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IMPLEMENTATION COMPLETION AND RESULTS REPORT
ON A

TF-90429, TF-58284

GEF GRANT IN THE AMOUNT OF US\$ 9.48 MILLION EQUIVALENT

TO THE

FIJI, PAPUA NEW GUINEA, REPUBLIC OF MARSHALL ISLANDS,
SOLOMON ISLANDS, AND VANUATU
(PACIFIC ISLANDS)

FOR A

Sustainable Energy Financing Program (SEFP)
July 12, 2023

Energy and Extractives Global Practice
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective June 30, 2023)

Currency Unit = Fijian Dollar (FJD)

FJD2.24 = US\$1

FISCAL YEAR

Fiji

January 1 – December 31

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ABBREVIATIONS AND ACRONYMS

ANZ	ANZ Banking Group Limited
CNO	Coconut oil
DOE	Department of Energy
EA	Executing Agency
EE	Energy Efficiency
ESSD	Environmental and Social Safeguards Documents
FJD	Fijian Dollar
GEF	Global Environment Facility
GEO	Global Environmental Objective
GoF	Government of Fiji
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
kWh	Kilowatt Hour
MSE	Micro and Small Enterprise
MTR	Mid Term Review
NPL	Non-performing Loan
PAD	Project Appraisal Document
PDO	Project Development Objective
PFI	Participating Financial Institution
PNG	Papua New Guinea
PV	Photovoltaic
RBF	Reserve Bank of Fiji
RE	Renewable Energy
RMI	Republic of Marshall Islands
RSF	Risk Sharing Fund
SEFP	Sustainable Energy Finance Project
SHS	Solar Home Systems
SME	Small and Medium Enterprise
TA	Technical Assistance
USD	United States Dollars
VREP	Vanuatu Rural Electrification Projects I and II
WB	World Bank

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P098423	Sustainable Energy Financing Program
Country	Financing Instrument
Pacific Islands	Investment Project Financing
Original EA Category	Revised EA Category
Not Required (C)	Not Required (C)

Organizations

Borrower	Implementing Agency
ANZ Banking Group Limited, Republic of Fiji	Department of Energy, Department of Energy

Project Development Objective (PDO)

Original PDO

The project aims to significantly increase the adoption and use of renewable energy technologies in participating Pacific Island states through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in support of equipment purchase.

Revised PDO

The objective of the Program is (i) to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energyfinance in the Participating Pacific Island States; and (ii) to support knowledge sharing and capacity building on renewable energyand energy efficiency technologies in the Participating Pacific Island States.

**FINANCING**

	Original Amount (US\$)	Revised Amount (US\$)	Actual Disbursed (US\$)
World Bank Financing			
TF-90431	507,000	506,760	506,760
TF-90430	507,000	189,567	189,567
TF-58284	1,993,487	1,993,487	450,117
TF-90429	697,000	558,513	505,906
TF-58282	5,200,000	406,138	406,138
Total	8,904,487	3,654,465	2,058,488
Non-World Bank Financing			
Borrower/Recipient	500,000	0	0
Borrowing Country's Fin. Intermediary/ies	10,200,000	0	0
Sub-borrower(s)	500,000	0	0
Total	11,200,000	0	0
Total Project Cost	20,104,487	3,654,466	2,058,489

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
12-Jun-2007	09-Jul-2007	12-Jan-2011	31-Dec-2017	15-May-2022

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US\$M)	Key Revisions
24-Apr-2014	6.47	Change in Project Development Objectives Change in Results Framework Change in Components and Cost Cancellation of Financing Change in Financing Plan Reallocation between Disbursement Categories Change in Safeguard Policies Triggered
03-Oct-2017	6.65	
19-Dec-2017	6.65	Change in Loan Closing Date(s)
11-Jun-2018	6.68	Change in Loan Closing Date(s)
22-Aug-2018	6.75	Change in Implementing Agency Change in Project Development Objectives Change in Results Framework Change in Loan Closing Date(s) Change in Legal Covenants Change in Institutional Arrangements Change in Implementation Schedule
09-Mar-2021	6.87	Other Change(s)
11-May-2022	6.88	Change in Loan Closing Date(s)

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Moderately Satisfactory	Modest

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US\$M)
01	25-Aug-2007	Satisfactory	Satisfactory	0
02	14-May-2009	Moderately Satisfactory	Moderately Unsatisfactory	5.61
03	23-Dec-2009	Unsatisfactory	Unsatisfactory	5.84
04	28-Jun-2010	Moderately Unsatisfactory	Moderately Unsatisfactory	6.10
05	28-Jun-2011	Moderately Unsatisfactory	Moderately Unsatisfactory	6.15



06	03-Apr-2012	Moderately Unsatisfactory	Moderately Unsatisfactory	6.39
07	29-Jan-2013	Moderately Unsatisfactory	Moderately Unsatisfactory	6.39
08	21-Aug-2013	Moderately Unsatisfactory	Moderately Unsatisfactory	6.43
09	07-Dec-2013	Moderately Unsatisfactory	Moderately Unsatisfactory	6.45
10	26-Jun-2014	Satisfactory	Satisfactory	6.47
11	29-Dec-2014	Satisfactory	Satisfactory	6.51
12	19-May-2015	Satisfactory	Satisfactory	6.53
13	15-Dec-2015	Satisfactory	Satisfactory	6.55
14	23-Jun-2016	Satisfactory	Satisfactory	6.55
15	21-Dec-2016	Satisfactory	Satisfactory	6.65
16	30-Jun-2017	Satisfactory	Satisfactory	6.65
17	07-Dec-2017	Satisfactory	Satisfactory	6.65
18	04-Jun-2018	Satisfactory	Satisfactory	6.68
19	13-Dec-2018	Satisfactory	Satisfactory	6.75
20	14-Jun-2019	Satisfactory	Satisfactory	6.75
21	17-Dec-2019	Satisfactory	Moderately Satisfactory	6.81
22	19-Jun-2020	Moderately Satisfactory	Moderately Satisfactory	6.81
23	29-Dec-2020	Moderately Satisfactory	Moderately Satisfactory	6.87
24	18-Jun-2021	Moderately Satisfactory	Moderately Unsatisfactory	6.88
25	23-Dec-2021	Moderately Satisfactory	Moderately Unsatisfactory	6.88

SECTORS AND THEMES

Sectors

Major Sector/Sector

(%)

Public Administration

9

Central Government (Central Agencies)

9



Financial Sector	5	
Banking Institutions	4	
Other Non-bank Financial Institutions	1	
Energy and Extractives	86	
Renewable Energy Biomass	22	
Renewable Energy Geothermal	20	
Renewable Energy Solar	22	
Renewable Energy Wind	22	
Themes		
Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)	
Environment and Natural Resource Management	100	
Climate change	100	
Mitigation	100	
ADM STAFF		
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. **The Pacific Island Countries (PICs) that were envisaged to benefit from this project (“participating PICs”)¹ faced complex but common developmental challenges.** Among them², the World Bank’s (WB) assistance strategy at appraisal aimed to help them establish a business environment conducive to faster and sustainable economic growth and to higher employment. The participating PICs are rather small with populations in these islands ranging from 51,000 to 5.6 million. They have open but narrowly based economies fueled primarily by tourism and many people engaged in subsistence agriculture. These countries were, and still are, extremely vulnerable to external economic and environmental shocks, with constrained institutional capacity and limited access to global markets. All these issues, when compounded by political instability, had severely undermined and weakened the economic growth of the participating PICs.

2. **Access to electricity is key to spur economic development but was low in the participating PICs.** At appraisal, PICs were divided into three major groups in terms of electricity access: (i) Papua New Guinea (PNG), Solomon Islands and Vanuatu, which have less than 20 percent of the population with electricity access; (ii) Fiji, Federated States of Micronesia (FSM), Republic of Marshall Islands (RMI) and Kiribati, with a range of 30 to 65 percent; and (iii) the remainder (Samoa, Tonga, Palau, Tuvalu, Nauru, Niue, Cook Islands, and Tokelau), with almost universal access. A large discrepancy in access to electricity also existed between urban and rural areas. These countries also suffered from high costs of electricity which undermined their economic competitiveness. PICs’ power generation was heavily dependent on imported diesel. Such heavy reliance on imported fuel resulted in extreme vulnerability to oil supply and price shocks. It also created an enormous financial burden for the countries and consumers, with rural households spending as much as 25 percent of their income on fuel in 2005.

3. **Accelerating deployment of renewable energy (RE) and energy efficiency (EE) technologies are a green, cost-effective, and indigenous way to lower costs of electricity and expand access to electricity in the region.** Many PICs have good RE endowments (solar, wind, and hydro in some countries) and considerable energy efficiency potential. Thus, RE technologies have become the least-cost option for increasing access to modern energy services for rural households and micro and small enterprises (MSEs). Improvements in EE can reduce fossil fuel dependence and lower energy imports costs. Consequently, the deployment of RE technology and improvements in EE can reduce PIC’s fossil fuel dependence, stimulate their economic development, and ultimately enhance each country’s economic competitiveness.

4. **Several barriers existed that impeded wide application of RE and EE technologies in the PICs.** Key barriers included (i) lack of enabling policy and regulatory framework, (ii) absence of technology standards, and lack of awareness to RE development; (iii) lack of a professional and accessible dealer

¹ At appraisal, PICs under the Project included Fiji, Papua New Guinea (PNG), Republic of Marshall Islands (RMI), Solomon Islands (SI), and Vanuatu.

² Major development challenges include but not limited to political leadership and regionalism, peace and security, economic development, climate change, natural disasters and technology and connectivity.



network to supply and help maintain RE equipment; and (iv) the reluctance of local financial institutions (FIs) to finance RE systems and EE investments on affordable terms due to a lack of familiarity at that time with the technologies and limited or no experience of providing finance to RE projects, as well as higher debt requirements that required five to seven year loan tenors, that at the time FIs were unable to offer. The first two barriers were addressed by the United Nations Development Programme (UNDP)/Global Environment Facility (GEF) Pacific Islands Renewable Energy Project (PIREP) and its follow-up project, the Pacific Islands Greenhouse Gas Abatement through Renewable Energy Project (PIGGAREP). However, the majority of past donor (mainly bilateral) assistance efforts had been technology-focused, fragmented, and had failed to establish efficient and commercially sustainable energy service delivery systems.

5. **At the time of project preparation, Risk Sharing Facilities (RSFs) were emerging as a new project model to address access to finance constraints for SMEs.** RSFs worked by sharing risks with selected banks on portfolios of new SME loans. In 2006, a ‘first wave’ of International Development Association (IDA)/International Finance Corporation (IFC) RSF pilots were launched in Madagascar, Ghana, and Mali. In 2009, a World Bank Group (WBG) Task Force Review on RSFs was undertaken and recommended a ‘second wave’ of piloting RSFs in ten new countries. Typically, RSFs would cover up to 50 percent of the net outstanding principal amount of a portfolio of new loans originated by local Participating Financial Institutions (PFIs), on a pari-passu basis with the PFIs. IDA funds would be used to cover the government’s risk sharing amount, in the form of a 50 percent first-loss coverage capped at a pre-determined amount IFC funds would then be used to cover the senior risk portion of the covered loan portfolio. The RSF in this way leveraged IDA and IFC resources and expertise, combining a hard currency IDA first loss tranche with a local currency IFC senior risk guarantee.

6. **In this context, a Sustainable Energy Financing Project (SEFP), originally commenced as a US\$9.48 million GEF grant-supported project, was conceived.** It aimed to contribute to address the latter two barriers through (i) helping local renewable energy equipment dealers with well researched market intelligence and opening the local markets to worldwide competition, thus bringing current prices down; and (ii) exploiting the willingness of capable local financial institutions to lend for RE and EE projects and removing the barriers to such lending. Through its implementation, the Project would achieve an increased uptake of RE technologies and EE measures in the participating PICs.

Theory of Change (Results Chain)

7. The project results chain summarizing the relevant activities, corresponding outputs, and intermediate results, and resulting outcomes to achieve the Project Development Objective (PDO) is presented in Figure 1. A direct causal link can be drawn between the project’s activities, outputs, intermediate outcomes, and the longer-term outcomes. Overall, the PDO is addressed by a clear results chain through interventions grouped into four components.

8. The original PDO is to “significantly increase the adoption and use of renewable energy technologies in participating Pacific Island states through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in support of equipment purchase”.

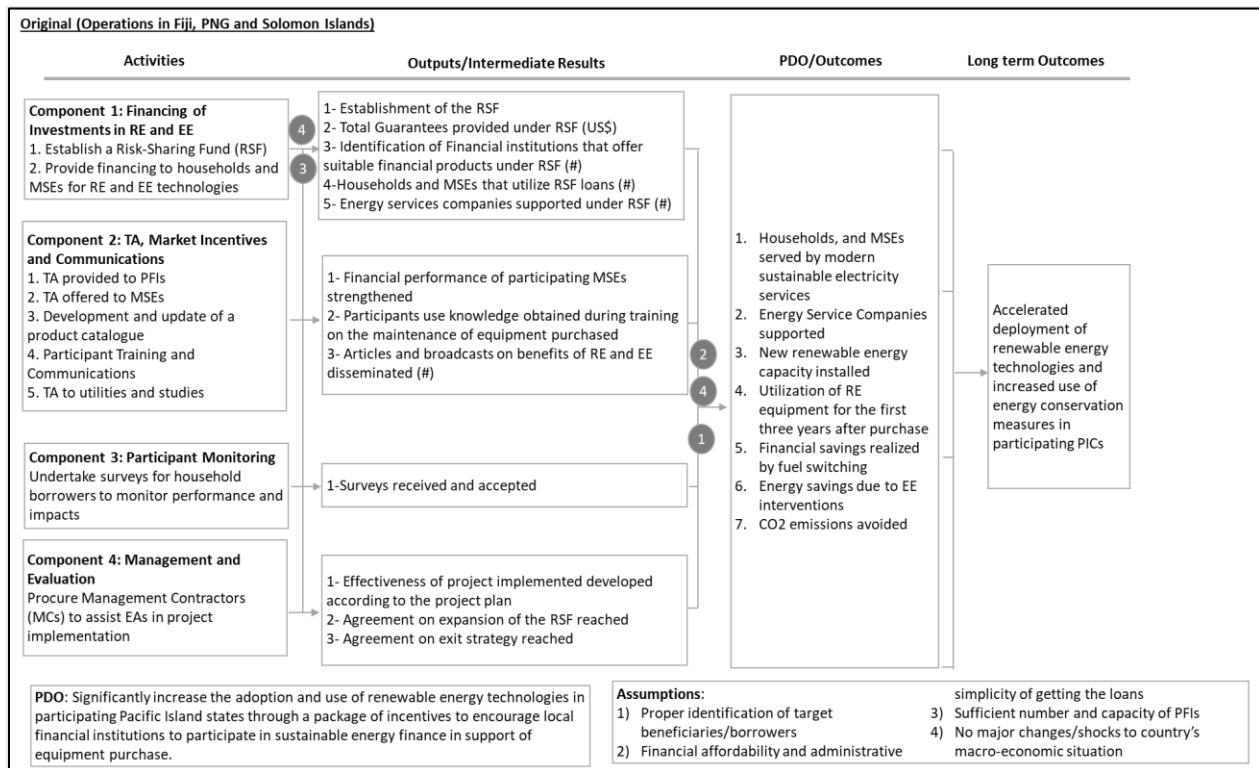
- **Component 1 (Financing of Investments in RE and EE)**, which is the core operation of the entire project, was designed to establish a Risk Sharing Fund (RSF) to incentivize the local commercial and development banks as PFIs. By doing this, the market for RE and EE goods and services in the target country markets was expected to increase. The number of beneficiaries using RE would rise, boosting the total RE installed capacity in the participating countries. This in turn was



expected to accelerate the use of clean electricity, and the reduction in the use of fossil fuels. In addition, through RSF's support to energy service companies, the use of EE technologies and energy conservation measures was projected to accelerate.

