key interventions: 1) well-designed benefit-sharing arrangements (e.g. quota-based female employment and skill training with concrete target percentages for PV system installation and associated construction as well as farming) and 2) gender mainstreaming measures (e.g. ensuring the equal participation of women in community consultation, decision-making platforms at all levels).

As Fiji is a diverse country where many differences in economic, social, and geographic aspects are intertwined, it is difficult to generalize the status of the female population relative to male and to assess gender inequality in the country. The limited availability of sex-disaggregated data and gender statistics was another barrier to carrying out gender analysis, especially at the household and community levels. This report provides an initial study on this matter and the project proponent is encouraged to continue to explore more specific local context along with the preparation and implementation of the project through continued consultation and engagement of the local stakeholders, particularly local women themselves. It is desirable to deploy a gender specialist, in-house or externally hired, to ensure overall gender-responsive measures are well implemented along with the project implementation as planned through monitoring and capacity building of the local stakeholders.

## **II. Policy, Legal and Institutional Context**

The Fijian government seeks to promote women's right and gender equality by pursuing different government acts and initiatives, and by approving or ratifying international conventions.

### **1. International Commitments**

The Fijian government has approved or ratified following international conventions and treaties in relation to women's rights and gender equality:

- UN Convention on the Elimination of All Forms of Discrimination Against Women (Ratification 1995): CEDAW address gender equality and non-discrimination in areas such as education, employment, marriage, health, finance and decision making. The Fiji Ministry of Women is responsible for the

implementation and reporting (the latest reporting being in 2016) of the progress of the Convention. The National Gender Policy is the key mechanism for the implementation of CEDAW.

- UN Convention on the Rights of the Child (Ratified, 1993): UNCRC recognizes civil, political, economic, social, health, cultural and human rights of any child under the ages of 18, including girls. The convention seeks to intervene with different gender issues including early marriage and sexual abuse against underage.
- ILO Equal Remuneration Convention (Ratification, 2002): The convention tackles inequality in wage or payment at work between men and women for the same value of work they do.
- UN Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children (Accession, 2017):
- ILO Discrimination in Employment and Occupation Convention (No.111) (Ratification, 2002)
- UN Underground Work (Women) Convention (Ratification, 1974): The Convention seeks to protect women from working underground or in the mining industry.
- UN Convention on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages (Succession, 1971): The Fijian government defined the minimum age for marriage as 18 in Marriage Act 1968 based on its commitment to protecting the underage from early marriage.

In relation to climate change and environmental protection, Fiji also ratified the following two UN environmental conventions. There are relevant to rural women in Fiji, in particular:

- UN Convention on Biodiversity (ratified 1993): This multilateral treaty seeks to conserve biodiversity, ensures sustainable use of its components, and share the benefits from bioresources fairly and equitably.
- UN Framework Convention on Climate Change (ratified 1993)

Furthermore, the leaders of the Pacific region also committed a collective initiative for gender equality by endorsing:

- SIDS Accelerated Modalities of Action (SAMOA) Pathway (2014): The SAMOA puts

forth the sustainable development pathways and aspirations in areas including Climate Change, sustainable energy.

UN SDGs (2015): The 2030 Agenda for Sustainable Development presents a shared blueprint around 17 goals tackling climate change and many other issues from poverty to peace. In particular, SGD Five - achieve gender equality and empower all girls and women - particularly provide a framework for policy development that are particularly critical to rural women and girls in Fiji.

The Fiji Government regularly attends the annual sessions of the Commission on the Status of Women (CSW). The commission's agreements provide recommendations to support progress in the implementation of the Beijing Platform for Action, the SDGs and overall human rights of women and girls. The 62nd session of the CSW was on the empowerment of rural women and girls. The session's conclusion included supporting the roles of women and girls in a rural area in improving the livelihoods. These are relevant to Fijian women and girls in the rural area<sup>4</sup>.

## **2. Commitment to Regional Arrangement**

Fiji is also participating in different regional initiatives on gender equality. These form the regional leadership in identifying and setting gender priorities to aid Pacific countries to develop their gender policies. Such initiatives can be enumerated as below.

- Pacific Platform for Action for the Advancement of Women and Gender Equality (PPA) (1994, 2004, 2017): As the first regional charter on gender equality established in 1994, PPA has been renewed in 2004 and 2015 respectively, the latter event leading to the change of its name to "the Pacific Platform for Action on Gender Equality and Women's Human Rights 2018-2030."
- Triennial Conference of Pacific Women and Meeting of Ministers for Women: Gender leaders from different walks of society such as government, NGOs, academia, etc. from the Pacific region gather for a discussion on progress, challenges, and recommendations for days ahead.
- The Pacific Leaders Gender Equality Declaration (PLGED): Endorsed in 2012, the declaration defines its action areas as 1) gender-responsive policies and programmes; 2) leadership and decision making; 3) women's economic empowerment; 4) ending violence against women; 5) health and education.

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<sup>4</sup> Country Gender Assessment of Agriculture and the Rural Sector in Fiji (FAO, 2019)

### 3. National Commitments & Capacity

The Constitution of Fiji (2013) stipulates all Fijian people's rights to equality and freedom from discrimination on the grounds of "*his or her actual or supposed characteristics or circumstances, including race, culture, ethnic or social origin, colour, place of origin, sex, gender, sexual orientation, gender identity and expression, birth, primary language, economic or social or health status, disability, age, religion, conscience, marital status or pregnancy*"<sup>5</sup>

Women's rights and gender equality are incorporated in domestic laws such as Married Women's Property Act (1891), Widows and Orphans Pensions Act (1914), Family Law Act (2003), and Employment Relations Act (2007). With these national commitments, the Fijian government has been striving to encourage women to live free from physical and structural violence, as well as to participate various forms of economic activities and decision-making processes in the society.

The overall strategy of mainstreaming gender equality and empowerment into every aspect of Fiji's development and governance is found in the Fiji government's strategic vision document, "5-Year and 20-Year National Development Plan: Transforming Fiji". The document explicitly recognizes women's rights to participate in all levels of decision making and the economy and to live from violence. The five performance indicators include the percentage of women's participation in the politics and governance (e.g. % of female MPs in the parliament and % of female government employees) and in the economy (e.g. % of women in paid employment)<sup>6</sup>.

Putting the country's goal of gender equality into practice is founded in the National Gender Policy (NGP), adopted in 2014. The main objective of NGP is to develop plans and strategies in a gender-sensitive way and carry out gender impact assessments in relation to the utilization of natural resources. NGP is administered by the Fiji Ministry of Women, constituting a key platform for the country's implementation of CEDAW and other gender-related treaties and commitments.

NGP has several recommendations for gender mainstreaming and women's empowerment

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<sup>5</sup> Article 26 of the Constitution of Fiji (2013)

<sup>6</sup> Country Gender Assessment of Agriculture and the Rural Sector in Fiji (FAO, 2019)

relevant to the proposed project. To list<sup>7</sup>:

- Ensure through enactment and revision of the existent laws equal employment, promotion, remuneration opportunities of men and women in the public and private sectors
- Promote gender equality at all worksites, mandating gender awareness in the provision of adequate occupational health and safety, sanitary facilities, flexible working hours, and increased access to quality child care facilities
- Promote gender balance in power and decision-making positions at all levels and sectors, including governmental bodies, the judiciary, trade unions, the private sector, political parties, employer's organizations and national corporations. In the rural sector, ensure women's participation in decision-making at all levels, including issues of land rentals, applications for financing from banks and financial institutions, and the distribution of rental and lease monies under the Land Use Decree 2011
- Utilize gender impact assessments, gender analysis and gender-aware approaches in assessing environmental issues
- Ensure that women in communities are consulted in any energy projects, and recognizing the roles and need of women in rural communities for energy access including renewable energy sources

There is room for improvements: In a stock take exercise conducted by the Secretariat of the Pacific (SPC) in 2014, weaknesses were identified in a technical capacity to do gender analysis, especially after the gender integration responsibility has been delegated from central planning to individual ministries. In addition, budget allocation for gender mainstreaming and short-staffing and weak capacity of the Ministry of Women, Children and Poverty Alleviation was also identified as room for improvement<sup>8</sup>. Related to the latter, the Department of Women within the Ministry, is mandated to support other ministries through coordination with 1) gender focal points in sector ministries and 2) networks of rural women's organizations. There is no government-wide chain of accountability for the gender equality objectives of the National Development Plan, reportedly generating a lack of clarity and confusions in ultimate responsibility of undertaking fulfilment of the gender-related

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<sup>7</sup> For full text of the NGP, see: <https://www.fiji.gov.fj/getattachment/db294b55-f2ca-4d44-bc81-f832e73cab6c/NATIONAL-GENDER-POLICY-AWARENESS.aspx>

<sup>8</sup> Country Gender Assessment of Agriculture and the Rural Sector in Fiji (FAO, 2019)

objectives and mandates. 2014 SPC stock take exercise highlighted the need for better coordination across ministries.

#### **4. Governance and Capacity at Local Level: Ovalau Island**

Ovalau Island is part of Eastern Division of Fiji. Major local government entities include Lomaiviti Provincial Government, Eastern Division Office, Levuka Town Council (under Department of Town & County Planning) and Ovalau District Office. As the affected community, Vanua of Bureta is 100% indigenous Fijian (i-Taukei) population. I'taukei Affairs Board (Roko Tui Ovalua) is another important stakeholder together with the Civil Aviation Authority of Fiji (CAAF) (due to the proximity of the proposed PV system to the Bureta airstrip. I'Taukei Affairs Board (and Office) is a government body for indigenous Fijian people, whose aims include promotion and protection of the indigenous cultures and traditions in the respective locality of the according to jurisdictions.

Available data and literature on gender issue at the sub-national level are scanty. It is not clear whether any designated officer(s) exist in the local government office level to promote gender equality. However, it is noteworthy that the Secretary of the I'taukei Affairs Board (Roko Tui Ovalua) is also the head of an NGO promoting gender equality.

The assessment below is largely dependent upon our preliminary findings through consultation meetings and interview with the local stakeholders:

##### **Governance at Vanua level**

Vanua of Bureta, the affected community by the proposed project, is represented by the Bureta Community Development Committee (BCDC). BCDC is composed of representatives of four villages (Naiviteitei, Nasaga, Tai, Navuola) with a common vision of " Sustainable Holistic Prosperity for the Vanua of Bureta." The Committee has 25 Commissioners including 1 chairperson (Donato Koyanasau) 1 Secretary (Ms Serena Qoro) and 1 Treasury. The Commissioners are village heads as well as representatives of women's groups and youth groups.

