Provision of Technical Assistance to Enhance Vanuatu's Market for Energy Efficient Appliances

Financing Mechanism Options & Recommendations for the Incentivization towards the Purchase of Energy-Efficient Appliances

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ACRONYMS AND ABBREVIATIONS

BSP	Bank South Pacific
CAGR	Compounded Annual Growth Rate
CTCN	Climate Technology Centre and Network
DoE	Department of Energy
EE	Energy Efficiency
EERS	Energy-Efficiency Resource Standard
ESCO	energy service company
GCF	Green Climate Fund
GGGI	Global Green Growth Institute
KOICA	Korea International Cooperation Agency
LGF	loan guarantee facility
MEPS	Minimum Energy Performance Standard
MOUs	Memorandum of Understandings
MV&E	Monitoring, Verification and Enforcement
NBV	National Bank of Vanuatu
NDC	Nationally Determined Contribution
NGEF	Vanuatu National Green Energy Fund
OBF	On-Bill Financing
PCS	Power and Communications Solutions
PICTs	Pacific Island Countries and Territories
PRIF	Pacific Regional Infrastructure Facility
RBV	Reserve Bank of Vanuatu
RE	Renewable Energy
SHS	Solar Home System
VeSW	Vanuatu Electronic Single Window
VNPF	Vanuatu National Provident Fund
VNSO	Vanuatu National Statistics Office
VREP	Vanuatu Rural Electrification Project

1 INTRODUCTION

This *Financing Mechanism Options & Recommendations for the Incentivization towards the Purchase of Energy Efficient Appliances* report was prepared for the Department of Energy (DoE) within the Ministry of Climate Change Adaptation, Meteorology, Geo-hazards, Energy, Environment and National Disaster Management Office as part of the **"Enhance Vanuatu's Market for Energy Efficient Appliances"** project, funded by the Green Climate Fund (GCF) through the Climate Technology Centre and Network (CTCN). The project objective is to support accelerating the transition to energy-efficient appliances through 1) improvement of the recently introduced standards and labelling programme; 2) introduction of Monitoring, Verification and Enforcement (MV&E) activities and a product registration system; and 3) introduction of financial mechanisms.

Implementation of the project is carried out through the following 5 tasks.

- Task 1 - Development of implementation planning and communication documents
- Task 2 - Comprehensive market and policy analysis for higher efficiency refrigerators, freezers, air conditioners, and lighting products
- Task 3 - Assessment and upgrade of the existing Vanuatu Electronic Single Window (VeSW) registration system and development of an MV&E plan
- Task 4 - Development of financing mechanisms for the incentivization towards the purchase of energy-efficient appliances
- Task 5 – Project closure

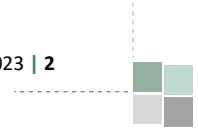
This report, under Task 4, identifies possible options for financing energy-efficient appliances and lighting products in Vanuatu.

1.1 Objective of the Report

The main objective of the report is to identify and recommend appropriate financial mechanisms that can be implemented under the existing regulatory and appliance market environment in Vanuatu. It is envisaged that the proposed financial mechanisms will serve as additional market-based instruments to promote the uptake of energy efficient appliances and lighting products in Vanuatu.

The identification and assessment of the appropriate financial mechanisms were conducted and analyzed based on desk reviews of various national conditions necessary for the design and operationalization of financial mechanisms for household appliances and lighting products. Additionally, interviews were conducted with stakeholders, including the National Green Energy Fund (NGEF), National Bank of Vanuatu (NBV), Bank South Pacific (BSP), ANZ Bank, BRED Bank and electrical appliance retailers (e.g., Computer World and Rapid Electrical) to understand the current market practices on consumer financing and to explore potential financing schemes for implementation among Vanuatu households (See *Annex A for Summary of Stakeholder Meetings on Financing Mechanisms*). Finally, a meeting was held to consult with stakeholders on the proposed recommendations for financial mechanisms and the related implementation plan, ensuring that they are well-suited for Vanuatu's needs, address women's concerns, and offer opportunities for financial independence (See *Annex F for Consultation Meeting on Recommendations on the Selected Financing Schemes*).

The analysis considered structure of the electricity industry, existing resources and mechanisms for energy efficiency financing, barriers, and challenges to financing the regulated products, international best practices on financing mechanisms for the uptake of energy-efficient appliances (primarily for household refrigerators, freezers, air conditioners, and lighting products), and social and gender considerations.