- **Component 2 (Technical Assistance (TA), Market Incentives and Communications)** provided technical assistance and training which aimed to strengthen capacity of key stakeholders including MSEs, RE/EE equipment suppliers, energy service providers and utilities and remove barriers to lending in RE/EE equipment purchase, and raise awareness of the benefits of RE and create demand for equipment. This in turn would encourage suppliers to borrow in order to stock up equipment to meet increasing demand. This component was meant to ensure that the enabling conditions for the RSF were improved.
- **Component 3 (Participant Monitoring)** aimed to carry out a survey on household borrowers to monitor performance of equipment and impacts of project on loan beneficiaries. This component was designed to improve the sustainability and scale-up of the program. From sustainability perspective, feedback collected from the survey was expected to help adjust and fine tune the project interventions for improved effectiveness. These activities were expected to help strengthen the design and help achieve the project outcomes.
- **Component 4 (Management and Evaluation)** supported a smooth project implementation through procurement of services of management contractors to help executing agencies (EAs) with implementing the project activities. An efficient project management is a key condition for implementing the activities, and in doing so contribute to achieving the project outcome.

Figure 1. Theory of Change for the Sustainable Energy Financing Project (original)



9. Through implementation of all four components, in the long-term the project outcomes were expected to significantly contribute to the increase in the adoption and use of RE technologies and EE



measures in the participating PICs. The provision of market intelligence, opening of local markets to competition, with resultant price competition and encouraging local financial institutions to provide RE and EE project loans, was to be achieved by removing the barriers to such lending.

10. Key assumptions of the project design, implementation and achievement of outcomes were as follows: (i) Proper identification of target beneficiaries/borrowers. These would include households already using kerosene for lighting, MSEs, including village-based formal institutions using kerosene, diesel or other fossil fuels to provide energy for use in their activities and Renewable Energy Service Companies. (ii) Financial affordability and administrative simplicity of getting the loans especially for those that may view the application procedure as burdensome. (iii) Sufficient number and capacity of PFIs to administer the loans and to participate in the program. PFI's low capacity to manage the applications and participate in the program could have been an obstacle to successfully implementing the program. (iv) No major changes or shocks to the country's macroeconomic situation. This has an influence over both the financial affordability of the consumers and attractiveness of the financing model for the PFIs.

Project Development Objectives (PDOs)

11. The PDO as stated in the original 2007 Grant Agreements concluded by the WB respectively with the Republic of Fiji and ANZ was as follows: *"The objective of the Program is to increase significantly the adoption and use of renewable energy technologies and the more efficient use of energy in participating Pacific Island states through a package of incentives to encourage local financial institutions to participate in sustainable energy finance"*.

12. The PDO was revised twice during implementation. First in 2014 when the RSF in PNG and Solomon Islands were closed and was limited to support operations in Fiji. In addition, the PDO was extended to include the dissemination of the lessons and capacity building in the participating PICs. The PDO was further amended in 2018 to reflect the intention to relaunch the operation as a regional operation, in the first instance in Fiji and Vanuatu, by removing the limitation of the program to Fiji that had been introduced during the first restructuring in 2014. These changes are discussed in detail in the Significant Changes section and in Table 2.

13. The Global Environmental Objective (GEO) of the Project was to contribute to mitigating climate change through the reduction of greenhouse gas emissions in line with the United Nations Framework Convention on Climate Change (UNFCCC).

Key Expected Outcomes and Outcome Indicators

14. The key expected original outcomes and outcome indicators were as follows:

- Expected Project Outcome 1: significantly increase adoption and use of renewable energy technologies in participating PICs. The outcome indicators used to assess the outcome are: (i) number of households and MSEs using RE; (ii) new RE capacity installed (kW); (iii) amount of kWh used in purchased technologies (solar PV, Pico-hydro and fuel switching); (iv) number of Energy Service Companies supported; (v) amount of kWh saved through investments in Energy Efficiency Services; and (vi) increased financial resources that are allocated by PFIs, individuals and MSEs to fund the growth of sustainable energy and energy efficiency. Table 9 demonstrates the



discrepancy between the indicators in the Project Appraisal Document and those monitored in the Implementation Status & Results Report (ISR).

- Expected GEO Outcome 1: contribute to mitigating climate change through the reduction of greenhouse gas emission in line with UNFCCC. The outcome indicator to be used to assess the outcome is CO₂ emissions avoided.

Components

15. At appraisal, the project was designed to be implemented over two phases, and comprised of four components:

16. **Component 1: Financing of Investments in RE and EE (At appraisal GEF: US\$5.2 million, Financial Institutions: US\$19.8 million, Enterprises: US\$1.5 million, NGOs/EC: US\$5 million, RE Investments: US\$20 million; at closing, GEF: US\$5.2 million, Financial Institutions: US\$21.53 million, Enterprises: US\$0 million, NGOs/EC: US\$0 million, RE Investments: US\$43.06 million).** The RSF, funded by GEF and managed by the ANZ³, provided innovative financing support to facilitate the flow of finance from local financial institutions to sustainable energy and EE investments. This was designed to incentivize local PFIs to lend to businesses and households to support installation of renewable energy equipment and energy efficiency measures. The incentive was provided through a partial guarantee of loans provided by the PFIs to individuals and small businesses for RE and EE equipment. Financing support was provided to facilitate the flow of finance from local financial institutions to sustainable energy and energy efficiency investments by guaranteeing 50 percent of the loans issued by the Bank and enabling the PFI to offer longer tenor loans. This guarantee would refund to the PFI 50 percent of principal losses on any guaranteed loan following a default. In return for this security enhancement, the PFIs were incentivized to provide loans to individuals and MSEs who purchase RE equipment and EE technologies.

17. RSF targeted three groups of end users: (i) households already using kerosene for lighting needs, (ii) MSEs, including village based formal institutions using kerosene, diesel, or other fossil fuels to provide energy for use in their activities, and (iii) Renewable Energy Service Companies given that the supply chain for such equipment was not well developed in the region. Technologies to be supported under the RSF included (i) solar PV, (ii) pico-hydro, (iii) switching to coconut oil, and (iv) improving EE.

18. **Component 2: TA, Market Incentives and Communications (At appraisal/ GEF: US\$2.6 million, Local Banks: US\$400,000, NGOs/EU/Trust Funds: US\$1.73 million, MSEs: US\$350,000; at closing, GEF: US\$1.69 million, other agency expenditure not monitored).** This component was designed to provide TA, market incentives and communications to the PFIs, RE suppliers and customers via the respective EAs. They included TA to local financing institutions, MSEs, utilities, and initiatives such as the development of a product catalogue for qualifying products/technologies, participant training and communications and renewable energy resource studies (see Table 1 for details). The GEF grants of US\$357,000 for Vanuatu and RMI were not mobilized because IFC did not proceed with the project. This was largely due to assessments conducted in 2009 and 2010 that concluded there were insufficient opportunities and potential partner banks willing to commit to the proposed structure therefore IFC was therefore unable to continue. The US\$320,000 allocation was cancelled after the 2014 restructuring of the project.

³ Acting as the Fund Manager under the agreement with the World Bank.

Table 1. Breakdown of Component 2 by activity

Category	Key Features
TA to PFIs	<p>Strengthen the capacity of local financial institutions to service clients borrowing to purchase solar PV systems, pico-hydros, or fuel switching equipment (green finance pipeline development).</p> <p>TA and training were to be made available to PFIs to establish and maintain a profitable sustainable energy portfolio, including support with appropriate management information systems, risk mitigation, and recovery techniques (green finance portfolio management).</p>
TA to MSEs	<p>Strengthen sales and after-sales incentive structure for service providers through detailed market surveys, thereby reducing the risk for wholesalers and retailers to stock too much or too little solar PV and additional equipment (RE/EE equipment inventory management).</p> <p>Strengthen the financial and technical capacity of MSE sustainable energy service providers to make them more bankable from the perspective of private sector lenders. This would include support for RE equipment suppliers to understand Global Approval Program for Photovoltaics certification and quality management standards.</p> <p>Provide assistance in sustainable energy repair and maintenance training to vocational schools in areas where no such training is currently available (vocational training related to RE and EE).</p> <p>Facilitate other local training institutions, including Internet based learning centers to develop and administer training in the repair and maintenance of sustainable energy equipment.</p>
Development and update of a Product Catalogue	<p>For each participating country, a catalogue of products that qualify for financing and/or meet the project's quality standards was to be developed, and frequently updated to allow for price fluctuations, and improved technologies.</p> <p>Assist wholesalers and local retailers and other MSEs to attend international trade fairs and training programs in countries with high quality competitively priced equipment.</p>
Participant Training and Communications	<p>Strengthen customer understanding of the operational aspects of sustainable energy equipment to be purchased. The project requires the buyers of products to pass a computer-based interactive video training program which assured that all possible clients get a basic understanding of the workings of the equipment. Completion of this training is a condition to be eligible for a loan supported by the RSF.</p>



	Communications and participant training that addresses all the relevant stakeholders.
Technical Assistance to Utilities and Studies	Provide TA and support RE resource studies, including micro- and mini-hydro, wind, biomass and geothermal resources studies and EE studies in Fiji.

19. **Component 3: Participant Monitoring (At appraisal, GEF: US\$0.4 million; at closing, this component was dropped, and funds reallocated to Component 2).** For the first three years of the project, household borrowers were requested to fill out a quarterly short survey, reporting their technical, economic, and social experiences resulting from access to modern energy services. The participating borrowers were to be rewarded for two acceptable surveys by receiving the equivalent of a monthly loan service payment on their loan for that year. The feedback from the surveys would help fine tune project interventions for improved effectiveness and to monitor project impact on the beneficiaries. The second mid-term review (MTR) in 2016 noted that TA funds had been disbursed and that almost all of the RSF was committed and was unlikely to be utilized given the short remaining commitment period.

20. **Component 4: Management and Evaluation (At appraisal, GEF: US\$1.36 million, Local Governments: US\$210,000; at closing, GEF: the US\$1.36 million, others not monitored).** Since EAs in the participating countries may not all have in-house technical expertise to manage this project in their country, EAs could procure the services of management contractors (MCs) in the first three years (phase 1) to start the project. After year 3 (phase 2), these functions would be delegated to the EA of Fiji acting as the Regional EA, with the support of a Regional MC. The regional MC would support the EAs in the five participating countries.

21. The project was designed to be a regional project that was expected to start with Fiji, PNG, Republic of Marshall Islands (RMI), Solomon Islands, and Vanuatu and was expected that if successful, it would expand to include other countries in the region over time. The project was initially planned to be jointly implemented by the WB and IFC, with the WB taking the lead in Fiji, PNG, and Solomon Islands while IFC covered RMI and Vanuatu. It was to be the second project that featured joint WB-IFC management of a GEF grant (after a project in Europe and Central Asia). As discussed below, however, the IFC’s assistance targeting RMI and Vanuatu did not commence and was cancelled in 2010.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

22. The project was restructured six times during implementation. Only two of the restructurings entailed revision of the PDO (more information can be found in the next section):

- April 2014: PDO change to shift to a Fiji-focused RSF, and the introduction of a regional knowledge sharing concept (more below). This involved terminating project activities in PNG and Solomon Islands, and canceling remaining grant proceeds to PNG and SI and closing the respective grants.
- December 2017: Extension of the project closing date from December 31, 2017, to June 30, 2018.
- June 2018: Extension of the project closing date from June 30, 2018, to September 30, 2018.
- August 2018: PDO change to shift to a Fiji- and Vanuatu-focused RSF, and the extension of the project closing date to December 2022 (more below).
- March 2021: Amendment to several legal clauses on fiduciary aspects in the Grant Agreements.

- May 2022: Early closure of the project on May 15, 2022.

Revised PDOs and Outcome Targets

23. In the first restructuring in 2014, the original PDO was revised to reflect recommendations from the first MTR that was conducted in 2010 with the final report released in January 2011. The restructuring was to (i) shift focus to Fiji only and cease RSF operation in PNG and Solomon Islands and (ii) leverage the Fiji case as a demonstration model to other interested PICs through knowledge sharing and capacity building (see Table 2). This was also deemed as a way in which the “regional nature” of the Project could be maintained. The first recommendation led to a modification in the original PDO which limited geographical coverage of the RSF under SEFP to Fiji alone, while the second recommendation resulted in the addition of Part (ii) of the PDO.

24. In the restructuring in August 2018, the PDOs were revised again to reflect a key recommendation in the second MTR in 2016 which was to relaunch SEFP as a regional project (the same as the original plan at appraisal), based on the success of the Project in Fiji and in dialogue with other PICs. Reinstating the Project on a regional basis was considered instrumental to support electrification in countries like Vanuatu (access rate: 30 percent), Solomon Islands (access rate: 20 percent), PNG (access rate: 12 percent at the time of the second MTR), and others, building on the lesson learned and implementation framework applied in Fiji. The project was extended to Vanuatu to support its rural electrification programs, as requested by the Government of Vanuatu. Therefore, the geographical coverage of the Project expanded from “Fiji only” to “Participating Pacific Island States” again to reflect its “regional nature” as in the revised PDO.

Table 2. PDOs at Appraisal and Revisions during Restructuring (key changes in bold)

	Original	Restructuring (2014)	Restructuring (2018)
Revised PDOs	to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy in participating Pacific Island states through a package of incentives to encourage local financial institutions to participate in sustainable energy finance	(i) to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in the Recipient's Territory (Fiji) (ii) to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Island States.	(i) to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in the Participating Pacific Island States (ii) to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the



			Participating Pacific Island States.
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Revised PDO Indicators

25. In the first restructuring in 2014, PDO level indicators were modified to reflect their relevance to the revised PDO (see Table 3 below). As a result, all three PDO level indicators were dropped, including (i) number of solar PV systems sold; (ii) number of pico-hydro systems sold; and (iii) number of diesel-fueled systems to coconut oil change sets installed, and new indicators were developed. The original indicators were not appropriate for a project where the key component was a RSF that would enable banks to have confidence in providing loans for RE, by means of partial credit guarantees and technical support from the project EA.

26. The seven new PDO level indicators were an outcome from the MTR in 2011. They proposed to better measure the impact of the financing provided by the PFIs. Four indicators were removed in March 2015 and there was no reporting in the ISRs. In addition, with the restructuring in 2014, the PDO was revised to include a second objective “support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Island States” to retain the “regional nature” of the project. One indicator was designed to measure the number of PICs that were interested in participating in knowledge sharing and understanding how the project could contribute to the sector in other PICs. This is logical in that the project objective is to increase the uptake of RE in the PICs through access to finance and sharing Fiji’s success story with other countries in the region and increasing their capacity may prepare them to implement similar programs in the future. The GEO indicator “CO₂ emissions avoided” was revised to “Carbon Dioxide emissions avoided due to financing through project (tCO₂)”.

27. In the restructuring of August 2018, four PDO level indicators were dropped, namely (i) People provided with access to electricity by household connections - Other RE: Off-grid (Number, Core); (ii) Community electricity connections constructed – Other RE: Off-grid (Number, Core); (iii) Generation Capacity of Renewable Energy (other than hydropower) constructed (Megawatt, Core); and (iv) Generation Capacity of Renewable Energy constructed – Other (Megawatt, Core Breakdown). The indicator on knowledge sharing and capacity building was dropped because the project was relaunched as a regional project. However, the second project outcome “to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Island States” was kept and no indicator was designed to measure progress. The GEO indicator remained unchanged.