As of 2020, there are 5 female Commissioners (20%) who represent women's interests and voices in the localities. The secretary of the Committee, Ms Serena Qoro, is also the President of Lomaiviti Women's Group (LWG). LWG is a registered NGO in Fiji, part of i-Taukei Office. (Bureta is one of the 12 districts in Lomaiviti Province.)

The most local administrative level of governance is *mataqali*, a unit of land ownership in

most of the areas in the country. *Mataqali* is closely related (by marriage and kinship etc.) group of families over generations with distinctive characteristics of its own. In the context of the proposed project, BCDC is reported to be composed of the head of the 17 *mataqali*. The committee's decision making should engage all the representative *mataqalis*, although they are represented by three Trustees. *Mataqali* is traditionally patriarchal system.

Fiji has a unique traditional community-level decision-making and conflict resolution mechanism called "Talanoa"<sup>9</sup>. BCDC, as a unique modernization/evolution of the traditional "Talanoa" system, includes women members. Talanoa is based on the principle of fairness and openness and participation. Open, inclusive and facilitative nature of Talanoa tradition in Fiji has been officially adopted by the UNFCCC in COP 22 and officially practised as an effective consultation platform since COP 23 globally<sup>10</sup>. A series of interviews with Ms Qoro, BCDC Secretary cum a President of the local women's group, was conducted on 5 October 2019, 19 December 2019 and 22 January 2020<sup>11</sup> respectively<sup>12</sup>. According to her, although women are minority groups in social aspects in Fiji, BCDC holds a special position as it is well-represented by women. Gender equality in the community level is also better in this region. In Ovalau, the local government is in good condition as the communities are well represented formally. Regular meetings are held and the committee's operation is active.

It is noteworthy that the Vanua of Bureta proactively embraced inclusiveness to Talanoa by ensuring women's participation. As a result, the climate change-related consultation via the "Talanoa Dialogue" was enabled more female representation in this community. Talanoa in the Vanua of Bureta is open to women and everybody is free to attend and voice out their opinions for the community's decision-making.

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<sup>9</sup> "[...] indigenous people in Fiji most often settle their decision-making is known by the term "talanoa". This is where the whole village or elders come together and talk over issues in a traditional manner where the chiefly herald acts as chairman of the discussion. After listening to all angles of the story from all the elders, the herald then advises the chief that those were ideas from the floor of discussion. The chief will then give his final say, but this is done only after everyone has voiced their different opinions. This exercise is carried out only in the traditional villages - not in towns and cities. [...] This procedure is still practiced at the present time." (Robinson, David; Robinson, Kayt, "Pacific ways" of talk Hui and talanoa", NZ Trade Consortium working paper no 36 July 2005). For full text, see: <https://www.econstor.eu/bitstream/10419/66100/1/494642475.pdf>

<sup>10</sup> <https://www.dw.com/en/talanoa-dialogue-giving-everyone-a-voice-in-the-climate-conversation/a-42479711>

<sup>11</sup> The latest meeting in January 2020 was a telephone interview.

<sup>12</sup>For more details of the consultation meetings with the communities and other local stakeholders, pls see Annex 1 of this report.

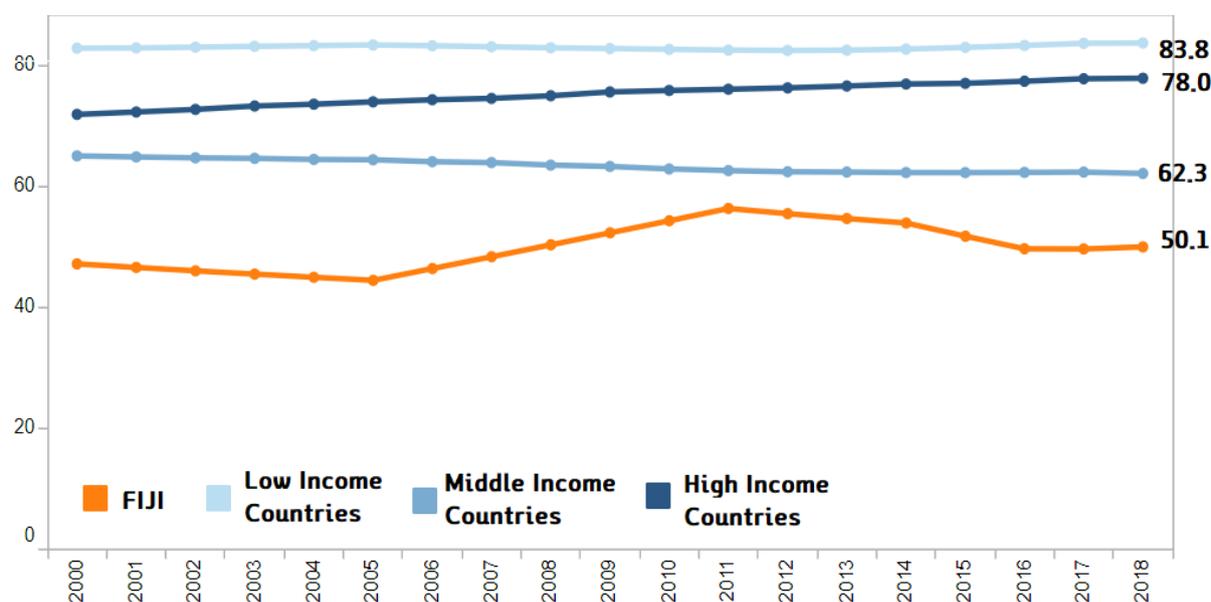
### III. Conditions of Women in Fiji

Despite multiple commitments by the Fiji Government and locally-based communities to gender equality, the gender gap in Fiji still exists across many sectors, most notably, in the economic sector. The gender bias in part is rooted in traditional norms, customs and culture, with men often preferentially being the decision-makers.

Current gender status and female engagement in the Fijian society in a variety of areas for engagements are summarised below:

#### 1. Economic Opportunities and Employment (Formal)

Gender inequality in relation to labour participation, particularly in the formal economy, is apparent: As for the ratio of female to male labour force participation rate, Fijian women were only 50% active in employment compared to men. Being an upper mid-income country group (by WB groups), Fiji's performance in female participation in the formal economy is way below the average of the Middle-income country group: Marking only 50% compared with the mid-income country group average: 83%.

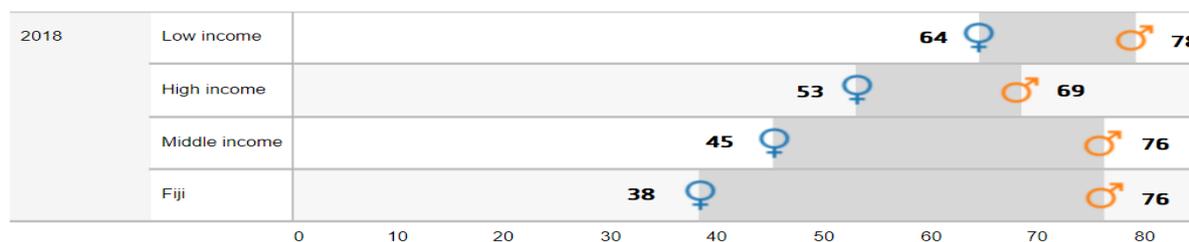


Source: World Bank Gender Portal

Figure 1. The ratio of female to male labour force participation rate (%)

Statistics show a lower level of female labour force participation than male across income strata. One noteworthy exception is the higher participation of female workers in the low-income class. This is deemed that low-income households are less likely to make their living

only with an income of breadwinners (who are mostly considered as men), thus are more likely to be depending on additional economic activities by women, compared with other income classes, indicating the likelihood of both husband and wife in the family being employed for income generation.



Source: World Bank Gender Portal

Figure 2. Labour force participation rate in Fiji by sex (% of population ages 15+)

Agriculture is a traditional basis of the economy in Fiji and one of the major employing industry for both men and women. Employment rates of men and women in agriculture are similar, marking about 30 per cent. Gender division in types of work is still apparent: The jobs given to women are more continuous and time-intensive while jobs taken by men are more physical. Women usually did garden maintenance, harvesting, processing and marketing and men did the garden clearing, burning, root crop maintaining, machine ploughing, and cane cutting, brushing or harvesting.

Service is the biggest business sector, which accounted for approximately 71 per cent of Fiji's GDP<sup>13</sup>. Tourism is the most contributing industry within the service sector (about 38% of the GDP), whereas the portion of agriculture was only 11 per cent. The manufacturing sector, however, hired over 10% in 2018<sup>14</sup>. By gender, more men were involved in manufacturing, such as beverages, wood, and garments, while the employment of female labour appeared higher in the service sector.

The gap between genders tended to decrease in terms of wage in opposition to the overall labour force participation rate, although the rate of male workers was still 10% higher. As for unemployment, the rate of women was 5.3 per cent, which was a bit higher than that of male workers.<sup>15</sup> Table 1. Featured indicators in relation to economy and employment

Indicators	2000	2018
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<sup>13</sup> World Bank (2017) Republic of Fiji: Systematic Country Diagnostic

<sup>14</sup> Country Gender Assessment of Agriculture and the Rural Sector in Fiji (FAO, 2019)

<sup>15</sup> World Bank Group (2019) The little data book on gender

	Female	Male	Female	Male
Labor force participation rate (% of population ages 15+)	37	78	38	76
Employment in agriculture (% of employed ages 15+)	44.2	46.5	38.7	39.8
Employment in manufacturing (% of employed ages 15+)	12.6	15.4	8.2	15.5
Employment in service (% of employed ages 15+)	43.2	38.1	53.2	44.7
Wage and salaried workers (% of employed ages 15+)	60	60.4	50.4	58
Unemployment rate (% of labor force ages 15+)	5.4	3.5	5.3	3.6
Contributing family workers (% of employed ages 15+)	18.7	11.3	30.1	14.5

Source: World Bank Group (2019) *The little data book on gender*

It is noteworthy that the official figures for unemployment is regarding the formal economy only. Formal employment category in Fiji includes production of goods and services for subsistence and small-scale trading by the household. However, household work typically done by women, such as childcare, elderly care, cloth washing and meal preparation and other household tasks are not measured and included. In general, women's economic activities in Fiji are skewed towards informal, and subsistence farming and small scale handicraft and manufacturing rather than formal and large scale business activities.

Gender-disaggregate data on GDP and average income level by gender is not available.

## 2. Poverty

It is reported that a third of the Fijian population lived in under the national poverty line in 2008/2009 and the disproportionately higher rate of poverty resides in the rural area, estimated up to 43 per cent vis-a-vis 19 per cent in the urban area. It is reported that the impacts of climate change through the incidence of natural disasters and changes in rural economies are likely to have exacerbated the poverty gap between the rural and rural areas<sup>16</sup>.