2 Overview of Economic and Financial Sector in Vanuatu

2.1 Economic Overview

Vanuatu's economy has seen steady growth since 2003. However, it has recently been impacted by a series of negative shocks. Tropical Cyclone Pam caused widespread damage in 2015 and was followed by severe dry weather conditions due to El Nino. Economic growth slowed to 3.2% in 2018, from 4.4% in 2017, due to a sharp decline in agricultural output, caused by Cyclone Hola in March 2018 and the volcanic eruption in Ambae Island. The country's economic growth is mainly driven by construction, tourism, and services. Subsistence agriculture is critically important, being the main economic activity of 50% of the heads of rural households.[1]

According to the Vanuatu National Statistics Office (VNSO), the Vanuatu economy suffered a recession of 5% in 2020 (see Table 2-1), and the main contributing factors have been the dual disasters of COVID-19 which saw Vanuatu completely shutting off its borders to international tourists in March 2020 and Tropical Cyclone Harold in April 2020. The Services sector suffered the most with a 6.7% contraction, mainly driven by the decline in tourism-related services. The agriculture, fishing, and forestry sectors also registered a 2.7% contraction. However, the industry sector managed to register 4% growth, driven mainly by government infrastructure investment as reflected in the trajectory of the construction subsector, that strongly correlated with electricity and water developments.

During the COVID-19 pandemic from 2020 to mid-2022, the policy priorities of the Vanuatu Government and its development partners were to provide extensive support to the country's economic sectors in the form of financial support and aid-in-kind. The government's financial support for recovery is still ongoing, however, the relevant policies are now geared toward long-term recovery aimed at reinforcing the economy's resilience and sustainability. The reopening of the border in the second half of 2022 and the return of visitors will boost tourism-related services. This has brought much excitement to the business community and the economic growth is expected to rebound to 3.6% in 2022 and projected to further grow to 5% in 2023 and 4.7% in 2024.

Table 2-1: Growth in Real Gross Domestic Product (Percentage Change)

Vanuatu Economic Outlook										
			Actual	*Estimate*	*Forecast*					
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Real GDP Growth (2006 prices)	**2.9**	**3.9**	**-5.0**	**2.8**	**3.6**	**5.0**	**4.7**	**3.2**	**3.0**	**2.6**
Agriculture, Fishing and Forestry Sector	0.9	4	-2.7	2.3	3.0	4.7	3.7	3.3	3.1	2.3
Industry Sector	4.9	9.8	4.0	10.3	14.6	13.6	10.7	4.0	3.4	3.4
Services Sector	0.8	3.3	-6.7	2.1	2.3	3.5	3.6	2.8	2.6	2.1

Source: National Statistics Office and Macroeconomic Committee (MEC) 2 2022 Estimates, (DoFT, 2022)[2]

[1] https://www.adb.org/sites/default/files/publication/530276/pacific-finance-sector-vanuatu.pdf
2 https://doft.gov.vu/images/2022/Economics/HYEFU_2022_English.pdf

Based on UN Women's research[3], men occupy more than 60% of the jobs in both private and public (government) sectors. The private sector includes more than 18,500 employees, with 64% being men and 36% women. The government sector is one third the size of the private sector, with around 6,500 employees, 61% of those jobs are held by men and 39% by women. Women are far more likely to undertake the role of a full-time homemaker than men – out of almost 18,000 full-time homemakers in Vanuatu, almost 15,000 are women. This also indicates a pattern associated with age: between the ages of 30 and 49 years, when families are most likely to have dependent children at home, and at least 85% of full-time homemakers are women. Among women who are currently earning an income and living with a man (either married or de facto), over half (53%) earned about the same or more than their husband/partner. Yet less than one in five (18%) has savings in the bank, one in three (31%) has other savings and few women own any major assets on their own.

2.2 Financial Sector

Vanuatu has a high degree of monetization, although expansion in private sector credit has been inconsistent due to the country's vulnerability to natural disasters. The Reserve Bank of Vanuatu is the central bank in the country which acts as the regulator of the banking sector. Vanuatu's financial system is well served by banks. There are 13 banks licensed to operate in the country. Two commercial banks (the National Bank of Vanuatu and Wanfuteng Bank Limited) are owned by Vanuatu nationals, while three banks (ANZ Banking Group, BRED Bank, and Bank of South Pacific Vanuatu or BSP Vanuatu) are subsidiaries of foreign-owned banks. The remaining eight banks provide international banking services to the people of Vanuatu. The country also has 34 insurance companies and intermediaries as well as a pension fund (Table 2-2).