Table 3. PDO-level Indicators at Appraisal and their Revisions during Restructuring

PDO	Indicators
PDO (at appraisal): significantly increase adoption and use of renewable energy technologies in participating PICs.	1. Number of households and MSEs using RE 2. Number of Energy Service Companies supported 3. New RE capacity installed 4. Amount of kWh used in purchased technologies 5. Amount of kWh saved through investments in Energy Efficiency Services



	6. Increased financial resources that are allocated by FIs, individuals and MSEs to fund the growth of sustainable energy and energy efficiency.
PDO (2014): to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in the Recipient's Territory (Fiji) (ii) to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Island States.	<ol style="list-style-type: none"> 1. People provided with access to electricity by household connections-Other RE: Off-grid 2. Community electricity connections constructed-Other RE: Off-grid 3. Generation Capacity of Renewable Energy (other than hydropower) constructed 4. Generation Capacity of Renewable Energy constructed 5. Increased lending from local financial institutions for RE and EE equipment in the Recipient's territory 6. Addition of kW of RE and EE technology financed through approved participating financing institutions 7. Number of PICs participating in knowledge sharing and capacity building programs
PDO 1 (2018): to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in the Participating Pacific Island States (ii) to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Pacific Island States.	<ol style="list-style-type: none"> 1. Increased lending from local financial institutions for RE and EE equipment in the Recipient's territory (US\$ million) 2. Additional number of kW of RE and EE technology financed through approved participating financing institutions (MW)
GEO: contribute to mitigating climate change through the reduction of greenhouse gas emission in line with UNFCCC	<p>(2007) CO₂ emissions avoided</p> <p>(2014 and 2018) Carbon Dioxide emissions avoided due to financing through project (tCO₂)</p>

Revised Components

28. In the 2014 Restructuring, the following changes were made to the original components:

- **Component 1 (Financing of Investments in RE and EE):** this component would only be active in Fiji. Technologies to be supported under the RSF would include “use of coconut oil” instead of “switching to coconut oil” to allow communities and/or energy supply companies to access the RSF to develop coconut oil fueled (CNO) electricity generation even if they do not already have an existing diesel generator. In addition, individual and MSE borrowers may access the RSF for other RE technologies, such as solar hot water systems, which could include fuel switching or installation of new equipment.



- **Component 2 (TA, Market Incentives and Communications):** this component supported the EA in Fiji with the funding and installation of RE and EE technologies as demonstration models to promote the marketing and uptake of such technologies. It would also include training on energy planning and sustainable energy solutions and testing and accreditation programs to raise the confidence of suppliers and users of sustainable energy technology.
- **Component 3 (Participant Monitoring):** This component was dropped and funding earmarked for this component was reallocated to Component 4.
- **Component 4 (Management and Evaluation):** An additional sub-activity – regional information sharing and capacity building – was newly added. Its objective was to share lessons learned from the project’s success in Fiji with the original set of participating countries and other PICs as agreed with the WB. It also included the participant monitoring activity previously included in Component 3.

29. In the August 2018 restructuring, the following key changes were made to program activities:

- Expanded Component 1(a) of the Program (the RSF) to cover Vanuatu; amended Component a (b) of the Program (providing TA to Fiji for the institutional arrangements for the RSF) to expand the TA to cover Vanuatu.
- Amended Component 2 of the Program (TA, Market Incentives and Communications) to expand the TA to cover Vanuatu.
- Revised Component 3 of the Program (Management, Monitoring and Evaluation) to state “Providing the services of a regional Program manager to Fiji for the Participating Pacific Island States in order to promote regional coordination of Program activities”.

Other Changes

30. Following a consultant’s report in 2009 that examined the potential opportunities for IFC in RMI and Vanuatu, in June 2010, IFC decided to formally cancel its engagement. This was due to a conclusion it reached that there were insufficient opportunities and potential partner banks willing to commit to the proposed structure in either Vanuatu or RMI at the time. Moreover, in the case of Vanuatu, it was thought that potential overlap with several donor-funded initiatives may confuse the market.

31. The closing date was amended several times. In the August 2018 restructuring, extension of the Closing Date of the grants was provided to Fiji and ANZ under the program by a cumulative total of five years from December 31, 2017, to December 31, 2022. This extension was the third extension of the Closing date. The previous two extensions were for six months and three months to September 30, 2018, to allow for the preparation and approval of the restructuring in 2018. The restructuring in May 2022 brought forward the project closing date from December 31, 2022, to May 15, 2022. Contrary to the expectation at the time of the second restructuring in 2018, the conditions for enabling the implementation of the project in Vanuatu were not met. There were delays in finalizing inter-jurisdictional implementation arrangements between Fiji and Vanuatu.

32. The two key issues that stopped the practical relaunch of the restructured project were (i) new and unsolicited terms that were added to the Client – PFI Agreements. In the March 2021 restructuring, several legal clauses on fiduciary aspects in the Grant Agreements were amended (e.g., requirements for audited financial statements from small borrowers); and (ii) the advent of COVID-19 resulted in a change



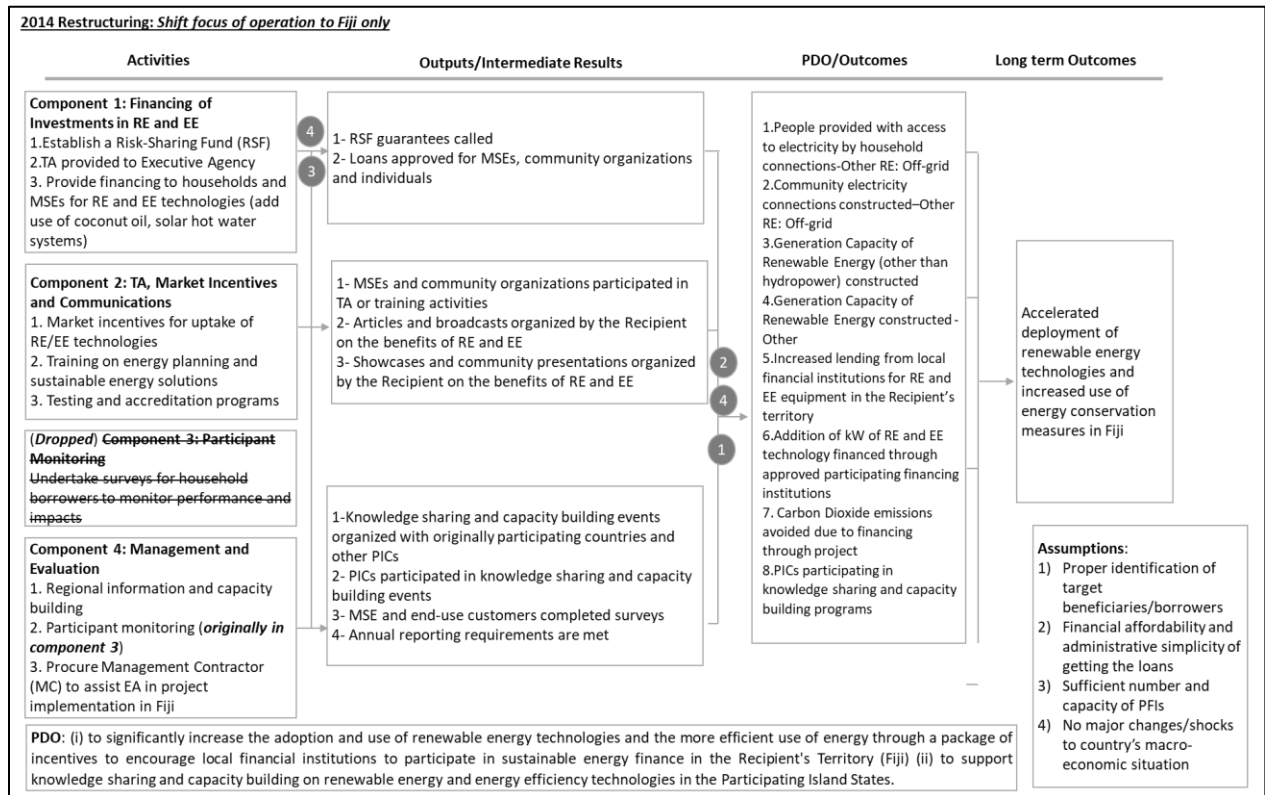
in the focus of the PFIs away from writing perceived new higher-risk business. PFIs shifted their priorities from lending for RE and EE installations to managing existing exposures. For these reasons, the project was closed earlier than initially planned.

Rationale for Changes and Their Implication on the Original Theory of Change

33. In December 2021, it was noted that there were implementation delays that arose from the finalization of legal agreements and the impact of COVID-19, and there has not been any new lending under the relaunched operation. Following client’s request, it was agreed to proceed to the early closing (May 2022), noting that there is insufficient time left to initiate any new loans.

34. The 2014 restructuring took place following the recommendations of first MTR (2011) which concluded that “the project was unlikely to achieve the expected results in PNG and Solomon Islands” and that “accelerate the successful implementation of the project in Fiji”. The implications on the original theory of change are (i) the geographical coverage of RSF operation was limited to Fiji only, as opposed to a regional project as envisioned originally; (ii) PDO level indicators were revised to focus on increased lending for RE and EE technologies financed under the RSF (in line with the PDO); (iii) the PDO was extended to include “to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Island States (PISs)”, to leverage Fiji’s experience and capacity in other PISs and to maintain the “regional nature” of the Project; and (iv) the beneficiary of the lending outcome was limited to Fiji, as opposed to Fiji, PNG and SI in the original project (see Figure 2).

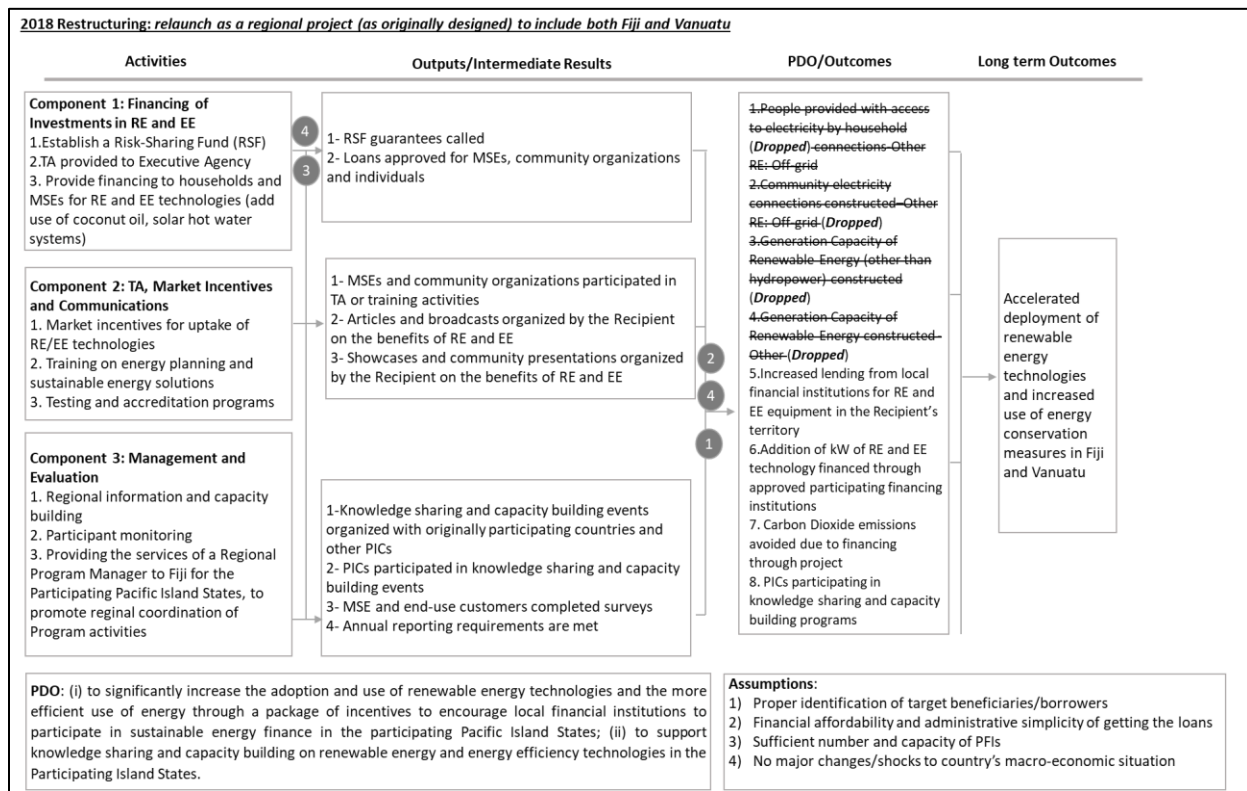
Figure 2. Revised Theory of Change Following the 2014 Restructuring





35. The 2018 restructuring came following the second MTR in 2016. This MTR found that “the Project had been very successful in Fiji, with all targets for the Program met or exceeded”. The MTR recommended that “the Program be reinstated on a regional basis, as per its original design”. Based on request from the Government of Vanuatu to extend the project coverage to Vanuatu to support its rural electrification programs and to meet its Nationally Determined Contributions (NDCs) to reductions in greenhouse gas emissions, the project was restructured to cover both Fiji and Vanuatu. The implications on the theory of change (2014) are (i) RSF operation became regional as per its original design; (ii) PDO level indicator – “Number of PICs participating in knowledge sharing and capacity building programs (#)” was dropped. This indicator was added during the 2014 restructuring to retain the “regional nature” of the project. However, it became redundant during the 2018 restructuring when the project was reinstated on a regional basis (see Figure 3).

Figure 3. Revised Theory of Change Following the 2018 Restructuring



II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating

36. The relevance of the PDOs is rated **High**.



37. At appraisal, the PDOs were consistent with WB’s Pacific Regional Strategy for FY2006-09. The project supported the pillar: “reducing poverty and increasing the quality of life for those persons living in rural households” and “generating sustainable economic growth and employment opportunities” through facilitating increased access to electricity, reducing reliance on kerosene and diesel generation, enabling income-earning activities, and contributing to the development of MSEs. The PDOs were also consistent with the objectives of the GEF Operational Program (OP) Number 5, “Removal of Barriers to Energy Efficiency and Energy Conservation,” and OP Number 6, “Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs.” The specific priority is Increased Access to Local Sources of Financing Renewable Energy and Energy Efficiency. Also, the project was in line with WB’s assistance strategy for the PICs to assist them to establish a business environment that is conducive to faster and sustainable economic growth and to higher employment.

38. The PDOs at completion remain relevant and consistent with WBG’s Regional Partnership Framework (RPF) FY17-FY21. The project supports the Objective 4.2 of the RPF – “Increased access to basic services and improved connective infrastructure” through scaling up application and use of RE technologies as means to improving access to electricity services. The project is also in line with WBG’s New Country Partnership Framework for Fiji (2021-2024). The project contributes to the Objective 1.3 – “Enhance delivery of productivity-enabling resilient infrastructure” under Focal Area 1: “Fostering Private Sector-led Growth and Inclusive Economic Opportunities” through assisting Fiji in its transition to clean energy by accelerating deployment of renewable energy infrastructure and reduce its reliance on diesel. The project aimed to contribute to the Government of Vanuatu’s objectives and targets for increasing access to secure, reliable and affordable electricity of its citizens under the National Energy Road Map 2016-2030, especially the key targets, (i) electrify 100 percent of public institutions in off-grid areas by 2030, and (ii) 100 percent electricity generated from renewable sources, among others. The project in Vanuatu was not launched and no activities were implemented.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

39. **Breakdown of the PDO.** Initially, the PDO was structured around one objective: (i) significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy in participating Pacific Island states. Later with the 2014 restructuring there were two sub-outcomes: (i) PDO 1: significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy in the Recipient’s Territory (Fiji); and (ii) PDO 2: support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Island States. The Global Environmental Objective for the project is assessed separately.