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<sup>16</sup> Country Gender Assessment of Agriculture and the Rural Sector in Fiji (FAO, 2019)

Domestically, women are engaged in many household tasks such as water securement, sanitation, cooking, caregiving, cleaning etc. No gender-segregated data is available for poverty, but some facts point to the likelihood of women to be poorer than men: 1) that women comprise a majority of the Family Assistance Scheme and 2) that women tend to be discriminated in the labour market, as described in the section A. This tendency seems more evident in the rural region where one in every four people work in agriculture, fisheries and forestry is a woman. The level of pay also differs by gender and women in rural areas make about 25% less than what men do. Given the wage gap between urban and rural areas standing at 44.5 per cent, it can be inferred that rural women are critically vulnerable to poverty<sup>17</sup>.

### **3. Women's Participation in Informal Economy & Asset Ownership, Access to Finance**

Women's economic participation is skewed to informal economy and their roles in the formal economy is relatively low nationwide. In 2008, it was reported that only 19% of registered businesses were in women's name. Employment and Unemployment Survey (EUS) between 2010-2011 also indicates 27% of self-employment in both formal and informal sector are accounted for by women. Women's participation as business owner in formal sector is very limited: Around 800 women compared with 4,300 men were reported to be self-employed in formal sector.

Constitution of Fiji and other related laws ensure equal rights to the asset ownership for both men and women in Fiji. However in reality, deeply-rooted culture of regarding women's roles as that of household workers and children/elder caretakers is reported to continue to generate "*de facto discrimination against women [...] Examples cited include refusal to honor contract and salary agreements with women [...]*"<sup>18</sup>. Thus, Barriers to business development in Fiji "*affect both men's and women's potential businesses, but women can be further disadvantaged by gendered power relations, the structure of traditional leadership hierarchies, and men's control of economic resources and decision making.*"<sup>19</sup>

To be more specific the Government of Fiji has listed up the potential challenges for women to have an equal access to the micro and small-scale business development as follows:

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<sup>17</sup> Country Gender Assessment of Agriculture and the Rural Sector in Fiji (FAO, 2019)

<sup>18</sup> Fiji Country Gender Assessment 2015 (ADB)

<sup>19</sup> Fiji Country Gender Assessment 2015 (ADB)

**Table 5.5 Gender-Related Constraints to Economic Empowerment**

General Constraints	Potential Gender Differences in Impacts of Constraints
Shortage of financial services suitable for micro, small, and medium-sized enterprises (MSMEs)	Shortage of services creates high competition and long wait time for service. Women may have less time and mobility and may miss out on opportunities to learn about how to use services. Some financial services are 'women only' and men may lack access to community-based options.
Shortage of support services for businesses	Women generally lack work experience due to years spent raising children and may need more coaching than men to enter business. Shortage of services that offer mentoring and coaching can reduce success.
Poor financial management skills of MSME operators	Women operate smaller and more intermittent income generation and business initiatives than men. Women may lack time to access training. Women may not envision long-term business success and undervalue skill development.
Lack of statistics on MSME sector	Lack of data makes it difficult to target initiatives to the different needs of women and men.

*Source: Government of Fiji. 2010. Roadmap for Democracy and Sustainable Socio-Economic Development, 2010-2014. Suva.*

(Source: ADB Fiji Country Gender Assessment 2015)

Another report<sup>20</sup> indicates that women in Fiji generally lack business knowledge and skills, especially in the area of marketing at the micro business level, such as "how to access market demand, how to negotiate for better prices, or how to find out where the best markets area. Challenges as such are higher for women in rural due to lack of communication and transport infrastructure.

The main income-generating activity for women in the community near the project site is found to be handcrafting made with leaves. Some usually sell virgin coconut oil while others are engaged in agriculture and fishing.

<sup>20</sup> Mennonite Economic Development Associates of Canada for the Government of Australia. 2015. Feasibility Study on Women's Economic Empowerment in Fiji. Melbourne. Referreed from: 2015 Fiji Country Gender Assessment (ADB)



Figure 3. Handcrafting with leaves

Regardless of the legal setup in ground reality, *"Women perform the vast majority of unpaid reproductive and domestic work and are primarily responsible for the care for children, the ill and the elderly. Fijian male heirs generally inherit traditional titles and ensuing responsibilities, with women only inheriting title if there are no male survivors"*<sup>21</sup>. When it comes to estate economy, the institutional system for land and marine ownership is complex and respect customary ownership for 85% of land base by indigenous (i-Taukei) groups called *Mataqali*<sup>22</sup>. Reach of women's voices varies depending on the community locations, the influence of social norm, or education levels and political connections. Especially in rural areas, men often the voice for the families, and the culture puts the communal and collective benefits before individualistic benefits. The general tendency in Fiji to put heavier household work burdens on women is also found in Vanua of Bureta and the community would not be an exemption from the nationwide tendency of women focusing on informal sectors. However, given the relative openness of Vanua of Bureta community inviting women's participation to the community-level political decision-making process and strong community-based decision-making culture, relatively more active female participation could take place in the agricultural and other types of formal employments.

In addition, considering the relative inclusiveness and higher representation of women members in the BDCD, a community-level decision-making body in relation to the

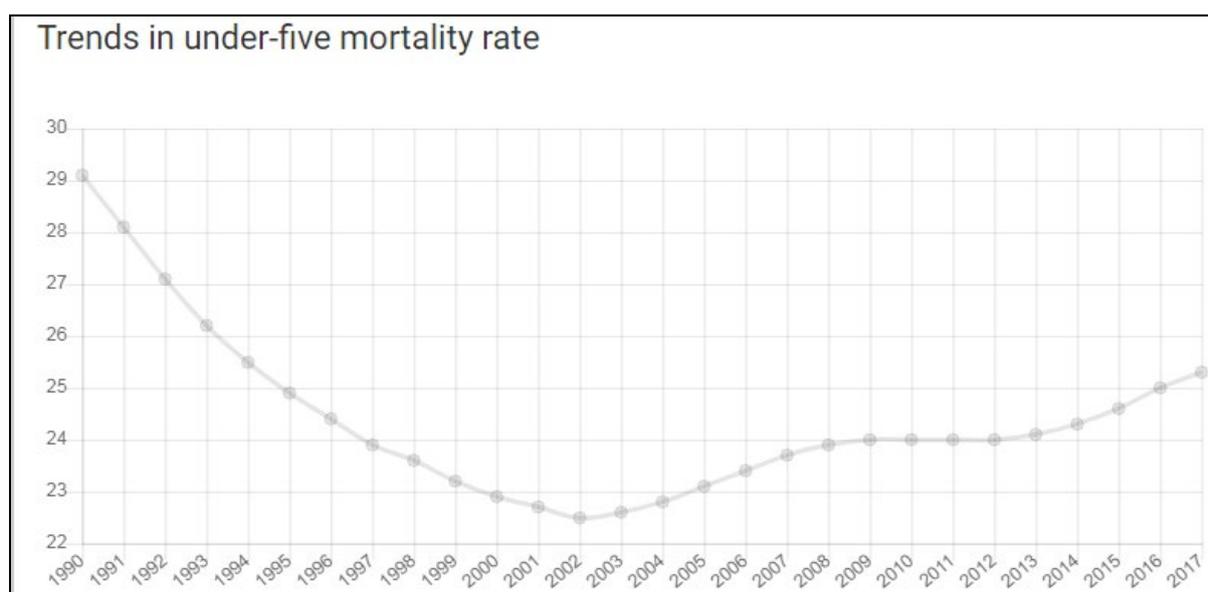
<sup>21</sup> Fiji Development Bank and Green Climate Fund GESI Policy and Action Plan 2018-2021

<sup>22</sup> Country Gender Assessment of Agriculture and the Rural Sector in Fiji (FAO, 2019)

implementation of the proposed project, it is possible that women's access to the economic and other benefit sharing opportunities from the proposed project may not be too severe. The project proponent is strongly recommended to ensure equal access to the project's benefits to both men and women.

#### 4. Health Status of Women

Sex ratio at birth in Fiji was 1.06 in 2017, and it had remained the same as the figure in 2000. Female births were slightly more frequent than the newborn male babies, which seemed following the laws of nature. Infant mortality (in relation to children under 5) was recorded as 25.3 per 1,000 live births in 2018, 23 for female and 28 for male, respectively. What is noteworthy is that the trend of infant mortality rate is on the rise since the early 2000s. This is concerning and further studies are required to identify the causing factors.



(Source: UNICEF, Dec 2018/ <https://data.unicef.org/country/fji/>)

Infant mortality rates of both genders somewhat increased since 2000, and male infants' mortality rate was a little bit higher. A longer lifespan was expected in 2017 for both female and male, compared to 2000, and women on average lived 6 more years.

Table 2. Featured indicators in relation to health

Indicators	2000		2017	
	Female	Male	Female	Male

Sex ratio at birth (male births per female births)	1.06	-	1.06	-
Under-five mortality rate (per 1,000 live births)	21	25	23	28
Life expectancy at birth	70	65	74	68
Prevalence of smoking (% of adults)	16	54	10	35

Source: World Bank Group (2019) *The little data book on gender*

For maternal health, maternal mortality was recorded at 34 per 100,000 live births in 2017. Given that Fiji belongs to the upper-middle-income country group, maternal health condition of this country can be considered exceptional. It is much closer to the average of high-income countries and is far better than that of other middle-income countries.

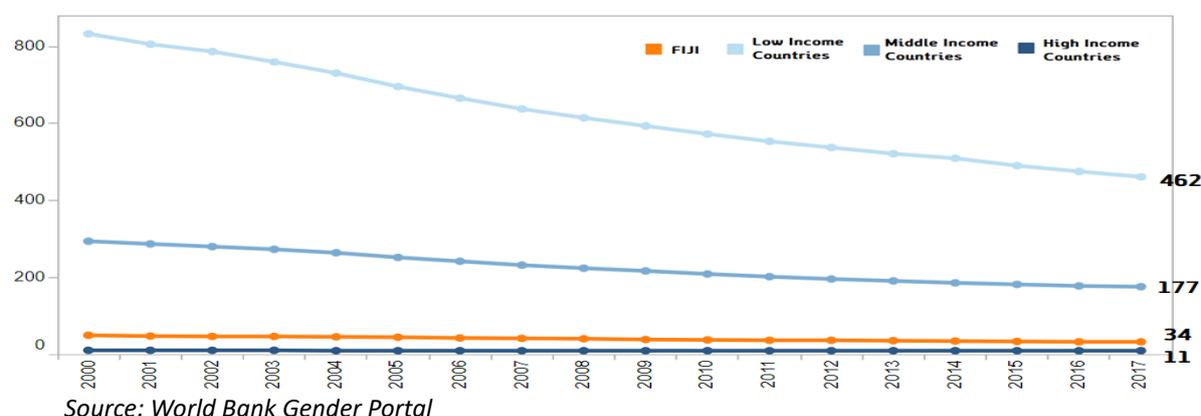


Figure 4. Maternal mortality ratio (per 100,000 live births)

What is notable is the adolescent pregnancy, to which bring special attention as other health figures of Fiji appear good. Adolescent fertility rate (births per 1,000 women ages 15-19) in Fiji was 49.4 in 2017, higher than the average of middle-income countries, 37.7. The main culprit of such phenomenon can be deemed as a shortage of sexual and reproductive health education, especially in rural regions where health services and contraception are limited for young women. Pregnancy during adolescence can critically affect girls' lives in negative ways: not only by being exposed to health risk or social stigma against teenaged single mothers, but also a deprivation of educational opportunities because girls tend to stop attending school once they have babies.