Table 2-2: Financial System in Vanuatu

Type of Institution	Number
Commercial Banks	5
International Banks	8
Insurance Companies and Intermediaries	34
Pension Fund	1
Other Financial Institutions	2
Total	**50**

Source: Reserve Bank of Vanuatu, January 2023

According to the ADB Finance Sector Brief published in 2019, financial development is comparatively high in Vanuatu, relative to other Pacific Island economies. It surpassed the regional Financial Development Index average from 2004 to 2015. For instance, the accessibility of financial services for households, such as the availability of automated teller machines (ATMs) and the number of commercial bank loan accounts, exceeds that of most other Pacific Island countries. However, despite efforts to enhance financial inclusion, meeting the credit demand of many small and medium-sized enterprises, particularly in the outer islands, remains challenging. Larger commercial banks primarily cater to the population in

3 https://asiapacific.unwomen.org/en/countries/fiji/co/vanuatu

urban areas, and as a result, rural and remote communities are unable to access the services provided by these banks. Women, girls, and vulnerable members of the community are further disadvantaged, as they are unable to travel to main towns or provincial centres to save, invest, or access funds. They often rely on their male counterparts to go to town for them. Trust issues further complicate matters, making it challenging for them to access different resources according to their specific needs. Although credit unions have provided alternative financial services to rural individuals who cannot access formal banking services, many small and medium-sized enterprises still face challenges in obtaining credit due to stringent collateral requirements.

The National Bank of Vanuatu (NBV) has played a crucial role in providing financial services to the outer islands, particularly through microfinance and financial literacy programs. In 2015, it introduced rural land and seasonal labour loans targeted at rural residents and seasonal workers, which resulted in a 53% growth in microfinance lending in 2017. NBV's financial literacy program has also been effective in increasing the number of bank accounts held by rural residents.

In addition, Oxfam Vanuatu has introduced UnBlocked cash transfer, a simple technology that focuses on vulnerable members of communities. Oxfam's UnBlocked Cash project (UBC) is a blockchain-powered cash transfer solution aimed at reducing the costs and delivery times of distributing aid, while also bringing more transparency and accountability to the process. This solution offers an opportunity to improve the delivery of aid without compromising the dignity of beneficiaries. The UnBlocked Cash solution comprises three key elements: 1) e-voucher "tap-and-pay" cards provided to beneficiary households, which they can use to purchase goods, 2) smartphones with a pre-installed app through which vendors receive payments, and 3) a single-payment online platform where NGOs like Oxfam can disburse funds and monitor transactions remotely and in real-time. A dedicated Oxfam team provides support to beneficiaries and vendors to ensure a smooth user experience and provides training in basic digital skills. Voucher arrangements are used, sometimes with designated warehouses for specific items such as building materials.

2.3 Monetary Policy

Vanuatu's monetary policy aims to achieve price stability, a viable balance of payments and economic growth. The main twin objectives of monetary policy are; a) low and stable inflation rate and b) maintaining a sufficient level of official foreign exchange reserves[4]. As of the end of June 2022, the bank's policy interest rate remained at 2.25% as the Bank felt that this current policy stance remains appropriate for achieving its policy targets of (i) keeping the annual inflation within the range of 0.0-4.0% and (ii) maintaining an adequate level of foreign reserves above the minimum threshold equivalent of 4 months of projected import cover. In the first quarter of 2022, annual inflation was recorded at 2.7%, falling within the target range set by the Reserve Bank of Vanuatu (RBV). Other policy interest rates such as the Statutory Reserve Deposits Ratio and the Liquid Asset Ratio have been maintained at 5.25% and 5%, respectively. The Capital Adequacy Ratio (CAR) remains at 10%.