40. **Approach taken in this ICR (split assessment).** Of the six restructurings, the 2014 and 2018 restructuring made substantial changes to the PDO and outcome targets. For accountability and transparency, the ICR considers project performance both before and after the revision of the PDOs by weighing the length of the implementation period in each case, between effectiveness (2008) and closing (2022).⁴ When the Project was restructured in 2014 and four out of the five participating PICs were removed from the project’s main component, it made substantial changes to the PDO as the project was

⁴ World Bank. OPS5.03-GUID.152.



made country focused. In 2018, the PDO 1 was changed the second time to expand the scope to include other countries in the region. A split assessment is therefore undertaken for two phases when the project was regional and when it was primarily country-focused respectively: (i) Regional PDO 1 for two periods, 2008-2014 and 2018-2022; and (ii) Country-focused PDO 1 for the period between 2014 and 2018. To assess the Project's efficacy, this ICR uses both pre- and post-restructuring objectives and outcome targets. Since PDO 2 was included after 2014 as a subsidiary objective, it is evaluated until project close in 2022. PDO2 is assessed for two periods, country-focused (2014-2018) and regional (2018-2022).

41. Regional PDO 1: Significantly increase the adoption and use of renewable energy technologies in participating Pacific Island states (2008-2014 and 2018-2022)

42. Until 2014, the PDO 1 objective was to significantly⁵ increase the adoption and use of RE technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energy finance”.

43. The project MTR conducted in June 2010 (final MTR report dated January 2011) concluded that the project was unlikely to achieve the expected results in PNG and Solomon Islands. The project had only commenced in late 2008 and the design and implementation challenges were already identified within two years. Implementation progress has fallen short mainly due to the fact the only one of the participating PICs (Fiji) was able to establish incentives and financial intermediaries capable of providing loans for renewable energy and efficiency investments, or to attract individuals and companies willing to seek credit for such investments.

44. By the 2014 restructuring, the PDO 1 was not achieved because the outputs planned for PNG and Solomon Islands were not completed. Before the restructuring, according to the three PDO indicators measured the progress, there were (i) 15,057 solar PV systems sold (71 percent of the end target); (ii) no Pico hydro systems sold (0 percent of the end target); and (iii) 11 diesel to coconut oil change sets installed (1.5 percent of the end target). It was reported that US\$7.9 million was the total amount of issued loans by PFIs allocated to individuals and MSEs for sustainable energy and energy efficiency in PNG, Solomon Islands and Fiji which is 58 percent below the end target value of US\$18.9 million. Although most of these loans were issued in Fiji, the project retained a regional nature until 2014.

45. At the time of the second restructuring in 2018, the PDO 1 was expanded to other countries in the region and was revised to significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy in the Participating Pacific Island States. The PDO 1 was not achieved by the project closing in 2022. After 2018, the conditions for enabling the implementation of the project in Vanuatu were not met. There were delays in finalizing inter-jurisdictional implementation arrangements between Fiji and Vanuatu that were not finalized until project close (more information to be found in other sections). It was envisaged at the time of the 2018 restructuring that SEFP would provide financing options to the beneficiaries of WB-funded Vanuatu Rural Electrification Project Stages I and II (VREP I and II). This was because access to finance for households and small businesses was identified as a key barrier for the uptake of solar home systems in Vanuatu during the implementation of the VREP activities. In 2020, however, the WB became aware of potential ineligible expenditures under VREP I that stalled its implementation of VREP. With the onset of COVID-19, moreover, the banking sector in general became focused on the protection of their balance sheets and was not keen on extending new loans. No

⁵ “Significant” can be understood as a noticeably or measurably large amount of additional RE and EE technologies being used.

progress was made in the PDO indicators between 2018 and 2022 (see Table 5) but given that the targets were revised, it seemed that the targets were not met by between 47 and 49 percent.

46. **Rating.** Regional PDO 1 is rated as **Modest** because the regional project partly achieved its objective in all countries and fell short of the targets (Table 4 and 5). In 2018, after the end targets were increased to reflect the regional approach and addition of another country (Vanuatu), the project did not start implementation, and the program as a whole was not successful. The key constraints identified were related to capacity and market scale in the financial intermediary sector in PNG and Solomon Islands. The PDO indicators measured the extent to which these technologies were adopted in the countries and the amount of loans being guaranteed by the RSF.

Table 4. Achievement of regional PDO 1 before 2014

Regional PDO1: Significantly increase the adoption and use of renewable energy technologies in participating Pacific Island states.		Baseline 2007	July 2012 Target	Actual by 2014 Restructuring	Above/below target	Comment
PDO/Outcome Indicators	Number of Solar PV systems sold.	0	21,000	15,057	-29%	Target not achieved
	Number of Pico hydro systems sold.	0	540	0	-100%	Target not achieved
	Number of diesel to coconut oil change sets installed	0	720	11	-98%	Target not achieved

Table 5. Achievement of regional PDO 1 between 2018 and 2022

Regional PDO1: Significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy		Baseline 2007	Revised Target 2022	Actual by Project Close in 2022	Above/below target	Comment
PDO/Outcome Indicators	Increased lending from local financial institutions for RE and EE equipment in the Recipient's territory (US\$ million)	0	41	21.53	-47%	Target not achieved
	Additional number of kW of RE and EE technology financed through approved participating financing institutions (MW)	0	8.8	4.49	-49%	Target not achieved
Intermediate Indicators	Number of RSF guarantees called	0	2	2	0%	Target not achieved
	Number of loans approved for (i) MSEs, (ii) community organizations and (iii) individuals	0	135	70	-48%	Target not achieved

Country-focused PDO 1: Significantly increase the adoption and use of renewable energy technologies in the Recipient's Territory (Fiji) (2014-2018)



47. The country focused PDO 1 after the 2014 restructuring is “Significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy through a package of incentives to encourage local financial institutions to participate in sustainable energy finance in the Recipient's Territory (Fiji)”. The project reached or exceeded the targets in Fiji and achieved the PDO.

48. It is not possible to assess the impact on EE measures, separately from RE. Although the Project Appraisal Document (PAD) Results Framework presents indicators on EE, none of them were measured during project implementation. Four indicators were not included in the ISR until 2014 and were again removed in March 2015. The PDO level indicators used in the ISR after the 2014 Restructuring measured the progress on both RE and EE technologies.

49. The PDO-level indicators captured the scope of accelerating adoption and use of RE technologies through financial intermediaries because the primary function of the RSF was to assist borrowers to buy RE equipment through catalyzing loans via local financial institutions. This objective was measured by two indicators (i) increased lending from local financial institutions for RE and EE equipment in the Recipient's territory and (ii) additional number of MW of RE and EE technology financed through approved participating financing institutions. The Program in Fiji was very successful and in 2018, targets were exceeded by between 54 and 115 percent (see Table 6)

50. Despite the constraints and complexities, the program had a remarkable success in Fiji. With limited project expenditure with return of the RSF, the project did achieve more than 90 guaranteed loans of US\$17million (US\$8.5million of guarantees), with an estimated US\$34million of clean energy investment at a high leverage and relatively low project cost as the RSF covered only one Non-Performing Loan (NPL) since 2007 for US\$68,000, such that the RSF was returned at project close.

51. At closing, the total lending catalyzed by RSF through PFIs reached US\$21.53 million, approximately 115 percent above the planned target. Nearly 40,000 individuals and small businesses benefited from the loans which supported RE and EE investments worthy of over US\$40 million. The NPL ratio was approximately one percent. The low NPL ratio meant that almost all of the US\$5.2 million allocated to the RSF by the WB has been returned to the fund, demonstrating the capacity of the Program to generate significant ongoing climate benefits at low cost. The catalyzed lending resulted in the installation of about 4.49 MW of RE/EE technologies approximately 54 percent above the target.

52. **Rating.** The country focused PDO 1 is rated as **High**. The project exceeded all three PDO targets for 2018 when it was set for Fiji only.

Table 6. Achievement of country focused PDO1 between 2014 and 2018 (Fiji)

Country-focused PDO1: Significantly increase the adoption and use of renewable energy technologies and the more efficient use of energy		Baseline	Dec 2017 Target	Actual by 2018 Restructuring	Above/below target	Comment
PDO/Outcome Indicators	(i) Increased lending from local financial institutions for RE and EE equipment in the Recipient's territory (US\$ million)	0	10.00	21.53	+115%	Target exceeded
	(ii) Additional number of kW of RE and EE technology financed through approved participating financing institutions (MW)	0	2.91	4.49	+54%	Target exceeded
Intermediate Indicators	RSF guarantees called	0	0	1	-100%	Target not met
	Number of loans approved for (i) MSEs, (ii) community organizations and (iii) individual	0	30	70	+133%	Target exceeded

Country-focused PDO 2: Support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Recipient's Territory (Fiji) (2014-2018)

53. The PDO 2 was included when the project became country-focused between 2014 and 2018 and was introduced with the 2014 Restructuring “to support knowledge sharing and capacity building on renewable energy and energy efficiency technologies”. This second objective was introduced to retain “regional nature” of the project when the project was restructured to focus on operations in Fiji only.

54. Achievements of PDO 2 between 2014 and 2018 are evaluated against one PDO indicator. By March 2018 the target was exceeded by 39 percent, when there were 11 PIC participants in knowledge sharing and capacity building programs, while the planned target was eight PICs by December 2017. Quarterly reports submitted by the DoE provided details of the number of PIC participants that received training. Between September 2009 to December 2015, in Fiji nine learning events including several multi-day workshops, were completed involving PIC participants. They were able to learn from the Fiji experience. The workshops in 2010 and 2011 were attended by over 100 participants. The development objective was achieved, and PICs had shared knowledge and built their capacity on RE and EE technologies.

Regional PDO 2: Support knowledge sharing and capacity building on renewable energy and energy efficiency technologies in the Participating Island States (2018-2022)

55. The second objective was not part of the PDO before 2014 and although it remained in the PDO after the 2018 restructuring, very little progress was made until project closing. The PDO 2 was kept after the second restructuring in 2018 when the intention was to extend the operation to other countries in the region, however, no activities took place. Given that the PDO level indicator to assess this objective was dropped, the achievements during the last four years of project implementation cannot be assessed. More information can be found in the Monitoring & Evaluation (M&E) section of the document.

56. After 2018, the achievement of this objective can be measured against three intermediate indicators (see Table 7). The Project sought to monitor progress through three further metrics (intermediate indicators) each of which can be assessed to have contributed to reaching the PDO target: (i) MSEs and community organizations participating in TA or training activities; (ii) number of articles and broadcasts organized by the recipient on the benefits of RE and EE; and (iii) number of showcases and community presentations organized by the Recipient on the benefits of RE and EE (see Table 7). At closing, a total of five MSEs and community organizations participated in TA and/or training activities, falling short of the target by 58 percent. About 21 articles and broadcasts were organized to disseminate the benefits of RE and EE, instead of the 51 as planned. Only 80 showcases and community presentations were organized to raise awareness of the benefits of RE and EE technologies, as opposed to the planned target of 130.

57. **Rating.** Given the evaluation above, the PDO 2 is rated as **Substantial** between 2014 and 2018, and **Modest** when the project was regional.

58. **Global Environmental Objective Assessment:** The GEO is “**Contribute to mitigating climate change through the reduction of greenhouse gas emission in line with UNFCCC**”. This objective is assessed against one metric intermediate indicator “CO₂ emissions avoided due to financing through project”. The target was exceeded by Fiji already in 2018 when the program contributed to the avoidance of 6.3 tCO₂e. However, when the end targets were increased to include Vanuatu where the program did not launch, the targets were not reached by the project closing date. The RSF catalyzed lending resulted in a total of 6.65 tCO₂e emission avoided through application and use of RE and EE technologies financed under the project. This fell short of the target by 49 percent. Due to the fact that the GEO is not part of the PDO, it is not included in the split rating calculation.

59. **Rating.** The restructured GEO 1 is rated as **Substantial**.

60. Tables 4, 5, 6 and 7 summarize the achievement of Part 1 and 2 of the PDO, and the targets and actual values at closing. The main reasons for falling short of the target were related to the inability to operationalize the project before the 2014, and after the 2018 restructuring when the project was regional for reasons elaborated more in the next sections of the report.

Table 7. Achievement of PDO 2 (2014-2022)

PDO 2: Support knowledge sharing and capacity building on renewable energy and energy efficiency technologies		Baseline	Dec 2017 Target	Actual by 2018 Restructuring	Above/below target	Comment	Revised Target 2022	Actual by Project Close in 2022	Above/below target	Comment
PDO/Outcome Indicators	Number of PICs participating in knowledge sharing and capacity building programs,	0	8	11	+38%	Target exceeded	na	na	na	
Intermediate Indicators	(i) MSEs and Community organizations participating in TA or training activities (number)	0	8	5	-38%	Target not met	12	5	-58%	Target not met

	(ii) Number of articles and broadcasts organized by the Recipient on the benefits of renewable energy and energy efficiency (number)	0	28	21	-25%	Target not met	51	21	-59%	Target not met
	(iii) Number of showcases and community presentations organized by the Recipient on the benefits of renewable energy and energy efficiency (number)	0	65	80	+19%	Target exceeded	130	80	-38%	Target not met

Table 8. Achievement of GEO (2014-2022)

GEO: Contribute to mitigating climate change through the reduction of greenhouse gas emission in line with UNFCCC		Baseline	Dec 2017 Target	Actual by 2018 Restructuring	Above/below target	Comment	Revised Target 2022	Actual by Project Close in 2022	Above/below target	Comment
Intermediate Indicators	Carbon Dioxide emission avoided due to financing through project (tCO ₂ e)	0	6.3	6.65	+5%	Target exceeded	13	6.65	-49%	Target not met

Justification of Overall Efficacy Rating

Table 9. Summary of Efficacy Results

	Regional Phase	Country-focused phase
Relevance of PDOs	High	
Efficacy	Modest	Substantial
PDO 1	Modest	High
PDO 2	Modest (PDO 2 is rated only 2018-2022)	Substantial

61. The overall efficacy rating was rated as **Modest** in the regional phase of the project and **Substantial** when the project was focused on Fiji. The program had some limitations, for example the implementation in the three countries selected at appraisal were not possible but the team were able to



narrow down the scope thereby improving the implementation progress and the advancement towards achieving the development objective. Later when the scope was expanded from country-focused to regional again, progress stalled, and the project could not be relaunched for several reasons as indicated in the next sections.

C. EFFICIENCY

Assessment of Efficiency and Rating

Rating: Substantial

62. **Economic and financial efficiency.** The economic and financial analysis at appraisal only focused on the solar PV component. The analysis concluded that the project is economically viable although the aggregated economic rate of return (ERR) was 8.7 percent. The analysis was based on avoided cost calculation and the outcome was described as conservative. Nevertheless, at completion, under the actual economic and technical parameters, an ERR of 26 percent was achieved, higher than the ERR at appraisal. The higher-than-anticipated economic (and financial) viability of the project can be attributed to lower capital expenditure. Due to the technology learning curve for solar panels, between the second and seventh year of project implementation the cost of solar home systems (SHS) declined by 10 percent per year. These large cost savings outweigh the lost benefit associated with fewer SHS being distributed. More information on the methodology, assumptions and results can be found in Annex 4.

63. A simplified assessment of the efficiency of Component 2, 3 and 4 based on a verification of ‘reasonable cost’ and ‘value for money’ concluded that the project achieved great value at reasonable cost due to significant cost savings, the use of grant financing and the visible and attributable benefits of the TA activities. A number of MSEs and community organizations participated in TA or training activities and benefited by these. In addition, despite its small size, the project was able to leverage considerable private sector investment in RE, particularly solar PV. Prior to the WB TA support, this would not have otherwise occurred at that time due to lack of knowledge/experience within the banking sector. The project’s economic efficiency is in line with the results anticipated at appraisal, and the operation achieved the development outcomes with significant savings.