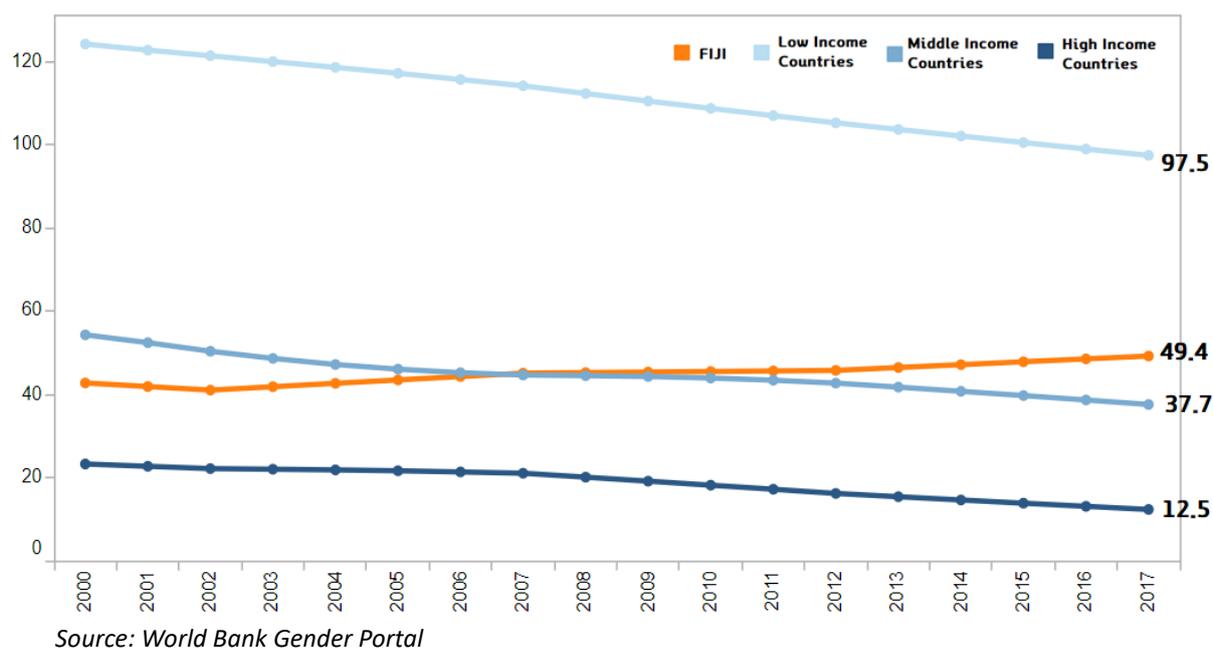


Figure 5. Adolescent fertility rate (births per 1,000 women ages 15-19)

## 5. Women's Education

Gender inequality was not severe in education as the gender ratio for almost all education-related indicators between girls and boys in Fiji is close to 1:1, and the literacy rates also stood almost at 100% for both men and women.<sup>23</sup>

Overall, the conditions for Fijian education improved in 2017 compared to 2000. The net primary enrollment rate is 98% for female students and 97% for male. Completion rate of primary school is 103 for both genders, and most of them continue and register for secondary education.

Table 3. Featured indicators in relation to education

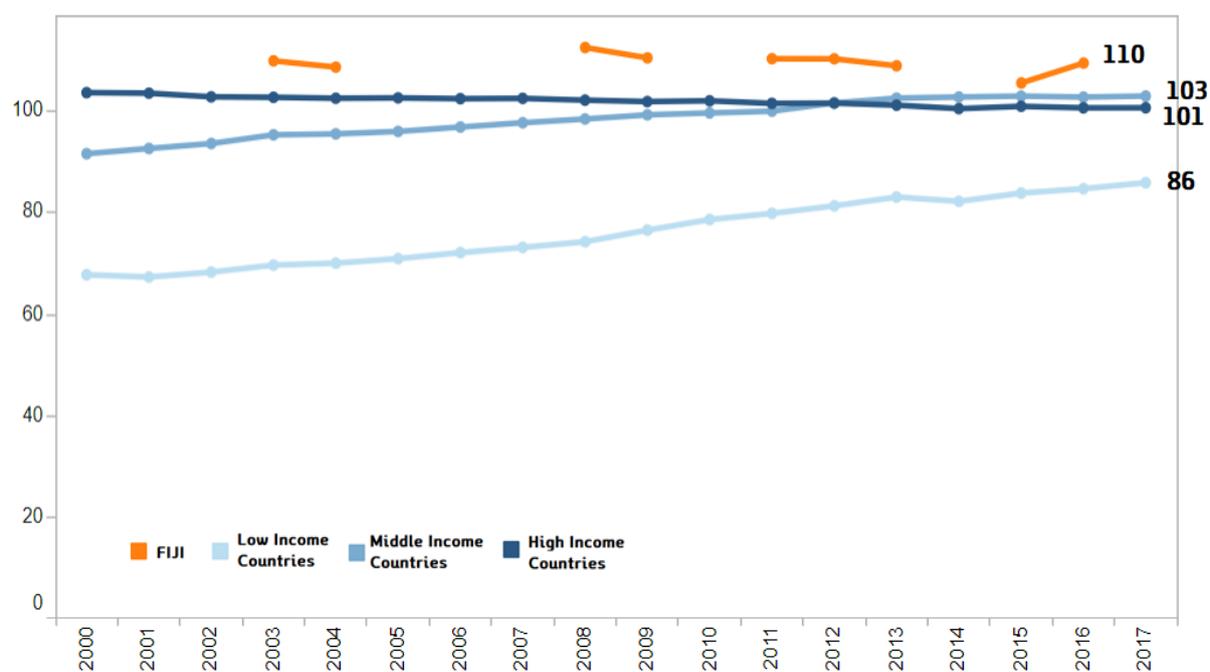
Indicators	2000		2017	
	Female	Male	Female	Male
Net primary enrollment rate (%)	93	93	98	97
Primary completion rate (% of relevant age group)	94	96	103	103

<sup>23</sup> World Bank, World Development Indicator: Gender, <http://datatopics.worldbank.org/world-development-indicators/themes/people.html>

Progression to secondary school (%)	97	100	98	98
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Source: World Bank Group (2019) *The little data book on gender*

Although secondary completion rate is lower, more girls successfully finished their courses than boys. The ratio of female students to male was 100 in 2016, higher than the average of both middle-income countries and high-income countries.

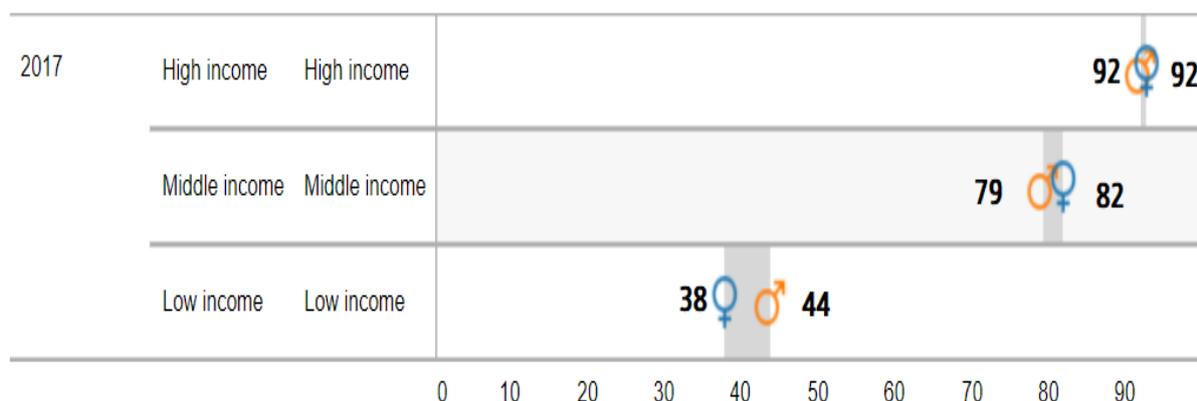


Source: World Bank Gender Portal

Figure 6. The ratio of female to male lower secondary completion rate (%)

One point to note is the difference in completion rate between income groups. In the case of the high-income group, 90 per cent of both female and male, completed lower secondary education. About 80 per cent of students from the middle-income group graduated from lower secondary school. The low-income class, however, showed a significantly lower level of completion rate for both genders, and the gender gap was widening for this group (44% of boys and 38% of girls).

This difference in completion rate by income group reveals that the income level is a more influential factor than gender for educational opportunities. However, this does not mean that there is no gender inequality in Fiji education. Gender gap rises with a decrease of overall income, which is most apparent within the low-income group.



Source: World Bank Gender Portal

Figure 7. Lower secondary completion rate by sex (% of relevant age group)

## 6. Women in Public Life and Decision Making

At the political decision-making level, women represented 16% of the total seats at the national parliament in 2018. Even though this was an enhanced situation, considering 6% in 2000, the figure was still insufficient to speak for women in the Fijian society. The proportion of women in ministerial level positions was similar to the national parliament - 15.4 per cent, which is insufficient to properly represent and protect women's rights.<sup>24</sup>

Employment market indicated a more favourable condition for women. Female share of employment in senior and middle management was 38.6 per cent in 2017, showing greater participation than in political and governmental sectors.

Table 4. Featured indicators in relation to public life and decision making

Indicators	2000		2018	
	Female	Male	Female	Male
Seats held by women in national parliament (%)	6	-	16	-
Female share of employment in senior & middle mgmt. (% of total)	N/A	-	38.6	-
The proportion of women in ministerial level	N/A	-	15.4	-

<sup>24</sup> World Bank, World Development Indicator: Gender, <http://datatopics.worldbank.org/world-development-indicators/themes/people.html>

positions (%)				
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Source: World Bank Group (2019) *The little data book on gender*

As mentioned above, the representation of Fijian women in the Parliament has stayed low. The numerical value of 16 per cent was not only lower than the average of high-income countries (27.9 per cent) and of middle-income countries (22.7 per cent), but also lower than the average of low-income countries (22.3 per cent). As one of the upper-middle-income countries, the gender inequality of Fiji at the decision-making level is remaining far behind than the average of the relevant country group.

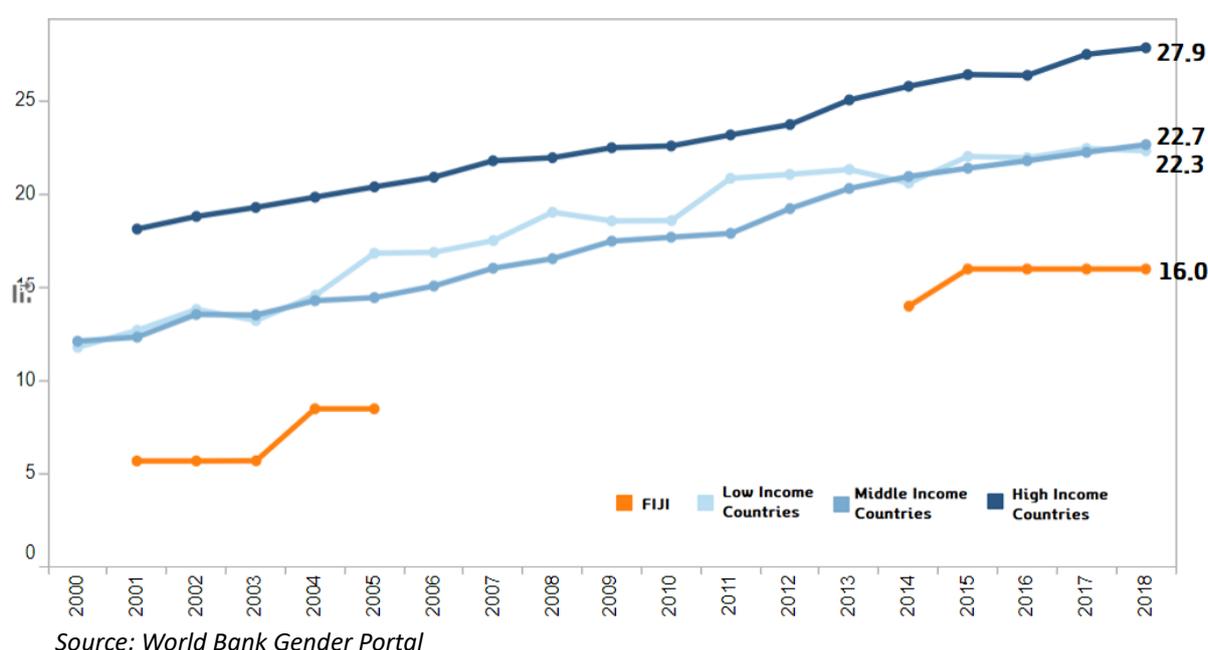


Figure 8. Seats held by women in national parliament (%)

## 7. Violence

More inequality was found at home or in a local community. About two-thirds of the Fijian women in their adulthood (between the ages of 18 and 65) have experienced physical or sexual violence<sup>25</sup>. The prevalence of violence against women has negative impacts on community and family capacity as well as on social cohesion. This, in turn, hinders economic

<sup>25</sup> Fiji Women's Crisis Centre (2013) *Somebody's Life, Everybody's Business!* National Research on Women's Health and Life Experiences in Fiji

and social development.

Female residents in rural areas are more likely to be prone to violence than those in the urban regions. Their access to support or protection services is also restricted, largely because of their remote abode.

During the interview, the president of the Lomaiviti Women's Group said that the communities around the project site do not have serious issues in relation to violence against women, with churches' big roles in ensuring safety for women. Furthermore, since most of the residents are relatives and connected with one another, women are reported to be fairly safe even at night.

## 8. Ethnicity and Women

The indigenous population in Fiji (i-Taukai) constitutes about 50 per cent of the total population and Indians make up 46 per cent. The remainder of the population is made up of Pacific islanders, Chinese, and people of European descent. Related to British colonial history, the Indian Fijian had been enjoying a relatively higher income level in professional and high-skill jobs in urban areas. Since the country became independent in 1970, 'affirmative actions' had been taken in order to achieve economic equality between the two races. Data on the gender aspects in the ethnic differentiation in Fiji was not available. For the proposed project, the ethnic dimension is not relevant as the affected community is 100% Indigenous Fijian (i-Taukei).

## 9. Climate Vulnerability of Women<sup>26</sup>

In general, it is reported that in Pacific island countries, women are more likely to be negatively affected by climate change and related natural disasters. Global research shows that women and children are 14 times more likely to die or be injured than men due to a disaster.

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<sup>26</sup> The gender aspects of the climate change and natural disaster impacts are summarised here based on the following sources: UN Women Brief - Why is climate change a gender issue/ Gender and climate (in)security in the Pacific from the Strategist(14 May 2019): <https://www.aspistrategist.org.au/gender-and-climate-insecurity-in-the-pacific/> Putting women at the forefront of climate change and disaster response in the Pacific, 4 June 2014, UN Women/ Life on the Front Line of Climate Change for Fiji's Women and Girls, 6 November, 2017, News Deeply

In addition to high fatalities, loss of homes and livelihoods, women and girls also experience more intangible losses. They are subject to a number of secondary impacts, including SGBV and trauma, loss or reduction of economic opportunities, and increased workloads.

In response to the impacts of damage, girls are more likely than boys to be pulled out of school to help with domestic chores after a disaster, making the achievement of universal primary education more difficult. After the 2012 Fiji floods, for example, evidence suggests that girls were being taken out of school to help take care of younger children or solicit extra cash through sex work. Damaged infrastructure also limits access to health resources from pregnant women, increasing the risk of maternal death.

Pacific women are often responsible for water collection. In the case of water shortage due to the drought, flood and salination of groundwater, a decrease in the availability of freshwater means women and girls will spend more time collecting water for their families. Additionally, the responsibility for caring for those who fall ill due to the increase in water-borne diseases associated with the inevitable decrease in water quality will also fall on women and girls. This increase in workload results in women and girls having less time to spend on earning an income and education or contributing to community-level decision-making processes, including climate change and disaster risk reduction.

Changing rainfall patterns combined with salinity intrusion are likely to have a significant impact on agriculture. Women and girls are affected the most when traditional crops begin to fail. Even though women are responsible for most of the agriculture production they often have limited land ownership and less access to productive resources to improve yields.

The situation of women in Ovalau would not be too different in case of the occurrence of natural disasters and extreme weather conditions.

#### **IV. Gender-inclusive Measures in Project Implementation**

To summarize, a generally low level of women's participation in the formal political and economic arena, violence against women as well as cultural barriers for women to take part in deeply male-dominated local governance mechanism remain to be barriers. However, the level of gender (in)equality appears to vary from place to place and the project location, Ovalau Island, is judged to have a relatively robust local governance system with a degree of representation of women in its decision-making roles.

The proposed project involves the generation of electricity by a solar PV system to, at least in part, replace electricity generation capacity provided to the Ovalau grid by diesel generators

in Levuka. Unlike other similar projects in Fiji, the proposed Projects does not include the connection of additional households or communities to the electricity supply. Given the nature as such, there appear to be no explicit gender components in the proposed project.

Given that the BCDC, the representing body of the affected community of Vanua of Bureta, is well-represented by both men and women, as long as 1) the meaningful consultations are ensured to reach a consensus among the affected community members (including girls and women) and to engage both men and women along the entire lifecycle of the project implementation, and; 2) appropriate land acquisition and compensation/benefit sharing agreements are made and implemented accordingly, the project is not expected to exacerbate the existent gender inequality in the community or in the broader context.

Well-prepared and effective implementation of the project's benefit-sharing scheme, which is well-supported by both men and women, could even improve actively furthering the welfare of the female population in the community. While effective gender mainstreaming may not be feasible at the policy or institutional level at the national scale, it is still possible that considerations are made in order to maximize the women's participation in decision-making and consultation process as well as benefit-sharing of (particularly more vulnerable) women's group amongst the beneficiary group, i.e. Vanua of Bureta, represented by the BCDC. Following are some of the measures to be considered to maximize the benefits on women: These measures shall be included as Gender Action Plan (GAP) for incorporation the overall design, planning, implementation and operation of the proposed project.

### **1. During the design/Planning stage**

It is of utmost importance that the project proponent, FDB(AE/EE), ensures the due presentation of female community members during the consultation and decision-making process especially on land acquisition and compensation and livelihood support packages for the losses and temporary disturbance of their livelihoods. One should bear in mind that both landowners, as well as landless affected households (engaging economic activities such as coconut (and other fruit/commercial) tree and crop farming and cattle herding with or without legal or customary rights), need to be equally considered for consultation and engagement along the entire life cycle of the project implementation.

International safeguard policies also require that all types of persons and households whose livelihood and income sources are permanently or temporarily disturbed and affected are entitled to according compensation by the project proponent, regardless of their legal ownership status, i.e. major difference from many of the country laws and regulations on

land acquisition and compensation. Special consideration should be made, in particular, to women and vulnerable group, especially those without land titles or tenure.

## 2. Construction/Installation Stage

This project's key component is a solar photovoltaic power generation, and sectoral specialists, especially engineers, are required for the construction and operation of the system (such as general workers, machine operators, truck drivers and managers). At this point, it is highly desirable to actively consider **hiring female experts and engineers**. As confirmed in the previous chapters, gender inequality in labour and employment, particularly in the manufacturing industry needs to be improved. The creation of female experts' employment in this project will contribute to bridging the gender gap. The required skill training program is recommended to be introduced (for installation of PV systems, maintenance and operation, as well as farming techniques for the selected four crops in the project site etc.)