64. **Implementation and administrative efficiency.** The implementation efficiency of the project had some shortcomings. Some key challenges could have been anticipated at design stage, including identifying the right target group of beneficiaries of renewable energy products. Although assessments were carried out during project preparation, these challenges were not identified early on. Nevertheless, the team was able to take action early in implementation and revise the design. The focus shifted to commercial loans to retailers, with some small loans targeting individuals. More information can be found in the Quality at Entry and Implementation sections.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

Table 10. Split Rating Evaluation

	Without Restructuring	With Restructuring
Relevance of PDOs	High	
Efficacy	Modest	Substantial



	Without Restructuring	With Restructuring
PDO 1	Modest	High
PDO 2	(PDO 2 is rated only after restructuring)	Substantial
Efficiency	Substantial	
Overall outcoming rating		
Outcome ratings	Moderately Unsatisfactory	Satisfactory
Numerical value of outcome ratings	3	5
Implementation period (years)	10	4
Share of implementation period (%)	0.7	0.3
Weighted value of outcome ratings	2.1	1.5
Final outcome rating	Moderately Satisfactory ^a (2.1 + 1.5 = 3.6)	

Note: a. According to the World Bank Guidance Note 2021, an overall outcome rating of Moderately Satisfactory can be derived where a relevance rating of High, efficacy rating of Modest and Substantial, and efficiency rating of Substantial have been achieved. This is recommended for a project in which “there are moderate shortcomings in achievement of one or more of the objectives/outcomes used in the assessment of the overall Efficacy.”

65. Based on an assessment of the objectives achieved, the ICR concludes that the overall outcome efficacy rating of the project is **Moderately Satisfactory**.

E. OTHER OUTCOMES AND IMPACTS (IF ANY)

Gender

66. The project was not designed to address any gender gaps and did not include related activities or outcomes. However, increased access and use of RE would benefit all project beneficiaries in project participating countries.

Institutional Strengthening

67. The project EA, the Fiji Department of Energy (DoE), successfully provided technical support to the project through technology reviews and project loan applications on behalf of the PFIs and the fund manager. The aim was to improve the ability of commercial banks to assess renewable energy lending. This was achieved as demonstrated by the number of loans provided and the full utilization of the RSF.

Mobilizing Private Sector Financing

68. The project key objective was to encourage commercial banks to provide lending for RE. As noted in the MTR 2016, the SEFP RSF backed up by the TA funds had mobilized 90 local commercial bank loans to individuals, communities and SMEs totaling over US\$17 million in loans equivalent to around US\$34 million in clean energy investments. This represented a leverage of 3-6x the RSF value. With a very low Non-Performing Loan (NPL) rate, it was anticipated that by project closure that the majority of RSF guarantees would be cancelled as the loans were repaid. By project closure guaranteed loans had increased to US\$21.53 million. The RSF of US\$5.2 million which was returned to the WB consequently achieved this level of mobilization of private sector finance at very low cost of EA and fund management fees. Potential borrowers still needed to meet credit conditions such that the SEFP partial credit guarantee support which was not to be used for PFIs to support fundamentally un-bankable projects, individuals or



companies thus avoiding the moral hazard of the partial guarantees incentivizing banks to lend to non-creditworthy borrowers.

Poverty Reduction and Shared Prosperity

69. The project was designed to help reduce poverty and increase the quality of life for those persons living in rural households and generate sustainable economic growth and employment opportunities. This was to be achieved through facilitating increased access to electricity, reducing reliance on kerosene and diesel power generation, enabling income-earning activities, and contributing to the development of MSEs. The project did achieve substantial lending through the guarantees provided by the RSF that led to an installed new capacity of 4.49 MW of small-scale clean energy.

Other Unintended Outcomes and Impacts

70. Although not set out in the PDO, the project contributed to catalyzing a local supply and service industry for renewable energy equipment and the financial sector, both for the banks and suppliers financing such products. As referred to above, the risk sharing (partial credit guarantee) fund, of just US\$5.2 million, triggered US\$21.53 million of bank lending. In addition, the investments under the project had a catalytic effect which has resulted in a sustainable renewable energy/financing industry that is now operating without the initial project incentives.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

71. **IFC Involvement.** The project was originally designed to cover five countries in the region and to benefit from IFC's experience in establishing clean energy RSFs for commercial banks. IFC was to support the project in RMI and Vanuatu, with the GEF implementing agency fees to be split by a 3/5:2/5 ratio, and a collaboration agreement to this effect was signed between the WB and IFC in April 2008. IFC pulled out in 2010 as it reached a conclusion that there were insufficient opportunities and potential partner banks for Vanuatu or RMI, so the project then focused on the three remaining countries supported by the WB until the 2014 restructuring.

72. **Financing to consumers and MSEs.** At preparation, it was envisaged that commercial banks could be encouraged (through the provision of the RSF guarantees) to provide micro-loans to individuals and MSEs. Such lending would be channeled through PFIs. However, appropriate PFIs in the participating PICs did not meet the WB's extensive criteria that were more appropriate for larger banks. The project identified fairly quickly that this was not possible as commercial banks were only able to lend according to commercial banking principles to sufficiently credit worthy borrowers. The project was re-focused on provision of loans to suppliers/installers of renewable energy equipment.



B. KEY FACTORS DURING IMPLEMENTATION

73. **The project was ambitious and the numerous players in the region presented coordination challenges.** The project was subject to early implementation delays in each country and finally got fully underway a year late in November 2008. The first MTR was conducted in May 2010, just 18 months from commencement and provides a good commentary on the challenges already being faced by the project and the evident constraints. It notes that by 2009, IFC had decided not to continue based on a market assessment update in Vanuatu and RMI, following their initial assessment in 2006. The consultant’s report concluded that the market in the two countries had declined since the original GEF approval to a point where IFC involvement was not considered viable. Several factors included bilateral donor support through grants and direct equipment supply that virtually eliminated any prospects for commercially supplied solar systems in RMI. This further narrowed the technological base for the country as originally outlined in the PAD.

74. **Recipients and Implementing Agencies**

- ANZ Bank Group Limited – For the RSF aspects of component 1 of the project, the recipient and implementing agency was ANZ Bank Group Limited, and a company registered in Australia with operations in PNG, Solomon Islands, Fiji and other PICs, was selected as the wholesaler/apex financial intermediary that could cover the project in all countries.
- PNG Sustainable Energy Limited (PNGSEL) – Is a company which carries out the energy related program of its parent company PNG Sustainable Development Program Limited, a company registered in Singapore that owns shares in Ok Tedi Mining Limited (OTML) and utilizes received dividends to reinvest in programs that deliver lasting benefits for the people of PNG, particularly in the Western Province. (Refer details below concerning the ceasing of operations of PNGSEL).
- Central Bank of Solomon Islands (CBSI) – The CBSI, independent of the Government of Solomon Islands, is responsible for the formation and implementation of the country’s monetary policy and regulating the banking industry.
- Department of Energy (DoE) – Responsible for the energy sector for the Republic of Fiji.

75. **Data Sheet, Basic Information, Organizations**

Borrower	Implementing Agency
ANZ Banking Group Limited	ANZ Banking Group Limited
Republic of Fiji	Department of Energy (DoE)
PNG Sustainable Energy Limited (PNGSEL)	PNG Sustainable Energy Limited (PNGSEL)
Central Bank of Solomon Islands (CBSI)	Central Bank of Solomon Islands (CBSI)

76. **The project objectives were clear, but implementation was made difficult by the complex project structure.** At first, the three EAs demonstrated variable commitment to implement the program, with limited engagement on work plans, procurement, budgeting, administration and lack of understanding of WB procedures. MTR noted that progress in Solomon Islands and PNG had been slow and that there were only two PFIs. A commercial bank had expressed strong interest in becoming a PFI but had reservations about receiving a partial credit guarantee from a competitor bank. In PNG, a PFI expressed concerns that the financial conditions imposed by the EA were too restrictive. In Solomon



Islands, the MTR noted the heavy presence of donor support as a hindrance to commercially oriented schemes. In 2012, the government of PNG passed laws that expropriated the shares in OTML from PNGSDP back to the government, along with court actions to gain control and ownership of PNGSDP itself, leading to PNGSDP losing its main source of income. While a lengthy series of mediation, arbitration and legal cases ensued, including the WB's The International Centre for Settlement of Investment Disputes (ICSID) case No ARB/13/33, all programs ceased and most staff stood down or retrenched. For PNGSEL, all funding and programs ceased and all staff left. This resulted in the recipient and implementing agency for the PNG aspects of the program to effectively no longer operate, seriously impacting the project. This, among other things detailed below, contributed to the 2014 restructure to cancel the PNG aspect of the project.

77. **The program narrowed its focus on Fiji where the context was more conducive for a successful program.** In 2010, the program was already showing progress in Fiji and there was strong support and loan volume was increasing. Of the 31 loans issued as of July 2010, totaling just over US\$900,000, 76 percent by loan volume were in Fiji. The MTR offered four options for SEFP and recommended that the project should be restricted to just focus its efforts in Fiji, where the EA had been effective and business loan uptake was strong and growing. It is unclear why the restructuring process took from 2011 to 2014, but the project focus in Fiji was showing results such that by the second MTR conducted in July 2015, the RSF was almost fully utilized where earlier there were doubts as to whether this could be reached by project closure. The second MTR noted that SEFP was then focused on just two PFIs, a single technology (solar PV), with support for three major suppliers and installer/operators of solar PV systems. This narrower focus had achieved success. The PFIs and suppliers interviewed at the time were strongly supportive of SEFP and wanted it to continue.

78. **In 2018, it was decided to expand the scope again to other countries in the region.** The MTR final report (April 2016) recommended that the project closure date be extended to 2017 and suggested that the returned RSF funds could be used for a new project with a regional focus as originally envisaged. At that time, the project could have been closed after the short extension to 2017 to ensure full utilization of RSF funds. There was support for SEFP continuation from Vanuatu, where the project would have benefited strongly from the substantial experience gained in Fiji. The project was restructured in 2018 to include Vanuatu and was extended to December 2022. However, the project was unable to be relaunched for several reasons including new and unsolicited terms that were added to the Client – PFI Agreements, the issue of ineligible expenditures that stalled the program (VREP I and VREP II) targeted to benefit from SEFP, and the impact of COVID-19 on PFIs that resulted in their focus being shifted away from lending to new perceived higher-risk business and protecting their balance sheets. The project was closed earlier than initially planned.

79. **The design was not suitable for its intended purpose.** As identified above, it became clear that the project had to be refocused on provision of loans to credit worthy companies rather than individuals or MSEs. This could have been identified at appraisal with individuals and MSEs to be targeted by PFIs rather than commercial banks. This resulted in start-up delays such that by the time of the first MTR in 2011, limited progress has been achieved. The main problem was that the target market for RE products was largely the rural poor who had no access to bank accounts and no regular income to qualify for a loan. For those on a salary and holding a bank account, the issues of low salary, irregular payments, cash deposits at bank supporting other lending, meant that the market for the products was limited. Lending efforts quickly focused on commercial loans to retailers, with some small loans being provided to



individuals in PNG by the NMB. Also noted in the MTR 2011, though it may not have been the case during project development, the cost of solar PV had already significantly reduced such that many retailers were offering very cheap systems, but of variable product quality. The products were not quality verified. Though these may not have met the complete energy needs of the rural populations, and the standards of quality are unclear, they were able to provide lighting at low cost. Some of the single light systems that included an integrated mobile phone charger point, could be purchased for cash at prices that did not need a loan.

80. **There was limited interest of PFIs to participate in the program.** The project had envisaged that up to 12 PFIs would support the program after five years. However, for the SEFP project structure to work in practice and be sustainable in the longer term, each PFI needed to be convinced that providing sustainable energy loans is a commercially viable business line. This is where there are significant volume transactions against fairly standardized loan products, where the bank's credit officers are able to easily assess the credit risks and price loans accordingly. SEFP was unable to attract more PFIs as there was a limited market in the region apart from in Fiji. Whereas some of the microfinance providers were interested in becoming PFIs, they were unable to meet the WB's stringent PFI eligibility criteria outlined in the PAD. The project restructuring in 2014 thus focused on Fiji and the two PFIs.

81. **The grant agreements had been amended by PFIs and borrowers to include additional clauses.** These requirements of new terms and conditions for agreement between the Client and the PFIs were deemed too onerous by the PFIs and could not be complied with. For example, requirements related to the need for submission of audited financial statements, clearly inappropriate for small scale borrowers (borrowing just FJD 5,000). The removal of the problematic requirements required a request from the Client and was only retroactively addressed in the 2021 restructuring (above). Lending could not be reactivated in Fiji or commenced in Vanuatu and the risk facility remained unutilized.

82. **The inability to launch the operation in Vanuatu was also due to the delays in the finalization of the Implementation Agreement between Fiji and Vanuatu.** SEFP was to support the implementation of the off-grid components targeting households under WB-funded VREP I and II, but the VREP engagements were mired in several implementation challenges including the ineligible expenditures that prevented the WB to effectively support the conclusion of the SEFP agreement. The SEFP in the end was no longer relevant for the VREP. No funds were allocated to Vanuatu under the Project Agreement. The Minister of Finance and Economic Management and the Department of Energy, Vanuatu, the Implementing Agency for the VREP, were advised of the early close of the project on April 7, 2022.

83. At completion, there was an outstanding Designated Account balance that was returned to the WB. Later it was found that there was in excess of about US\$23,600. The WB team carried out a reconciliation of the two accounts, as a result of which the team returned the excess funds back to the Ministry of Economy.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M & E Design

84. Although the project theory of change was clear, the M&E design showed weaknesses. At appraisal, some PDO indicators identified in the results framework to monitor progress toward the PDOs were more suitable to track progress towards achievement of intermediate results than the PDOs. The indicators in the results framework approved at appraisal were not monitored regularly, as the ISRs reported on three new PDO indicators that were not listed in the PAD. Over the course of the project, the results framework was revised twice, when a number of PDO indicators were deleted and replaced by new indicators. Both restructuring papers did not report how the new indicators were designed, or how the baseline data would be collected.

Table 11: Discrepancies in PDO indicators between approved Results Framework and ISR reporting

PAD Results Framework	ISR Indicators
<ol style="list-style-type: none"> 1. Number of households and MSEs using RE 2. Number of Energy Service Companies supported 3. New RE capacity installed 4. Amount of kWh used in purchased technologies 5. Amount of kWh saved through investments in Energy Efficiency Services 6. Increased financial resources that are allocated by FIs, individuals and MSEs to fund the growth of sustainable energy and energy efficiency. 	Number of households and MSEs using RE: <ol style="list-style-type: none"> 1. Number of solar PV systems sold; 2. Number of pico-hydro systems sold; 3. Number of diesel-fueled systems to coconut oil change sets installed
2014 Restructuring Results Framework	ISR (post 2014) Indicators
<ol style="list-style-type: none"> 1. People provided with access to electricity by household connections-Other RE: Off-grid 2. Community electricity connections constructed-Other RE: Off-grid 3. Generation Capacity of Renewable Energy (other than hydropower) constructed 4. Generation Capacity of Renewable Energy constructed - Other 5. Increased lending from local financial institutions for RE and EE equipment in the Recipient's territory 6. Addition of kW of RE and EE technology financed through approved participating financing institutions 7. Number of PICs participating in knowledge sharing and capacity building programs 	<ol style="list-style-type: none"> 1. Increased lending from local financial institutions for RE and EE equipment in the Recipient's territory 2. Addition of kW of RE and EE technology financed through approved participating financing institutions 3. Number of PICs participating in knowledge sharing and capacity building programs



M & E Implementation

85. Throughout project implementation, M&E reporting was timely but there were significant shortcomings in the quality of data collected and indicators monitored by the task team. The indicators in the results framework approved at appraisal were not monitored regularly, and the ISRs reported on three new PDO indicators that were not listed in the PAD. Similarly, with the 2014 Restructuring eight indicators were developed, but only four were monitored during supervision (only one ISR in March 2015 reported on all eight) (see Table 11).

86. The M&E arrangements involved the EA, the Fiji DoE and ANZ as the RSF fund manager. The responsibilities were clearly defined in the EA and the fund manager manuals developed for the project. Monitoring of progress on other indicators and results was carried out by the EA, and the responsibilities of each EA were governed by the Executive Agency Operations Manual (EAOM). This was a comprehensive document that set out the specific responsibilities of the EA, including identifying new PFIs that complied with the eligibility requirements as well as closely monitoring individual loan transactions. Each EA prepared and submitted a quarterly report covering a review of activities as well as a spreadsheet detailing expenditure against the agreed procurement plan. Reports were prepared in different formats and cross-comparison was not readily facilitated.

M & E Utilization

87. Results presented by the EA were used to assess project implementation. The WB team used the indicators to monitor implementation progress and to restructure the project.

Justification of Overall Rating of Quality M & E

88. The overall rating of quality of M&E is **Modest**. There were significant shortcomings in the M&E system's design and implementation, although some measures were taken to improve the results framework. There were significant weaknesses in the design and/or implementation of the M&E system, making it somewhat difficult to assess the achievement of the stated objectives and test the links in the results chain.

B. ENVIRONMENTAL, SOCIAL AND FIDUCIARY COMPLIANCE

89. This project was expected to have limited environmental impacts and so was rated low E&S risk at appraisal as a Category C project. The original project triggered OP 4.01 (Environmental Assessment) and OP 4.10 (Indigenous Peoples). As part of the review of the draft restructuring package in August 2013, it was decided that activities supported by the project warranted the triggering of the Involuntary Resettlement Policy (OP 4.12). The key potential E&S issues identified were:

- Safe disposal of the batteries in solar PV systems; and
- Any land use issues associated with transmission lines coming from pico-hydro systems, which might have to traverse land not belonging to the owner of the pico-hydro or CNO supported activities.



90. Under the requirements of the GEF grant agreement and EA Operations manual, approved PFIs were required to adopt the Environmental and Social Safeguards Framework (ESSF) and each PFI Borrower Covered Loan to include covenants by the Borrower to: (i) comply with the environmental and social safeguards requirements of the Recipient; (ii) ensure disposal of solar PV batteries in accordance with the ESSF; and (iii) ensure prior to undertaking any low voltage transmission line arrangements for pico-hydro and new coconut oil projects, the Borrower has obtained the approval of any land owners over whose property the Borrower intends such lines to run, in accordance with the ESSF. The EA Operations Manual, Section 7 - Environmental and Social Safeguards Framework, provides further clarifications and requirements. Since the original project design, the international financial institutions (IFIs) have moved towards a risk-based approach to assess the potential E&S impacts of bank lending. Most IFIs now require commercial bank clients to establish an Environmental and Social Management System (ESMS) that categorizes projects/loans, determine the level of E&S risk presented by the project/activity and then manages the identified risks through loan covenants with appropriate E&S requirements.

91. During implementation there were no projects financed under SEFP that triggered any EIA requirement under Fiji legislation, any of the three safeguard polices identified as relevant for SEFP, or under the IFC Environmental and Social Performance Standards that are relevant for commercial bank lending. No support was provided to projects where third-party land acquisition/access was required for transmission lines. Though the ESSF was amended in 2014 to include the potential for resettlement, no resettlement was required and so there was no requirement for any Resettlement Action Plans (RAP) to be prepared. Lending under SEFP was almost exclusively for solar PV systems with no hydropower and only a few small biofuel generators (11 totaling just 229 kW), and so the only key E&S risk related to battery disposal. In Fiji, this was noted to be closely regulated and monitored by the authorities and there are appropriate recycling facilities in place for effective recycling. There were no reported significant environmental impacts due to SEFP.

92. The Financial Management risk of the project was assessed as Low-Moderate for each recipient and implementing agency. After project closing, there are no overdue audited financial statements for any recipient and implementing agency, though during project implementation there were at times overdue audits and late submissions. The biggest challenge came receiving audits related to the PNG aspects of the project through PNGSEL. As mentioned above, since all project funds had been disbursed and expended by 2010 and with the subsequent ceasing of all operations, finding staggling of PNGSEL, it was difficult to get an audit of the funds from PNGSEL. To address this the task team had approved a creative and flexible solution, to have the WB engage a private accounting firm via a WB executed contract, to provide the independent assurances over the PNGSEL project funds. This was obtained in April 2015.

C. BANK PERFORMANCE

Quality at Entry

93. Project activities were relevant to the sector priorities in the selected PICs and the activities were designed to achieve them. The WB identified, prepared and appraised the operation with the goal of achieving the planned development objective. The project development objective was relevant for the region and the approach proposed by the WB, though optimistic at appraisal, was adjusted during appraisal to focus on a country where achieving the objective by completion date was more realistic.



Project preparation studies were conducted and findings on the market, key players and issues were incorporated into the project design.

94. The RSF was designed to target the challenges in the five PICs and to help remove barriers to a wider access to sustainable modern energy sources. While the local banks and credit unions were interested in participating, the project team discovered that some of the interested financial institutions lacked the experience and technical capacity to finance RE and EE investments. The team recommended that the project should start with two PFIs with TA and training provided. It was also noted at the time that most financial institutions viewed RE and EE investments as risky, particularly those outside the main urban areas. SEFP would need to provide innovative risk-abatement and risk-sharing interventions to make RE and EE investments attractive to the local financial institutions.

95. The context of all five countries were different, and Fiji was an outlier compared to the other four countries mainly because its commercial banking sector was more advanced. The WB had been approached by several PIC governments for support in assistance to expand RE and EE to offset the rapidly increasing price of oil, which was having a direct adverse effect on living conditions and Gross Domestic Product (GDP). With rural energy and finance access issues similar across the PIC, and the broad need for TA and capacity building, the team proposed a regional approach to take advantage of shared learning. The team also took advantage of the then new GEF approach under which a regional project could be prepared for a few countries, and other countries that are able to follow the same model could be included later.

96. The RSF was selected as the financing instrument due to its perceived suitability for addressing challenges with access to financing. The RSF approach has been successfully employed by IFC in other countries to encourage commercial banks to provide loans for RE/EE through partial credit guarantees that provide a level of protection against credit default and also enable a bank to provide longer tenor loans and reduce collateral requirements. Although the intention was to replicate this model, the SEFP project structure contained multiple components that were not always conducive to encouraging the PFIs to develop a RE/EE business. The RSF could have been structured as a first loss portfolio facility, with direct TA support, which through IFC experience demonstrates, this works well with commercial banks handling larger loans. It could have been recognized during preparation that this approach was unlikely to succeed for individual borrowers and MSEs, that would have been better served by MFIs. Commercial banks are required to follow normal banking process and lend only to credit-worthy borrowers – unlikely for rural individuals. The RSF was not designed to permit commercial banks to lend to non-creditworthy borrowers. Applying this to five countries would be a challenge, rather than starting in one country and then expanding but the project noted that the ANZ the RSF fund manager had regional presence. The team conducted preparatory studies using finance specialists and consulted with IFC's Pacific Enterprise Development Facility (PEDF) that had an ongoing program to assist local financial institutions and business organizations. Discussions were held with IFC to determine the extent of their involvement in this project and one of their Business Development Officers participated in the preparation mission. SEFP would leverage IFC's regional experience with local private commercial banks and their creditworthiness.

97. The program could have benefited from the partnership with the IFC, and its expertise and experience with partial credit guarantees for commercial bank EE/RE lending. At appraisal, IFC was responsible for the programs in RMI and Vanuatu but pulled out of the project in 2010 as their original market expectations were not met. Market assessments were conducted in 2006 prior to the SEFP by a



consulting firm. It is likely that the market moved on in the time taken for project approval and start of implementation, which is an issue for projects designed for and targeted at a commercial market. The RSF is there to encourage banks to lend to products that they have been reluctant to provide and so create a market for loans.

98. Key challenges could have been anticipated at the design stage, including identifying the right target group of beneficiaries of RE products. The PNG WB Teachers Solar Lighting Project (TSLP, 2005) was cited in the PAD as a promising example in support of SEFP. The project involved a revolving fund used to support teachers in PNG to switch to solar home systems. The theory being that although teachers had no disposable income after expenses, the relatively large percentage sum of income spent on kerosene could be used to cover the switch to solar through a longer five-year tenor (and thus affordable) loan, that would be repaid. There is limited information available, but the SEFP MTR reported that the TSLP was ineffective, with just a single loan achieved during its life and was subject to early closure by the WB. Early in implementation, it became clear that the most rural poor had no access to bank accounts and could not qualify for a loan from commercial banks. For beneficiaries on a salary and holding a bank account, could not qualify for a loan either due to low salary or irregular payments. Market assessments during project preparation could have identified these challenges but were not carried out, and the team had to revise the scope and design of the project. The focus shifted to commercial loans to retailers, with some small loans targeting individuals. While the financial management risk of the project recipients and implementing agencies were low to moderate, the factors that impacted performance, mainly the overdue audit for the PNG aspects, were not due to financial management matters or anything that could have been predicted, i.e the government expropriation of the shares in the parent company of PNGSEL and the subsequent ceasing of operations of PNGSEL. Even with these challenges that eventuate, the WB came up with solutions, as detailed under the fiduciary compliance section. The country was eventually removed from the program because of an overdue financial audit report. Other relevant obstacles to accessing bank loans by small scale borrowers in Fiji (below FJD 5,000) included a requirement to submit audited financial statements.

Quality of Supervision

99. The project was supervised by the task team leader, and the project team based in Sydney on a regular basis. Supervision included periodic missions and regular reporting of any issues raised during these missions. The project was regularly monitored through implementation support missions documented in Aide Memoires and reported through regular Implementation Supervision Reports (ISRs). In total, 25 ISRs were submitted by the project close. Two comprehensive MTRs were prepared as well as a Sustainability Paper (March 2016) that aided the restructuring of the project. Regional technical workshops were conducted to share lessons from the experience of Fiji with other PICs. Safeguards supervision was limited as there were no safeguards issues that arose during project implementation.

100. Since 2007 there has been only one NPL called (for US\$68,000), providing strong evidence of the RSF performance in terms of not supporting loans to poor credit worthy borrowers, yet still being able to meet financing targets. There are no outstanding compliance issues with legal, fiduciary and safeguards requirements.

The team was engaged and initiated project restructuring to adjust the scope of the project in response to changing circumstances, address constraints during implementation and in some cases to address some



of the design deficiencies. Nevertheless, there were moderate shortcomings in project implementation and team supervision. For instance, the time it took to restructure the project after MTRs was long. In addition, insufficient proactivity could be inferred by the extended period of poor project performance ratings. Between May 2009 and June 2014, both the overall implementation progress (IP) and Progress towards achievement of Development Objective (DO) rating were rated as Moderately Unsatisfactorily (MU) and Unsatisfactorily (U) due to the limited progress of the project in PNG and Solomon Islands and because of the overdue financial audits from PNG. The IP rating was upgraded to Satisfactory when the project restructuring of 2014 discontinued activities in PNG and Solomon Islands and was limited to Fiji. This restructuring did not just cease the FI program in PNG, it ceased the entire project operations in PNG, including the TA under components 2, 3 and 4. The IP rating was MU again between June 2021 and project close. It was evident that project implementation issues could have been addressed sooner, such as the 2014 restructuring that took three years after the first MTR to materialize, or the second MTR resulting in a restructuring almost two years later or the amendments to the legal agreements, practiced by the PFIs and borrowers was noticed after the August 2018 restructuring but only addressed in the 2021 restructuring.

Justification of Overall Rating of Bank Performance

101. The rating of the WB performance is **Moderately Satisfactory**. There were moderate shortcomings in quality at entry and in quality of supervision. The WB task team put an effort and incorporated results of the conducted assessments in project design, ensuring that the project outcomes were relevant to the energy sector needs and strategies of the participating countries at the time of project preparation and incorporated lessons from previous projects to ensure smooth implementation. The team carried out the preparation of an operation covering multiple countries and agencies. Some shortcomings were noticed with implementation supervision. Nevertheless, the PFIs and suppliers interviewed commended the success of the project and were strongly supportive of SEFP and recommended its extension.

102. The project achievements in terms of using a RSF to provide partial credit guarantees was financially efficient and enabled the substantial leveraging of commercial bank lending for RE. However, the project was not able to demonstrate any progress in the last 18 months before the closing date. The main reasons for the lack of progress were: (i) delays in practical relaunch due to the time taken to finalize the Implementation Agreement between Fiji and Vanuatu and the need for a further restructuring (completed in March 2021) to address concerns with certain terms and conditions in the Client –PFI agreements (refer to Section Key Factors during Implementation), (ii) project implementation issues with VREP I and II that reduced the immediate need for SEFP funds in Vanuatu around 2020, and (iii) the general economic downturn and increase in lending risk arising from COVID-19. In addition, the closure of local and international borders has impacted on the movement of personnel and goods to undertake installations which do have the finance. Following COVID-19 there was limited interest from the previously participating banks. Whilst the FDB signed a Fiji –PFI agreement, none of the Fund Manager - PFI agreements were concluded. There was a consensus that no new lending will occur before cessation of lending in June 2022. The Clients (Government of Fiji and the Fund Manager, the ANZ Banking Group Limited (ANZ)) requested an early close of the project, and it was agreed to proceed to the early closing



of the project (May 2022) noting that there is insufficient time left to initiate any new loans.

D. RISK TO DEVELOPMENT OUTCOME

103. Without continuation of the RSF, it is doubtful in the short term whether the project successes achieved to date could continue and for the project development objectives to continue to be achieved. The project has demonstrated that it has built capacity in Fiji in terms of the participating banks understanding of the commercial and technical risk issues associated with renewable energy lending. The partial credit guarantees have provided sufficient support to the PFIs to encourage them to lend to what they perceived originally as higher risk projects while maintaining their credit risk assessment requirements. Given the challenging market and economic conditions in the region post COVID-19, it may take some time before banks are able to provide further loans as they are likely to have other priorities for lending. Stakeholders interviewed for the ICR indicated their wish to have a similar scheme continued to support the uptake of RE and EE in Fiji, and possibly beyond.

104. The pandemic led to an economic downturn that increased the lending risk, and the closure of local and international borders hindered installations of solar systems. Although the latter challenge has been now solved, the economic implications following the COVID-19 pandemic may contribute to the higher risk that the development outcome may not be sustainable.

V. LESSONS AND RECOMMENDATIONS

105. SEFP utilized a partial credit guarantee fund approach to encourage participating private commercial banks to provide renewable energy loans. This proved successful in Fiji through the provision of loans to equipment importers/suppliers/installers, that were guaranteed by the fund. IFC has also successfully utilized this approach in the energy sector, enabling participating banks to build up a pipeline and portfolio of loans.

106. **RSF and project structure were not suitable to cover the risk profiles of energy financing needs particularly of rural households in the Pacific and where conducive environment does not yet exist.** The SEFP structure contained multiple components that were not always conducive to encouraging the PFIs to develop an RE/EE business. The RSF Fund was held and managed by a commercial bank that would then issue guarantees under the RSF to other participating banks. Apart from adding another layer of bureaucracy, these banks may have been reluctant to accept guarantees from a competitor and may have had concerns about payment if a guarantee was called. Though banks do handle inter-bank transactions routinely, this may have been a limiting factor for other banks. A commercial bank specifically raised this during the MTR final report 2011. This may have constrained the number of PFIs and therefore the take-up of the program. In addition, loans were guaranteed on an individual basis, rather than on a portfolio basis – thus not encouraging longer term loan business growth. The RSF could have been structured as a first loss portfolio facility.