## 3. Operation stage

In addition, in the post-construction (operation) stage, it is important to maintain the energy efficiency of the installed PV system by regularly managing solar panels to secure the originally planned power generation and to keep energy efficiency from falling. To do so, it will require regular maintenance of solar panels such as regular cleaning of the panels and replacement of some electric equipment. The tasks as such are not physically demanding that women will not be disadvantaged. Given that the PV operation and maintenance training shall target vulnerable women groups, it is likely that the community women will also be hired. This project is also a new type of project incorporating agriculture into solar power generation and plans to farm under solar panels. The east-west facing system would provide sufficient solar irradiation to keep the expected yields of crops (such as taro, tomato, lettuce and bell pepper) above 87% compared to conventional agriculture. Many women on the island of Ovalau are also engaged in agriculture as are women in other areas of Fiji, and **female employment for agriculture activities** is expected to increase in this stage of operation. With limited space under the panel, it is expected that it will be difficult to apply farming methods using agricultural machinery such as tractors, and most agricultural activities are expected to be carried out manually. Such small-scale farming is mainly done by women (female specialization), which requires female agricultural labour force for maximization of the project effectively and also alleviate gender inequality in labour force participation. This will be able to offer a lot of benefits to women, including agricultural techniques, such as how to grow vegetable and good ideas on organic farming.

#### 4. Benefit-sharing

Aspects of gender equality are also related to access to benefits accruing from the lease and use of land for the project. Whilst the land subject to acquisition related to the project implementation is held in trust on behalf of the Vanua by three men, it is apparent from the consultation that decision making in relation to the use of this land is vested in the broader Bureta Community Development Committee. This committee is, in turn, comprised of representatives of both men and women. Indeed, the committee has a women's group who have direct input into the decision-making process and the chairperson of the committee is an influential female within Fijian society. The positive activities of the group can contribute to alleviating gender inequality.

Although more stable energy and power supply can at least partly be provided through solar power generation, this project represents only a switch in the way in which electricity is generated, as 98 per cent of the population of Ovalau is already connected to the electricity grid. Therefore, it would be difficult to expect positive gender-related effects such as educational opportunities and increased income activities through liberation from household labour and securing nighttime safety by installing streetlights.

Having said that, it is still possible to consider designing a benefit-sharing scheme particularly targeting venerable women (such as female-headed (divorced or widowed) households)<sup>27</sup> and other groups at risk (such as minors or the elderly without family support or the persons with disabilities etc.). It is recommended that specific gender consideration is proactively and consciously made in the process of consultations by the project proponents with the affected community.

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<sup>27</sup> The predicament of female-headed households are not documented in the host communities. However, it is a well-grounded presumption based on sufficient documentations and studies that in a strong patriarchal society where an access to the land and other properties of economic values are exclusively or predominantly allowed only to men, by laws or by cultural or religious norms, women without male family members, especially husbands, are often castrated by the society and marginalized in access to resources, wealth and political power. Thus female-headed households often constitutes the poorest and most powerless and vulnerable component of a population. This would not be an exception in Fiji and the host community of the programme.

## V. Recommendations

To summarize the actions to be taken:

- All processes related to local residents' consultation during project implementation, including information disclosure, need to ensure proper representation and participation of the relevant women's group and female community members. Setting a women's and girls' participation target (e.g. 50%) is desirable. If culturally appropriate and/or requested, consider having a separate consultation meeting with the women's group. Consider to include NGOs, CBOs and female workers' unions as participants.
- Consideration of equal participation between men and women of the relevant decision-making body is desirable. Ensure to include a certain quota of female participation at important decision-making bodies (e.g. project steering committee etc.) Ensure to include gender officer, if available, of the relevant government ministries and agencies.
- In this context, active cooperation with BCDC is desirable because women are already involved in the BCDC and a group of women who are directly involved in the decision-making process participates in the committee. Regular consultation sessions between the BCDC and the Project proponent needs to be scheduled as part of the stakeholder engagement plan. Each session should be duly documented with counting the female participations and gender-specific concerns.
- It is recommended to classify indicators by gender when preparing environmental, social and gender monitoring reports. Ensure to evaluate the project benefits by gender (e.g. count the different number of male and female target population as project beneficiaries)
- It is desirable to ensure equal participation of both men and women in employment related to power plant operation/management and agricultural activities. More proactive gender-friendly measures could be considered, such as 1) a quota-based system or priority policy for female employees in PV system operation, maintenance and APV farming. Per Fiji's National Gender Policy, it is recommended identifying any specific needs (flexible work hours etc.) amenity facilities (such as child care facilities etc.) for female employees. Equal payment and no-discrimination policy would need to be strictly introduced and observed. The project proponent is expected to closely monitor the performance and compliance on this front.
- To create jobs for professional women, the quota system for female engineers is recommended when selecting engineers. A quota-based skill-training program for girls and women are strongly recommended.

The project proponent is encouraged continuing to explore more specific local context along with the preparation and implementation of the project through continued consultation and

engagement of the local stakeholders, particularly local women themselves. It is desirable to deploy a gender specialist, in-house or externally hired, to ensure overall gender-responsive measures are well implemented along with the project implementation as planned through monitoring and capacity building of the local stakeholders.

In implementation all the recommended actions and the Gender Action Plan for the proposed project, the project proponent shall activate its gender policy ("Gender Equity and Social Inclusion Policy and Action Plan 2018-2021") and according to procedures.

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### ANNEX 1. List of the Consultation Activities with the Key Local Stakeholders & the Community

No/Subject	Date/Venue	Participants	Key Agenda	Details
1/ Consultation with Local Government (1)	22 & 23 Oct 2018/ Levuka Town Hall	CEO & Environmental Officer of Levuka Town Council  & Local EIA team	Selection of Project Site  & Joint ocular inspection of the site	<p>- The CEO of Levuka Town Council is supportive of the proposed development and was present when all alternative sites were examined for their feasibility and encouraged the selection of the proposed development site. Of interest to the CEO and the council is the potential role of the development in catalysing either a reduction in the time during which the Levuka power station is operated or the relocation of the power station out of the town boundaries.</p> <p>- The Environmental Officer from the Town Council accompanied the field team during the detailed inspection of the proposed site on the 22 and 23 October 2018 and met with the trustees of the landowners.</p> <p>The CEO of Levuka Town Council also attended the consultation held on 15 May 2019 and, during this consultation, provided a brief introduction to the Project.</p>
2/ Consultation with Local Government (2)	22 & 23 Oct 2019/ Levuka Town Hall	Ovalau District Officer & Staff  With EIA Consultants	Selection of Project Site & Land acquisition arrangement	<p>The Ovalau District Officer and staff accompanied the inspection of the proposed and alternative sites.</p> <p>The District Office is supportive of the proposed development, and expressed a preference for the identified site, given the landowners of the site have a similar lease</p>

No/Subject	Date/Venue	Participants	Key Agenda	Details
				<p>arrangement over the portion of their land used for the Bureta airstrip.</p> <p>The Ovalau District Officer also attended the consultation held on 15 May 2019.</p>
3/ Consultation with Local Governments (3)	17 Jul 2019/ Levuka Town Hall	<p>Lomaitivi Provincial Administrator (PA), Officers and the CEO of the Levuka Town Council, Officers of the Ovalau District Office</p> <p>With the Korean Delegation (KOICA &amp; Ministry of Economic and Finance) and Project Developer</p>	Consultation with key local government decision-makers on the project and cooperation	<p>The Lomaiviti Provincial Administrator (PA), other government officers and the CEO of the Levuka Town Council joined the meeting on 17th July 2019 in Levuka</p> <p>The PA is under the command of the commissioner Eastern division and welcomed the Korea delegation. The PA emphasizes the support of the project from the Ovalau District Office and the commissioner Eastern Division.</p> <p>The CEO of the Levuka Town Council also showed full support for the project. The CEO agreed to support the construction plan approval and in other local license/permit process that is necessary to progress with the project.</p>
4/ Consultation with local government (indigenous) (4)	23 Oct 2018/ l’Taukei Affairs Board Office, Suva	<p>l’Taukei Affairs Board (Roko Tui(*) Ovalau)</p> <p>(*) Office of Liaison personnel assigned by the Fiji government to facilitate cooperation between the village and the regional government</p>	Traditional welcome ritual (l’sevusevu) for the proposed project by indigenous community tradition & consultation	<p>The Roko Tui Ovalau accompanied the field team to the village of Bureta on the 23 October 2018 and assisted in the presentation of l’sevusevu to the freehold landowners and the Vanua of Bureta. The Roko Tui Ovalau is supportive of sustainable development on Ovalau, and the role that the proposed development will play to meet this goal.</p> <p>The Assistant Roko Tui Ovalau also attended the consultation held</p>

No/Subject	Date/Venue	Participants	Key Agenda	Details
				on 15 May 2019 – to listen to the feedback raised by the community and landowners.
5/ Consultation with the Community (1)	23 Oct 2018/ Nasaga village hall, Bureta	Two official Landowners (Trustees) of the BCDC  With EIA Consultants	Information disclosure of the proposed project to the community representatives & consultation on land acquisition	Two of the three trustees who hold the freehold land proposed for the development in trust, on behalf of the Vanua, were present during an initial discussion about the proposed development, held in Nasaga village on 23 October 2018. Both were, in principle, agreeable to the land being used for the proposed development, and proposed a lease arrangement similar to that held with the State for the special aerodrome lease, rather than outright purchase of the land. The trustees indicated that further negotiations and discussions would be needed, and that consensus amongst the Vanua on any proposed lease arrangement would need to be sought.  These individuals also represented two of the seven mataqali whose land is included in the alternative site 2. In response to this alternative site, both indicated this area is heavily cultivated and is subject to dispute between the mataqali and, as such, would not be a viable alternate site.
6/National Government Stakeholder Meeting (1)	8 Nov 2018/ KOICA Fiji Country Office, Suva	Officials of: <ul style="list-style-type: none"> <li>• Fiji Ministry of Economy</li> <li>• Fiji Ministry of Agriculture</li> <li>• I’Taukei Land Trust</li> </ul>	Multi-Party Stakeholder meeting including Fiji NDA & other relevant Fiji central government agencies and the Korean Delegation	A decision was made to develop a steering committee with the Government stakeholders to continue support and assist on any issues that are relevant to the Project.  The Ministry of Economy as National designated authority (NDA) for

No/Subject	Date/Venue	Participants	Key Agenda	Details
		<p>Board (TLTB)</p> <ul style="list-style-type: none"> <li>• Energy Fiji Limited (EFL)</li> <li>• Fiji Ministry of Foreign Affairs</li> <li>• Fiji Ministry of Infrastructure and Transport</li> <li>• Fiji Development Bank (FDB)</li> <li>• Korea International Cooperation Agency (KOICA) Fiji Office</li> </ul> <p>With the Korean Delegation (KOICA &amp; Ministry of Economic and Finance) and Project Developer</p>		<p>Green Climate Fund (GCF) will oversee the steering committee.</p> <p>All the Government stakeholders shared their support for the project and recognize the benefits that will come from the project.</p>
7/ Consultation with the Community (2)	5 May 2019/ Private residence of the Head of the Community	<p>20 members of the Bureta community (including landowners) (both men and women) including the Head of the Community, Mr Donato Koyanasau</p> <p>w. Fraunhofer Institute (APV technical specialist) &amp; Project Developer</p>	Information disclosure on the technological aspects of the project and its positive impacts on agriculture & Collection of the community's views, concerns and requests	<p>Twenty landowners and neighbouring community members including one of the trustees of the land Donato Koyanasau, attended the consultation held on 3 May 2019 in Bureta.</p> <p>A representative of Fraunhofer Institute (APV technical specialist) explained the benefits of APV with renewable energy and agriculture.</p> <p>One of the trustees of the land Donato Koyanasau, mentioned that the Project site was originally used for agriculture use. Rice and ginger were cultivated for a few years but due to economic reasons, it did not continue. He mentioned that through this APV project it will be great to restart cultivation of crops on the existin</p>

No/Subject	Date/Venue	Participants	Key Agenda	Details
				<p>g agricultural land.</p> <p>The landowners and neighbouring community members were interested in the farmland that is provided through APV and wanted information regarding what crops will be considered for the project.</p>
8/ Consultation with the Community (3)	15 May 2019/ Levuka Town Hall	34 members of the Bureta community (including landowners) (both men and women)  With EIA Consultants	Collection of the community's views, concerns and requests	Thirty-four landowners and neighbouring community members attended the consultation held on 15 May 2019 in Bureta. Individuals were broadly divided between members of mataqali who are owners of the Project site land and those that, whilst not owners of the land, live around the Project site and whom collectively fall under the Bureta Development Committee.
9/ Consultation with the Community (4)	17 July 2019/ Nasaga village hall, Bureta	Members of the Bureta community (including landowners) (both men and women)  With the Korean Delegation (KOICA, Korea Ministry of Economic and Finance) and Project Developer	Site inspection & Potential financier/partner's direct communication with the community	<p>Landowners and neighbouring community members attended the consultation held on 17 July 2019 in the Bureta town hall. The Bureta people welcomed the Korea delegation from the Korean government and KOICA. The Korea delegation showed the full support of the Project and appreciated the warm welcome and support from the Bureta communities.</p> <p>The Bureta community requests to address the following issues:</p> <p>That the Project site is returned to the original status after demolition (after project lifecycle)</p> <p>The batteries in the energy storage system to be disposed of properly</p> <p>Benefit-sharing is important for Bureta which could be achieved from em</p>

No/Subject	Date/Venue	Participants	Key Agenda	Details
				ployment opportunities and others.
10/ Consultation with the Community - Leader of a Women Group (1)	5 Oct 2019/ Lako Yani Company, Suva	Ms Serena Qoro, Secretary of BCDC & cum President of the Lomaiviti Women's Group)  w. Project Developer	Updated project information disclosure to BCDC, Discussion on land acquisition arrangement	The Project Developer had a meeting with the secretary of BCFC, Serena Qoro, for an update on the project development process and other items .  The main discussion was on the Land Lease Agreement and the need for both parties to conduct a valuation of the land by a registered valuer in Fiji. Draft Land Lease Agreement was shared to the secretary to start to discuss the terms and conditions of the lease.
11/ National Government Stakeholder Meeting (2)	16 July 2019/ Grand Pacific Hotel, Juva	Officials of:  <ul style="list-style-type: none"> <li>• Fiji Ministry of Economy</li> <li>• Fiji Ministry of Agriculture</li> <li>• I'Taukei Land Trust Board (TLTB)</li> <li>• Energy Fiji Limited (EFL)</li> <li>• Fiji Ministry of Foreign Affairs</li> <li>• Fiji Ministry of Infrastructure and Transport</li> <li>• Fiji Development Bank (FDB)</li> <li>• Korea International Cooperation Agency (KOICA) Fiji Office</li> </ul>	Multi-Party Stakeholder meeting including Fiji NDA & other relevant Fiji central government agencies and the Korean Delegation	The second Government stakeholders meeting was held on 16 July 2019.  The Korea delegation from the Korea Ministry of Economy and Finance ( MOEF), KOICA Headquarters and Korea Environmental Industry and Technology Institute (KEITI) also attended.  MOEF as a national designated authority of Korea for GCF, showed the Korean government's support, asked for Fiji government's support and mentioned the benefits that the Project will bring to Fiji and the relationship between the two governments.  KOICA, an ODA agency from South Korea and one of the executing entities (EE) of the Project showed the support for the project and talked about the continuous activities KOICA is performing to assist Fiji in expanding the renewable energy resources.  A member from the Green Climate Fund (GCF) joined the meeting and c

No/Subject	Date/Venue	Participants	Key Agenda	Details
		With the Korean Delegation (KOICA & Ministry of Economic and Finance, KEITI, First Secretary of the Korea Embassy to Fiji) and Project Developer		<p>commented that GCF supports the projects for Small Island Developing States (SIDS) such as Fiji, and welcomes projects, especially from direct Accredited Entities such as FDB.</p> <p>The FDB Chief Executive Officer, Mark Clough also emphasised on the importance of the project for Fiji because of its impact, relevance and replicability.</p> <p>The project progress was updated to all the participants and the discussion session was held to raise any issues or comments regarding the project</p>
12/ Consultation with the Community - Leader of a Women Group (2)	19 Dec 2019/ Lako Yani Company, Suva	Ms Serena Qoro, Secretary of BCDC & cum President of the Lomaiviti Women's Group  w. Project Developer	A semi-structured, questionnaire-based interview with a women' group leader cum Secretary of BCDC	<ul style="list-style-type: none"> <li>• Status of conditions of the women in the community</li> <li>• Participation and representation of women within BCDC &amp;</li> <li>• Activities of the Lomaiviti Women's Group</li> <li>• Perception of the Project</li> <li>• Local governance and decision-making mechanism etc.</li> </ul> <p>(☒ For more details, see Annex 2. "An Interview with Ms Serena Quoro in Dec 2019" below.)</p>
13/ Consultation with the Community - Leader of a Women Group (3)	20 Feb 2020/ Lako Yani Company, Suva	Ms Serena Qoro, Secretary of BCDC & cum President of the Lomaiviti Women's Group)  w. Project Developer	A semi-structured, questionnaire-based interview with a women' group leader cum Secretary of BCDC	<ul style="list-style-type: none"> <li>• Structure of Bureta Community Development Committee (BCDC)</li> <li>• BCDC opinion on the APV Project in Ovalau</li> </ul> <p>(☒ For more details, see Annex 3. An Interview with Ms Serena Quoro</p>

No/Subject	Date/Venue	Participants	Key Agenda	Details
				in Feb 2020" below.)

## **ANNEX 2. An Interview with Ms Serena Quoro in Dec 2019**

### **I. Interview Overview:**

- Date: 19 Dec 2019
- Venue: Lako Yani Company, Suva, Fiji
- Interviewee: Ms Serena Qoro, President of the Lomaiviti Women's Group)
- Interviewer: Mr Yoon Sung, Project Developer

### **II. Questions:**

#### **(1) ABOUT THE GROUP**

1. What are the major activities/ functions of the Lomaiviti Women's group (LWG)?  
LWG is a registered NGO in Fiji, part of iTaukei Office (Government Body for Indigenous Fijian). LWG looks after the province's culture protection, craft skill preservation, training young women, indigenous language preservation, and others.
2. In Lomaiviti, what are the ethnic composition?  
It's 100% iTaukei (Indigenous) group
3. Tell me about the representative composition of the group. (Do you well represent of ethnic minorities? e.g. Chinese Fijian etc.)  
It's 100% iTaukei (Indigenous) group
4. What's your role as a leader?  
Overall management of the group, representative of LWG for the 12 districts in Lomaiviti province (including Ovalau)
5. Are you engaged in the affairs of BCDC? (Yes. how?/ No)  
Engaged as the secretary of BCDC

#### **(2) ABOUT THE WOMEN IN COMMUNITY**

6. What are the difficulties Fijian/Lomaiviti women face in life in general? Do you think men and women are equal in Fijian society?  
As a group of islands, transportation can be a problem. No proper port, walf, very difficult transportation. In general, the women groups in the province are a minority in terms of the social aspect, but the BCDC is a unique situation that the women are well represented in the community with equal rights.
7. FAO Country Gender Assessment: high rate of violence (including domestic (by an intimate partner) against women. Safety of women appears to be a problem. Do you agree?  
There are some cases, but not common. Churches play a big role in the safety of women.
  - 7.1. Long-distance commuting of children and women esp. at night (without proper lighting): This is reported to be unsafe. Do you think this safety problem hamper women/girls' freedom of movement and access to education/economic activities?  
Not really. Most of them are relative and connected so pretty safe.
  - 7.2. What explains a relatively high level of violence against women? (Is there an ethnic difference/

cultural /religious norms etc.?)

The province does not have a common issue of violence against women.

8. Can women own land and other properties (such as buildings)?

Itaukei Land Act -> women and men have equal right on the land (by Law).

9. What are the common income-generating activities of women in your community?

Major income comes from selling handcrafted met with leaves shown as the picture below



Women income generation mostly from Crafting, some from selling virgin coconut oil  
Agriculture, Fishing.

10. Is it common married women or unmarried women/girl open their own (separate) bank account?

Yes

11. Is it common a girl child inherit land or family heritages rather than a boy child? Is it legally allowed?

Yes

### **(3) ACCESS TO SERVICES**

12. Which social service do the community members face a challenge to access?

Well supplied generally, but serious medical cases needed to be transferred to Levuka town

13. Do most of the households in Lomaiviti use electricity (all the time? part-time (how many hours?)) /  
Water?

Yes (most of the times)

14. Do most of the households in Lomaiviti eat three meals a day?

Yes

15. What is the common health issue in the communities?

There are cases of malnutrition. Bad food feeding, for babies too. Nutrition-wise, the project will help.

### **(4) VULNERABILITY**

16. Any vulnerable groups in the community prone to natural disasters(drought, flood, tornados, soil erosion  
and sea-level rise etc.)?

All groups in the province are vulnerable to natural disasters

17. Is there any intervention or action that the community-initiated to improve their living condition?

Water supply issue, reservoir water catchment should be improved. Drought happens

18. What are the challenges that children are facing in your community?

(not answered)

19. Where do women and girls feel safest or less safe? -> Generally safe in the province

**(5) PERCEPTION OF PROJECT & EXPECTED IMPACTS ON WOMEN**

20. Do you think this project will make women’s lives more difficult? If so how?  
 A lot of benefits will come in training wise for women, how to grow vegetable, giving them some good ideas, organic farming.

21. Do you think the project will benefit men more than women? If so, how? (Or, Do you think this project will benefit women more than men? If so, how?)  
 Pretty much the same

22. What are the possible risks in your mind related to the project implementation? Why?  
 It will give a lot of benefits, but can’t think of any risk at the moment.