107. **There was a need to strike a balance between the scope of work that is suitable for a regional approach and those that are more suitable for country-based operations.** While the project was envisaged to be a regional project, harnessing the regional branch network of participating commercial banks, there was little synergy between operations in different countries and the project's success and



failure depended more on country-specific factors. The knowledge sharing events were conducted to retain a regional dimension, but for these there may have been better alternatives, such as fostering collaboration with and through regional organizations such as the Pacific Community (SPC), Pacific Power Association (PPA), among others.

108. **The project design may not be suitable for small scale, private sector projects where WB procedures/requirements seem to be more challenging**. The PFIs continued to implement normal commercial and banking sector requirements in terms of borrower credit worthiness, worthwhile market loan sizes and prevailing interest rates thereby minimizing moral hazard of financing non-creditworthy borrowers because of the partial credit support. Where projects involve highly regulated commercial banks, then these procedures and requirements need to be closely reviewed at appraisal and if deemed acceptable to the WB, it would be simpler to permit the commercial banks to operate in accordance with their own central bank requirements without any undue additional requirements. It should be noted that since SEFP, WB guidance on financial intermediaries has now adopted this recommendation from the MTRs. For financial intermediary projects where commercial bank and central bank systems and requirements are acceptable to the WB, they will not need a program of improvements before being permitted to join the project.

109. **PFIs should be encouraged to view these projects as a business and commercial proposition and be permitted to determine technologies and suppliers.** It was noted from several interviews conducted as part of the MTR that too many players were involved with the project, with the key player, the PFI, not being directly supported to take the lead role. If convinced of a business case for a new loan product, commercial banks will allocate appropriate resources, have their staff trained and be responsible in their usual way for loan product development and promotion. Specific TA could be offered to new PFIs to help them develop the business, prepare standardized documentation, provide in-house technical training to credit teams. PFIs should be allowed to operate in a normal commercial way with minimal prescribed requirements. If there is any specific WB required reporting or documentation, then this would be the responsibility of the EA. Eligibility criteria for PFIs should be kept to a minimum.

110. **In-depth assessment of the demand-side profile as well as the financial sector landscape is essential for providing tailored financial services for the target segments.** Under normal commercial banking practice and requirements, PFIs would be unable to provide loans to borrowers who were not considered creditworthy. Of the three original SEFP targeted groups, only RESCOs would be likely to meet commercial bank requirements. For the other two target groups, it was expected that the RSF would support the provision of micro/small loans in remote areas to individuals and MSEs, including village based formal institutions. However, these could be better served by MFIs. There was therefore a mismatch between the target beneficiaries and the type of PFIs. Appropriate MFIs in the participating PICs did not meet the WB extensive criteria that were more appropriate for larger banks. In this regard, providing financial services would require a detailed understanding of the target market segments and designing appropriate financial products that match their risk profiles.

111. **Prescribed technology lists are inappropriate, unless they are continuously updated, as these keep changing.** Due to rapid technological advances, it would require the project manager and PFIs to constantly monitor and update the product catalogues. Consequently, providing loans only to technologies that are on a prescribed list is an additional project constraint. If the PFI has assessed that there is an ongoing demand for the financing product (in this case for RE and EE), then the loan



officers/team would become product specialists, as in the case, say, of mortgage loans. SEFP technical assessment was provided by EAs, whereas efforts could have been made to build up the in-house capacity of PFIs.

112. **Alternative financing instruments and project design may need to be considered to reach the rural poor.** At appraisal, RSFs were emerging as a new WBG instrument for catalyzing SME lending, through partnerships between International Development Association (IDA), IFC and national governments. RSFs were designed to incentivize banks to lend to SMEs by guaranteeing a portion of their potential losses, leveraging IDA and IFC resources. If designed and implemented well, RSFs could address broader public policy goals of developing the SME sector and contributing to growth, job creation, and poverty reduction. While the RSF approach drew upon IFC project experience with commercial banks, generally this was with larger loans for corporates that participating banks were already familiar with and where the market for the loan products was not only expected to grow, but to grow profitably for the bank. For the PICs, households and MSEs, a different financing approach utilizing MFIs and credit unions may be more effective. The project could consider support for leasing equipment and other various financing models.

113. **The WB's portfolio monitoring metrics may not be suitable for a guarantee/contingent grant operation.** SEFP was meant to disburse a certain portion upfront and subsequent disbursement was not expected to happen in a major way unless PFIs were exposed to default of their portfolio under the project or to cater to the payments needed to undertake small-scale TA activities. This is not captured well by disbursement focused IPF tracking metrics. For a hybrid IPF project that includes guarantees or contingent grant/credit schemes, there is a need for separate portfolio management metrics that would focus on project results and non-performing loans as opposed to disbursement. Project disbursement figures should be understood in the context of the refund of the RSF guarantee fund to IDA at project closure. The low disbursement reflects the success of the guarantee in being disbursed and then refunded to IDA at project closure.

114. At a project level, appropriate metrics to cover PFI lending include: number of new PFIs, new loan products developed, number of loans issued, NPL/defaults, default recovery, PFI portfolio growth in terms of number of new borrowers, loan book per borrower, total loan value, loan percent to determine actual capital expenditure growth on RE/EE, other RE/EE loan business growth not covered by the RSF, but as a result of gaining sector knowledge participating in the project, PFI in-house capacity growth number of staff per PFI dedicated to RE/EE lending, number of PFI staff gaining RE/EE financing capability, number of external specialists for loan technical assessments.



ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Increased renewable energy technologies and energy efficiency

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Increased lending from local financial institutions for RE and EE equipment in the Recipient’s territory	Amount(USD)	0.00	41.00		21.53
		12-Jul-2007	31-Dec-2022		13-Dec-2021

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Additional number of kW of RE and EE technology financed through approved participating financing institutions	Megawatt	0.00	8.80		4.49
		12-Jul-2007	31-Dec-2022		13-Dec-2021

Comments (achievements against targets):



Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Carbon Dioxide emissions avoided due to financing through project	Metric ton	0.00 12-Jul-2007	13.00 31-Dec-2022		6.65 13-Dec-2021
Comments (achievements against targets):					

A.2 Intermediate Results Indicators

Component: Risk-Sharing Fund

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
RSF guarantees called (Component 1)	Amount(USD)	0.00 12-Jul-2007	2.00 31-Dec-2022		2.00 13-Dec-2021
Comments (achievements against targets):					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
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Number of loans approved for (i) MSEs, (ii) community organizations and (iii) individuals (Component 1)	Number	0.00	135.00		70.00
		12-Jul-2007	31-Dec-2022		13-Dec-2021

Comments (achievements against targets):

Component: Technical Assistance, Market Incentives and Communications

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
MSEs and Community organizations participating in TA or training activities (Component 2)	Number	0.00	12.00		5.00
		12-Jul-2007	31-Dec-2022		13-Dec-2021

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of articles and broadcasts organized by the Recipient on the benefits of renewable energy and energy efficiency	Number	0.00	51.00		21.00
		12-Jul-2007	31-Dec-2022		13-Dec-2021



(Component 2)

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Number of showcases and community presentations organized by the Recipient on the benefits of renewable energy and energy efficiency (Component 2)	Number	0.00 12-Jul-2007	130.00 31-Dec-2022		80.00 13-Dec-2021

Comments (achievements against targets):

Component: Management, Monitoring and Evaluation

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Grievances registered related to delivery of project benefits that are addressed	Percentage	0.00 12-Jul-2007	75.00 31-Dec-2022		0.00 13-Dec-2021

Comments (achievements against targets):



KEY OUTPUTS BY COMPONENT

Objective/Outcome 1: The significant increase in adoption and use of renewable energy technologies in participating Pacific Island states	
Outcome Indicators	<ol style="list-style-type: none"> 1. Increased lending from local financial institutions for RE and EE equipment in the Recipient’s territory 2. Additional number of kW of RE and EE technology financed through approved participating financing institutions 3. Carbon Dioxide emissions avoided due to financing through project 4. Number of PICs participating in knowledge sharing and capacity building programs
Intermediate Results Indicators	<ol style="list-style-type: none"> 1. RSF guarantees called 2. Number of loans approved for (i) MSEs, (ii) community organizations and (iii) individuals 3. MSEs and Community organizations participating in TA or training activities 4. Number of articles and broadcasts organized by the Recipient on the benefits of renewable energy and energy efficiency 5. Number of showcases and community presentations organized by the Recipient on the benefits of renewable energy and energy efficiency 6. Grievances registered related to delivery of project benefits that are addressed
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	<ol style="list-style-type: none"> 1. US\$21.53m 2. 4.49MW 3. 6.65 tCO₂e 4. 2

**A. STAFF TIME AND COST**

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
Preparation		
FY06	12.117	584,950.64
FY07	14.352	235,568.98
FY08	0	76,381.37
Total	26.47	896,900.99
Supervision/ICR		
FY08	4.607	129,134.20
FY09	10.802	229,895.96
FY10	39.230	99,697.73
FY11	32.763	161,177.12
FY12	7.935	53,870.13
FY13	9.627	48,910.30
FY14	9.225	35,298.08
FY15	.400	14,691.68
FY16	1.250	13,975.95
FY17	0	1,234.28
FY18	.800	7,567.98
FY19	2.350	18,219.05
FY20	.650	6,163.76
FY21	3.400	15,928.77
FY22	17.780	121,205.41
FY23	10.300	67,862.78
Total	151.12	1,024,833.18

**ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION****B. TASK TEAM MEMBERS**

Name	Role
Preparation	
Antonie de Wilde	Coordinator, TTL
Melinda Good	Senior Counsel
Robert James Simms	Investment Officer
Elisabeth Jane Mealey	Communications Officer
David Chandler	Financial Management Specialist
Edward Daoud	Senior Finance Officer
Cristiano Costa e Silva Nunes	Procurement Specialist
James Monday/ Bernard Baratz	Safeguards Specialist
Mara Baranson	Project Coordinator
Perry Radford	Program Assistant
Dalcy Lagoni Tozaka	Intern
George Failace	Consultant
Jon Exel	Consultant
Andrew Mears	Consultant
David Smith	Consultant
Supervision/ICR	
Kamleshwar Khelawan	TTL
Cristiano Costa e Silva Nunes	Senior Procurement Specialist
Evaron Doris Masih	Operations Officer
Nathalie Suzanna Noella Staelens	Lead Environmental Specialist
Rebekah Beatrice Ramsay	Social Development Specialist
Eka L. Vakacegu Yabaki	Operations Analyst
Fiona Evelyn Bingham	Team Assistance
Muzaffar Ahmad	ETC
Nicholas Gerard Williams	Procurement Analyst
Viliame Momoivalu	Environmental Consultant



A. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US\$ (including travel and consultant costs)
Preparation		
FY06	12.117	584,950.64
FY07	14.352	235,568.98
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Total	26.47	896,900.99
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FY09	10.802	229,895.96
FY10	39.230	99,697.73
FY11	32.763	161,177.12
FY12	7.935	53,870.13
FY13	9.627	48,910.30
FY14	9.225	35,298.08
FY15	.400	14,691.68
FY16	1.250	13,975.95
FY17	0	1,234.28
FY18	.800	7,567.98
FY19	2.350	18,219.05
FY20	.650	6,163.76
FY21	3.400	15,928.77
FY22	17.780	121,205.41
FY23	9.500	49,135.72
Total	150.32	1,006,106.12



ANNEX 3. PROJECT COST BY COMPONENT

Components	Amount at Approval (US\$M)	Actual at Project Closing (US\$M)	Percentage of Approval (US\$M)
Management, Monitoring and Evaluation	0	.76	0
Technical Assistance, Market Incentives and Communications	0	1.79	0
Risk-Sharing Fund	5.20	5.20	0
Total	0.00	7.75	0.00



ANNEX 4. EFFICIENCY ANALYSIS

1 An economic and financial analysis for the Implementation Completion and Results Report was conducted on Component 1. The analysis shows that the project achieved higher ERR at a slightly lower ENPV than anticipated at appraisal. An ERR of 26 percent and ENPV of US\$895,334 indicate that the project was economically viable at discount rate of 12 percent and increased social benefits by improving the adoption of renewable energies and energy efficiency supplied by projects funded by the PFIs benefited from the project's risk management fund. The ERR for the project at completion was higher than 8.7 percent, which was calculated at appraisal.

Rationale for public financing

2 During the project design, approval, and early implementation the uptake of RE and EE technologies in the targeted countries was extremely low. In the beginning of the project, even large-scale RE investments would have found elevated costs that would have hardly justified investments. All of these variables together had an impact on the high costs of deploying solar energy, particularly solar home systems for SMEs and households. Moreover, each of the countries by themselves would have virtually no possibility of attracting enough market interest to promote renewable energy investments. Thus, there was a strong need for a Risk Sharing Fund (RSF) that could incentivize the local commercial and development banks (PFIs) to lend to borrowers perceived as less creditworthy due to lack of a credit history and seasonal incomes by guaranteeing 50 percent of the loans issued by the WB. Through this guarantee potential refund to the PFI of up to 50 percent of principal losses on any guaranteed loan following a default, there was an attempt to strengthen the SHS market. The regional approach aimed to enhance this public financing through decreasing risks associated to early stages of renewable energy deployment and catalyzing additional private investments.

Value added of Bank's support

- 3 The WB's value added for this project was based on at least three main components:
- a. **The WB's experience with the use of guarantees for market development:** in a specific time when deploying SHS and energy efficiency was considerably more expensive, the WB's guarantees allowed to incentivize financial institutions to provide loans to SMEs and households willing to deploy those technologies. The rationale behind these guarantees is to mitigate early project risks and, thus, catalyze private capital.
 - b. **Regional presence and convening power:** the WB has an extensive portfolio of projects in the East Asia Pacific region including the countries initially targeted by the project, and has a vast amount of portfolio projects providing financial guarantees to markets in early stages.
 - c. **Benchmarking with other regional and international experiences:** the previously mentioned past international, regional, and country-wise experiences provided a vast array of precedent to bring to the design and implementation of the project. Lessons learned from those projects were brought to the design and implementation of this project.



Economic Analysis

Methodology at Appraisal

4 The analysis was carried out only on the solar PV component. The methodology used at the appraisal was the Avoided Cost Methodology (ACM). It requires that the model identifies the variables linked to the costs and benefits of the project. According to the WB's June 2016 "Power Sector Investment Projects: Guidelines for Economic Analysis", it is recommended that the costs and benefits are associated to the fossil fuel replacements. For those reasons, this model considers the variables for the costs are those related to replace the kerosene lighting with SHS under the GEF-funded project/alternative, such as capital cost of SHS, cost of Battery and controller replacements, and Operation and Management (O&M) costs of the light bulbs. While additional information in their values is in the "Assumptions" sub-section next, the model takes into account the variables below for the benefits or economic avoided costs. Following the ACM, those variables are the costs associated to maintaining the kerosene lighting as a business-as-usual scenario: capital cost of kerosene lamps and their lifetime, kerosene fuel cost, the annual average specific kerosene consumption on a household, and the O&M of kerosene lights.