**(6) GOVERNANCE & INFORMAL LEADER/DECISION-MAKERS**

23. How would you rate community engagement of your community?  
 Women are very actively involved (BCDC), but low involvement in other areas

24. What is the main strength of your community?  
 Formalized community, well organized, representatives, keeping proper meeting notes that is accessible for others.  
 There are good resources and flat land.

25. [Other than yourself] Who are the most trusted leaders (formal and informal) in the community (both male and female)? Where are they located?

Matagali(District) heads, Mr Donato (key person) in Bureta

But, everyone has actively involved [THE END]

**FIJI AGROPHOTOVOLTAIC PROGRAMME IN OVALAU**

Consultation for Lomaiviti Women’s Group

Date: 19<sup>TH</sup> DEC 2019

Location: Lako Yani, Suva

Participant List

Name	Position	Organization	Sign
Sereana QORO	President	Lomaiviti Women	

### **ANNEX 3. An Interview with Ms Serena Quoro in Feb 2020**

#### **I. INTERVIEW Overview:**

- Date: 20 Feb 2020
- Interviewee: Ms Serena Qoro, President of the Lomaiviti Women’s Group)
- Interviewer: Mr Yoon Sung, Project Developer

#### **II. Questions:**

##### **(1) Structure of Bureta Community Development Committee (BCDC)**

- A. BCDC represents the 4 villages (Naiteitei, Nasaga, Tai, Navuola) in Bureta Tikina(District) with the vision of “Sustainable Holistic Prosperity for the Vanua of Bureta.”
- B. BCDC has 25 committee members with one chairperson (Donato Koyanasau), one secretary (Sereana Qoro), and one treasury.
- C. The 25 members are composed of the head, women group representative, youth group representative, and other group representatives for each village. This composition is designed for all the voices to be heard regardless of the sex, age group, and positions. (5 out of the 25 members are women).
- D. Each member will reflect the voice of the village with the traditional conversation dialogue called “Talanoa Dialogue” which was the main theme for anyone to submit their Climate Change story and voice with transparency, fairness, and participation in COP23 when Fiji was the president.

##### **(2) BCDC opinion on the APV Project in Ovalau**

- E. BCDC is welcoming the project to be implemented in their land
- F. BCDC is willing to lease the land for a minimum of 30 years, and the lease signing is pursued in March 2020.
- G. BCDC stated that the project aligns with their 5-year community development plan in terms of sustainable agriculture and food security. The English translated version of the development plan to be shared by BCDC.





**GREEN CLIMATE FUND**

## **Gender Action Plan**

### **Fiji AgroPhotovoltaic Project in Ovalau**

This Gender Action Plan is based on the Gender Assessment. The intended gender impacts of the project will be pursued through gender awareness and capacity building support targeted at key local stakeholders including the affected communities. Proposed activities and targets shall be reviewed and validated through consultation with the key stakeholders before finalization and concretization. Along this process, the AE and EEs shall ensure to apply their gender policy and extend their budget and technical support.

The main intended gender impacts of the proposed project include:

- Improved economic status and living standard of women;
- Raised awareness on gender equality and the ability to apply the principle in decision-making on project operations
- More gender-responsive and inclusive local governance;
- Enhanced gender mainstreaming capacity in project planning and implementation;

Below are specific intended changes in different spheres of project delivery and management to achieve better gender equality by enhancing gender awareness of both men and women at a different level of decision making (in the government, project management unit as well as community level) and supporting the required capacity buildings (technical and management etc.) at all levels for gender mainstreaming.

- Women's participation in all types of project-incurred employment and training opportunities;
- Better and more frequent political representation and decision-making by women at the local governance and community level;
- Project benefits and compensation are evenly shared by women, esp. by vulnerable women in the community
- Project design, planning, implementation and operation process that are systematically gender-mainstreamed;

Activities	Indicators and targets	Timeline	Responsibilities	Budget
<b>Impact Statement</b> Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions, including women and girls from the adoption of diversified, climate-resilient livelihood options with low-carbon energy generation				
<b>Outcome Statement</b>  <ol style="list-style-type: none"> <li>1. Strengthening the national and community capacity on the low-carbon generation and microgrid stabilization (Component 1)</li> <li>2. Enhancing the adaptive capacity of the local community with sustainable climate-resilient agriculture through the APV system (Component 2)</li> <li>3. Technical Assistant – Strengthened adaptive capacity and reduced exposure to climate risks of women, men and at-risk communities (Component 3)</li> </ol>				
<b>Output 1.1. Low-carbon generation &amp; Output 1.2. Build a microgrid system for energy security and reliability with 5MWh BESS</b>				
<b>Activity 1.1.1 . to finance the establishment of 4MWp Solar PV plant.</b>  <b>&amp;</b> <b>Activity 1.2.1. installation and connection of 5MWh BESS to the PV plant for the microgrid system</b>  <ul style="list-style-type: none"> <li>- Provide solar-PV generated power to the grid system of Ovalau Island, providing cleaner energy mix with all connected households and individuals (both men and women)</li> <li>- Provide full and productive employment and decent work in the construction and operation phase</li> <li>- Give employment priority to vulnerable women (female-headed low-income households)</li> <li>- Ensure equal remuneration for female and male workers (construction workers, engineers, office managers etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Number of households, and individuals (males and females) with improved access to low-emission energy sources / 50% of the mid- and long-term target beneficiary shall be female(2,520 female out of 5,100 beneficiaries once systems becomes operational).</li> <li>• List of hired employees (both male and females, including the number of female-household heads) /Priority Targets of female-household heads_100% employment of the applicants (as long as</li> </ul>	Y1/Q1~Q4	<ul style="list-style-type: none"> <li>• FDB(AE/EE)</li> </ul>	Included in the budget plan

Activities	Indicators and targets	Timeline	Responsibilities	Budget
	<p>they are found apt for the jobs/tasks)</p> <ul style="list-style-type: none"> <li>Wage payment records/ evidence of equal pay to both male and female employees in the same function/responsibilities</li> </ul>			
<b>Output 2.1: Increasing management capacity in microgrid stabilization</b>				
<p><b>Activity 2.1.2. Classroom and field training on maintenance of PV array and BESS for EFL</b></p> <ul style="list-style-type: none"> <li>Ensure to prioritize the female engineers as training beneficiaries to the possible extent</li> </ul>	<ul style="list-style-type: none"> <li>Participant list of the training (gender-disaggregated)</li> </ul>	Y1/Q1~Y2/Q4	<ul style="list-style-type: none"> <li>FDB (AE)</li> <li>EE – Fiji Ministry of Infrastructure and Transport</li> </ul>	Included in the budget plan
<p><b>Activity 2.1.3. Classroom and field training on maintenance of PV array and BESS for youth and woman groups in affected communities</b></p> <ul style="list-style-type: none"> <li>Secure 3 out of 6 Training Sessions for women's group.</li> <li>Prioritize the vulnerable women for training targets (e.g. a member of woman-headed households in affected communities)</li> </ul>	<ul style="list-style-type: none"> <li>Participant list of the training</li> </ul> <p>(Target number: at least 30 women trainees who completed the course from 3 Training Sessions)</p>	Y2/Q1~Y2/Q4	<ul style="list-style-type: none"> <li>FDB (AE)</li> <li>EE – Fiji Ministry of Infrastructure and Transport</li> </ul>	Included in the budget plan
<b>Output 2.2. Promoting Climate-Resilient APV Project by Establishing Specialized Climate Financing Facility and Regulatory Scheme</b>				
<p><b>Activity 2.2.1 Establishing Specialized Climate Financing Facility (for APV projects nationwide)</b></p> <p>Enable FDB and other loan Banks in Fiji to develop and provide loans for APV projects to enhance the climate resilience of the</p>	<ul style="list-style-type: none"> <li>A newly developed loan scheme promoting APV development sets its eligibility condition to include female</li> </ul>	Y3/Q1~Y3/Q4	<ul style="list-style-type: none"> <li>FDB (AE)</li> <li>EE – Fiji Ministry of Economy</li> </ul>	Included in the budget plan

Activities	Indicators and targets	Timeline	Responsibilities	Budget
communities and the agricultural sector targetting the women group as a priority	population in their 20s to 40s as priority group/At least 30% of the loan beneficiaries being women			
<b>Output 2.3. Promoting awareness of climate change threats and related appropriate responses using APV system in the South Pacific region</b>				
<b>Activity 2.3.1. Develop and disseminate mass/social media content to raise public awareness of climate change and to promote APV</b>  - Include gender components as contents of the awareness program	<ul style="list-style-type: none"> <li>• Contents of the program developed</li> </ul>	Y1/Q2 & Q3, Y2/Q2 & Q3, Y3/Q2 & Q3, Y4/Q2 & Q3	<ul style="list-style-type: none"> <li>• FDB (AE)</li> <li>• EE – Fiji Ministry of Economy</li> </ul>	A separate budget for Gender Specialist (under PMC arrangement)  Media content development & dissemination costs included in the budget plan
<b>Activity 2.3.2 Training workshops for policy-makers (senior officers or above) on the APV system</b>  - Programs to include gender equality session(s) targeting women leadership - Ensure at least 25% of female participation - Deploy a gender specialist to participate in designing the program and facilitate gender session	<ul style="list-style-type: none"> <li>• At least 1 session or more on gender equality to be held in each round of the training workshops</li> <li>• At least 25% of the participants to be female officials (both domestic and international (other SIDs) participant groups)</li> </ul>	Y2/Q4, Y4/Q4	<ul style="list-style-type: none"> <li>• FDB (AE)</li> <li>• EE – Fiji Ministry of Economy</li> </ul>	A separate budget for Gender Specialist (under PMC arrangement)  Overall training costs included in the budget plan
<b>Activity 2.3.3 Workshops on climate change awareness and the APV system promotion for representatives of the local communities (Provincial level) in Fiji</b>  - Ensure at least 40% of female participation (for each round of workshop)	<ul style="list-style-type: none"> <li>• At least 1 session or more on gender equality to be held in each round of the training workshops</li> <li>• At least 40% of the</li> </ul>	Y2/Q4, Y3/Q4, Y4/Q4	<ul style="list-style-type: none"> <li>• FDB (AE)</li> <li>• EE – Fiji Ministry of Economy</li> </ul>	A separate budget for Gender Specialist (under PMC arrangement)  Overall training

<b>Activities</b>	<b>Indicators and targets</b>	<b>Timeline</b>	<b>Responsibilities</b>	<b>Budget</b>
- Deploy a gender specialist to design and facilitate gender session(s) of the workshop	participants to be female representatives			costs included in the budget plan