Methodology at Completion

5 The methodology chosen for the ex-post economic and financial analyses of this project is identical as the one used at appraisal, the Avoided Cost Methodology (ACM), for two reasons. The first one is that it facilitates the data usage and the comparisons with the ex-ante analysis. The second reason is that it is the recommended methodology to use for renewable energy projects under the WB's June 2016 "Power Sector Investment Projects: Guidelines for Economic Analysis." As per those guidelines, all renewable projects should consider as principal benefit the avoided costs associated to fossil fuels. There are a few exceptions based on the assumptions, including: (i) updated prices for CAPEX and O&M costs (ii) a variable price for the SHS capex (instead of a fixed one) (iii) updated taxes and import duties for the financial analysis.

Disclaimer

6 Due to lack of accurate information, the methodology applied for analysis at completion assumes that: (i) the final number of individual project beneficiaries was estimated as those who purchased SHS from the companies that had access to loans and distributing the systems, rather than individuals who directly accessed loans as initially planned because they were not creditworthy (ii) the benefits accrued only for the first 7 years of the project although the project timeline was 15 years. The reason is that during this time, many more customers had been served and the beneficiaries had changed as indicated in (i). As a result, close to 51,000 households had purchased to SHS as opposed to 21,000 as initially planned. To ensure comparison of the models at appraisal and completion, the analysis did not consider this elevated number of project beneficiaries and the 15 years' project lifetime, and a simplified assumption was made (see below).

Assumptions

7 The assumptions for the economic and financial analyses are based on the accessibility to the project's data and based on the ex-ante analysis where there is no updated information based on data on solar PV systems in other similar projects. Some assumptions had to be adapted due to changes in the



project scope during implementation. For example, the analysis at appraisal considered projections of households using SHS, this data was not incorporated after the first restructuring. For this reason, certain assumptions of those variables were modified in order to have both methodology for the economic and financial analyses at completion aligned with methodology used at appraisal and allow for comparability

Table 1. Economic Analysis Assumptions

Parameter		Appraisal	Completion
Average specific kerosene consumption	liters/households/year	67.89	67.89
Kerosene price	US\$/liter	0.42	0.42
O&M kerosene lighting: wick, gauzes	replacement/month	1	1
Replacement cost of kerosene lamp for 3 lamps every 2 years	US\$	60	78
Capital solar home system (avg 2007-2014)	US\$/system	473	353
Replacement cost of battery	US\$/year	30	39
Replacement cost of light bulbs	US\$/year	18	23.4
Discount rate	%	12%	12%

- Considering that the additional number of kW of RE and EE technology financed through approved participating financing institutions (MW) was 51 percent of the planned target, the number of households replacing kerosene consumption with SHS considered for the model is equal to 51 percent of the market projections of the model at appraisal.
- A solar home system of 30 Wp is considered for the analysis. The total cost of the system in 2007 is assumed to be the same, however in the analysis at completion a technology learning curve and capex reduction is assumed. It is assumed a reduction of 77 percent of its total solar panel cost from the first to the fifteenth year (as per NREL weighted-average estimates)⁶;
- Battery life is assumed to be one year. The cost of a battery is assumed to be US\$39 and would be replaced at the owner's cost;
- Controller life is assumed to be of seven years. The cost of a controller is assumed to be US\$35 and would be replaced at owner's cost; Bulbs and other accessories usually have a short life (two months) and would be replaced at owner's cost; Indoor wiring and switches are considered for a lifetime of 15 years; Kerosene lamp life is considered three years. The cost of the lamp is US\$26 and would be replaced at owner's cost;
- The average cost of O&M (through wick and gauzes) for the kerosene lights is assumed to be an average of 18.21 percent of the total capital cost and kerosene fuel cost, as per the economic analysis at appraisal.
- Cost of a liter kerosene is US\$0.42/liter and a household is assumed to use 67 liters of kerosene per annum;
- The scheme would be administered by the EAs of the project through providing guarantees to PFIs to extend micro finance to households and enterprises to buy solar PV systems;
- The PFI would extend a loan to the households maximum of 90 percent of the total cost of the system to purchase SHS;



- GEF guarantees 50 percent of the loan amount made by PFIs; and
- The balance amount comes as the equity financing of the households collected as a cash or sweat equity.

Results and Discussion

8 The economic analysis under the previously presented methodology and assumptions gives results on an Economic Rate of Return (ERR) of 26 percent. This is more than three times the ex-ante ERR mostly based on the reduction on prices by SHS and their impact in the model. As a reference, SHS have meant an average of 89.9 percent of the total economic cost from the second to the seventh year of the model while other replacement and O&M costs are reduced in comparison.

9 The ex-post results (26 percent ERR) show higher economic justification of the program than the ex-ante (8.7 percent ERR). The differences in the results were associated with changes in some of the assumptions, including number of installed SHSs, updated cost of capex and O&M, replacement cost of batteries, kerosene lamps. Given that the ex-ante analysis was conducted in 2007 and the ex-post in 2023, the cost of technologies due to technology learning curve and other factors have changed. For instance, the total deployment of SHS considered is 51 percent of the initially planned at appraisal and is based on the rate of beneficiaries reached compared to its original goal for each year. Moreover, the ex-post analysis used updated prices for CAPEX and O&M costs and the ex-post analysis considered a linear reduction of the SHS capex following a technology learning curve trend, declining by 77 percent in 15 years. The ex-ante analysis considers a fixed SHS price over the course of the project. Other different updated costs include the replacement cost of batteries, the replacement cost of light bulbs, and the replacement cost of kerosene lamp for three lamps every two years.

10 The model simulates the financial analysis at appraisal for the beneficiaries, where investments in MSE projects were financed under the scheme screened by PFIs, which do not provide loans to loss making enterprises, that these investments will be financially justified. As there is no particular data from the funded projects for the MSEs by the PFIs, the similar logic behind the retailer and technical services of providers of solar PV was assumed. All those projects are assumed to have similar IRRs from 10 to 24 percent as in the project at completion.

11 In terms of the ex-ante and ex-post financial analyses, there was also an increase in the FRR from 12 percent to 20 percent. There were two main reasons for this difference. First, the higher capex assumptions for the ex-ante analysis, as previously mentioned, as in the higher replacement costs. Second, the ex-post analysis used revised figures for taxes and import duties, namely the import duty declined to 5.36 percent and the average value added tax decreased to 10 percent.

CO₂ emission savings

12 The assumptions recurred in the model and the need of comparability between analysis at appraisal and at completion has made that the *GHG emissions avoided* are not included through economic and financial variables (i.e., through monetizing their benefit and adding it to the model).

13 One of the project's PDO outcomes is to contribute to mitigating climate change through the reduction of greenhouse gas emission in line with UNFCCC; thus, leading to a PDO/outcome indicator of



Carbon Dioxide emission avoided due to financing through project (tCO₂e). Even though the project avoided 6.65 tons of CO₂ under this outcome (51 percent of the original target), the ex-ante economic and financial analyses did not consider the GHG emissions as an additional economic benefit through any of the existing methodologies. For instance, there was no inclusion of the possible carbon credits that the project could have considered nor other type of additional climate finance that could have been catalyzed through the projected or actual avoided GHG emissions.

Including Consumer Surplus

14 There is enough evidence of common efforts to phase out of kerosene lighting in different countries⁷, alongside of the household's willingness to pay for access to electricity through solar PV at the right price and/or with the correct financial incentives.

15 Furthermore, there are two contrasts of scenarios relevant to potentially include the consumer surplus. First and on the more general picture, the model needs to consider what are the impacts of those beneficiaries of accessing to electricity through the SHS funded by the project. There is enough evidence to support that access to electricity on a household level has a significant impact on education (i.e., increased literacy rates, improving access and quality of education)⁸, average income and welfare (i.e., through education, socioeconomic welfare, health, and environmental outcomes)⁹, health (i.e., lower mortality and improved health care)¹⁰, among others. Thus, the project could have monetized all the benefits observed through the increase in the consumer surplus by those variables. However, the ex-post model will simulate the ex-ante model to allow comparability, alongside the lack of data of the project and the elaborate econometric research that would be required to determine causality in those variables from electricity access.

16 Second, the model could have included the increase on consumer surplus due to the contrast of having access to electricity but through SHS instead of kerosene lighting. The specific consumer surplus for these two scenarios could include the health benefits of reducing air pollution (i.e., risks of asthma and lung cancer)¹¹, the decrease in the expected value of preventing kerosene-led burn injuries, house fires, and related death, and indirect income effects (i.e., through increasing household savings in electricity)¹². Similar to the previous argument, these variables associated to the consumer surplus are not considered for modelling purposes. However, the ex-ante analysis already illustrated that including these variables could up to triple the ERR.

Financial Analysis

17 The financial analysis was performed using a simplified methodology that was in accordance with WB Guidelines at project appraisal. The model assumed that the GDP-weighted average import duties from Fiji, PNG, Solomon Islands, RMI, and Vanuatu is 5.26 percent. Similarly, a GDP-weighted average

⁷ <https://punchng.com/climate-change-fg-to-phase-out-kerosene-usage-by-2030/>

⁸ <https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1608&menu=35>

⁹ https://www.adb.org/sites/default/files/evaluation-document/515326/files/in242-20_6.pdf

¹⁰ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8559404>

¹¹ https://energyeducation.ca/encyclopedia/Kerosene_lantern

¹² <https://ourworld.unu.edu/en/solar-lamps-rid-ding-african-families-of-kerosene-woes>



gives an average value added tax of 10 percent. With a same 12 percent discount rate as at appraisal, the financial analysis for this project results on a Financial Rate of Return (FRR) of 20 percent.

Table 2. Financial Analysis Assumptions

Parameter		Appraisal	Completion
Average specific kerosene consumption	liters/households/year	67.89	67.89
Kerosene price	US\$/liter	0.42	0.48
O&M kerosene lighting: wick, gauzes	replacement/month	1	1
Replacement cost of kerosene lamp for 3 lamps every 2 years	US\$	60	89.9
Capital solar home system (avg 2007-2014)	US\$/system	473	410
Replacement cost of battery	US\$/year	30	44.95
Replacement cost of light bulbs	US\$/year	18	26.9
Discount rate	%	12%	12%
Import Duty	%	18%	5.26%
Taxes	%	11%	10%

18 This model simulates the at appraisal financial analysis for the beneficiaries, where investments in MSE projects were financed under the scheme screened by PFIs, which do not provide loans to loss making enterprises, that these investments will be financially justified. As there is no particular data from the funded projects for the MSEs by the PFIs, the similar logic behind the retailer and technical services of providers of solar PV was assumed. All those projects are assumed to have similar IRRs from 10 to 24 percent as in the project at completion.



Economic Analysis at Completion

	yr1	yr2	yr3	yr4	yr5	yr6	yr7	yr8	yr9	yr10	yr11	yr12	yr13	yr14	yr15
Supply projection															
Market projections (# of hhs)	128	383	765	1275	2040	2805	3315								
Cumulative market projections (# of hhs)	128	510	1,275	2,550	4,590	7,395	10,710	10,710	10,710	10,710	10,710	10,710	10,710	10,710	10,710
Base case - kerosene lighting															
Capital cost - kerosene lamps (US\$)	9,945	29,835	69,615	129,285	228,735	348,075	487,305	348,075	487,305	348,075	487,305	348,075	487,305	348,075	487,305
Kerosene fuel cost (US\$)	3,636	14,542	36,355	72,710	130,878	210,860	305,383	305,383	305,383	305,383	305,383	305,383	305,383	305,383	305,383
O&M cost (wick, gauzes)	2,473	8,080	19,294	36,777	65,473	101,763	144,322	118,973	144,322	118,973	144,322	118,973	144,322	118,973	144,322
Total Economic Avoided Costs (US\$)	16,053	52,457	125,264	238,772	425,087	660,698	937,009	772,430	937,009	772,430	937,009	772,430	937,009	772,430	937,009
GEF alternative - SHs															
Capital cost of SHS	60,308	162,830	293,094	439,642	633,084	783,441	833,297								
Battery and controller replacement		4,973	14,918	29,835	49,725	79,560	79,560	79,560	79,560	79,560	79,560	79,560	79,560	79,560	79,560
O&M cost - light bulbs		2,984	8,951	17,901	29,835	47,736	47,736	47,736	47,736	47,736	47,736	47,736	47,736	47,736	47,736
Total Economic Costs (US\$)	60,308	170,786	316,962	487,378	712,644	910,737	960,593	127,296	127,296	127,296	127,296	127,296	127,296	127,296	127,296
Net Economic Flows (US\$)	-44,254	-118,330	-191,699	-248,606	-287,557	-250,040	-23,583	645,134	809,713	645,134	809,713	645,134	809,713	645,134	809,713



Financial Analysis at Completion

	yr1	yr2	yr3	yr4	yr5	yr6	yr7	yr8	yr9	yr10	yr11	yr12	yr13	yr14	yr15
Supply projection															
Market projections (# of hhs)	128	383	765	1,275	2,040	2,805	3,315								
Cumulative market projections (# of hhs)	128	510	1,275	2,550	4,590	7,395	10,710	10,710	10,710	10,710	10,710	10,710	10,710	10,710	10,710
Base case - kerosene lighting															
Capital cost - kerosene lamps (US\$)	11,463	34,388	80,240	149,017	263,645	401,199	561,678	401,199	561,678	401,199	561,678	401,199	561,678	401,199	561,678
Kerosene fuel cost (US\$)	4,190	16,761	41,904	83,807	150,853	243,041	351,991	351,991	351,991	351,991	351,991	351,991	351,991	351,991	351,991
O&M cost (wick, gauzes)	2,850	9,313	22,238	42,389	75,466	117,294	166,348	137,130	166,348	137,130	166,348	137,130	166,348	137,130	166,348
Total Financial Costs (US\$)	18,503	60,463	144,382	275,214	489,964	761,535	1,080,018	890,320	1,080,018	890,320	1,080,018	890,320	1,080,018	890,320	1,080,018
GEF alternative - SHs															
Capital cost of SHS	70,147	189,396	340,913	511,369	736,372	911,260	969,249								
Battery and controller replacement		5,731	17,194	34,388	57,314	91,703	91,703	91,703	91,703	91,703	91,703	91,703	91,703	91,703	91,703
O&M cost - light bulbs		3,439	10,317	20,633	34,388	55,022	55,022	55,022	55,022	55,022	55,022	55,022	55,022	55,022	55,022
Total Financial Costs (US\$)	70,147	197,352	364,781	559,105	815,932	1,038,556	1,096,545	146,724	146,724	146,724	146,724	146,724	146,724	146,724	146,724
Net Financial Flows (US\$)	-54,094	-144,895	-239,517	-320,334	-390,845	-377,858	-159,536	743,596	933,294	743,596	933,294	743,596	933,294	743,596	933,294



ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

The World Bank task team held discussion with Director, Department of Energy, Ministry of Infrastructure & Transport of the Government of Fiji on May 19, 2023 regarding the Sustainable Energy Finance Project (SEFP).

The Government of Fiji reiterated that access to finance continues to be a key challenge for stimulating the uptake of rural energy by rural communities, such as solar home systems and solar kits. This is a much-needed type of engagement for the Government to achieve its national electrification goal.

In terms of project design aspects, where families are engaged in subsistence farming, formal security and collateral requirements by commercial banks can be too onerous for rural households to meet. Moreover, the share of guarantee coverage under the SEFP (50 percent) could have been higher to further accelerate rural energy access.

Despite some of these design issues, the Government of Fiji is pleased with the outcomes of the SEFP and wishes to see a similar scheme continued and scaled up in the country.



ANNEX 6. SUPPORTING DOCUMENTS (IF ANY)

- Project Appraisal Document (Report No. 38120)
- Grant Agreements
- ISRs (#1-#25)
- 2011 MTR report
- 2016 MTR report
- The World Bank Group Guarantee Instruments 1990–2007, IEG, 2009
- Risk Sharing Facilities, IFC
- Assessing the Impact of IFC’s China Utility-Based Energy Efficiency Finance Program, IEG, 2010