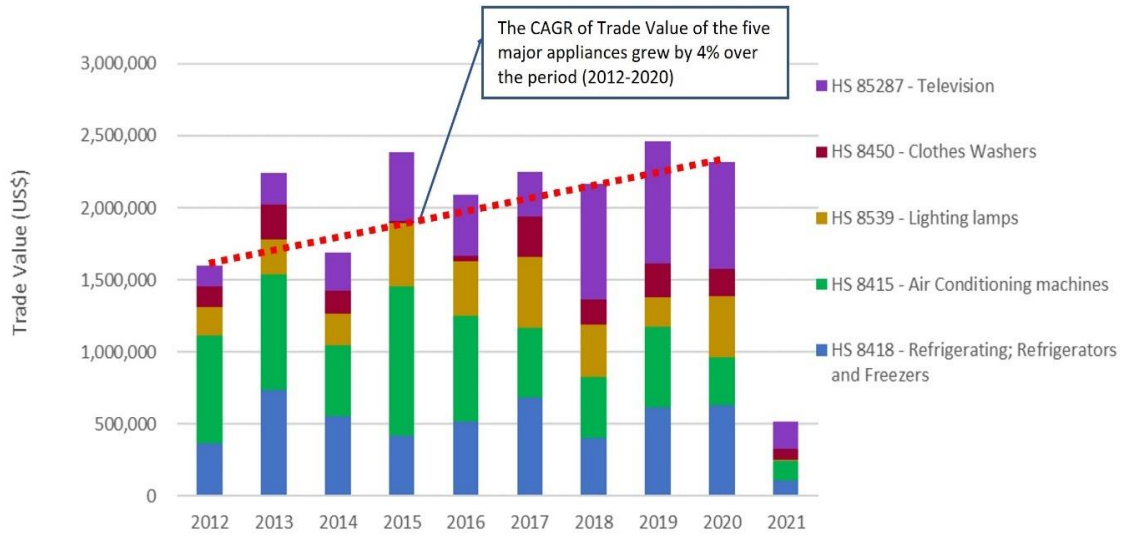
[4] https://www.rbv.gov.vu/index.php/en/monetary-policy/about-monetary-policy

3 APPLIANCE MARKET IN VANUATU

3.1 Estimated Market Size of Regulated Electrical Appliances

Import statistics are not available from the Vanuatu Customs department, therefore, the export statistics from UN Comtrade are used as a proxy for analyzing the market sizes of regulated electrical appliances in Vanuatu. Note that energy efficiency performances of refrigerators, freezers, room air conditioners and lighting products in Vanuatu are regulated under the Energy Efficiency of Electrical Appliances, Equipment and Lighting Products Act No. 24 of 2016, while clothes washers and televisions have recently been included in the scope of the Act in 2022. For these five selected types of appliances, approximate annual market size, compounded annual growth rate (CAGR) are discussed in this section.

Based on the trade values, the average annual market size of the five selected appliances was estimated at US$ 1.97 million between 2012 and 2021 (Figure 3-1). Before the COVID-19 pandemic, the CAGR for these appliances was about 4% (2012-2020). During the COVID-19 pandemic in 2020 and 2021, the trade value slightly decreased by 6% in 2020 and fell sharply by 78% in 2021. Table 3-1 provides units of electrical appliances exported to Vanuatu from 2012 to 2021.



Source: United Nations Commodity Trade Statistics Database (UN Comtrade), 2022

Figure 3-1: Annual Trade Value of Regulated Electrical Appliances in Vanuatu, 2012 – 2021

Table 3-1: Annual Trade Quantities of Regulated Appliances in Vanuatu, 2012 - 2021

Year	HS 8418 - Refrigerating; Refrigerators and Freezers	HS 8415 - Air Conditioning machines	HS 8539 - Lighting lamps	HS 8450 - Clothes Washers	HS 85287 - Television
2012	2,175	1,710	153,171	551	325

Year	HS 8418 - Refrigerating; Refrigerators and Freezers	HS 8415 - Air Conditioning machines	HS 8539 - Lighting lamps	HS 8450 - Clothes Washers	HS 85287 - Television
2013	3,272	1,990	136,245	1,070	914
2014	2,045	1,209	143,135	582	2,290
2015	1,638	2,224	368,518	94	2,744
2016	2,037	1,792	243,559	43	1,589
2017	2,792	1,568	256,466	748	1,042
2018	1,561	1,479	306,630	467	6,859
2019	2,135	1,776	231,345	897	8,578
2020	2,314	751	56,566	567	1,977
2021	137	151	43	183	332

Source: United Nations Commodity Trade Statistics Database (UN Comtrade), 2022

Based on the abovementioned trade flow data, the average annual market sizes in US$ and quantity for each type of regulated appliances as well as estimated stocks are shown in Table 3-2.

Table 3-3: Average Annual Market Size and Stock for Regulated Appliances

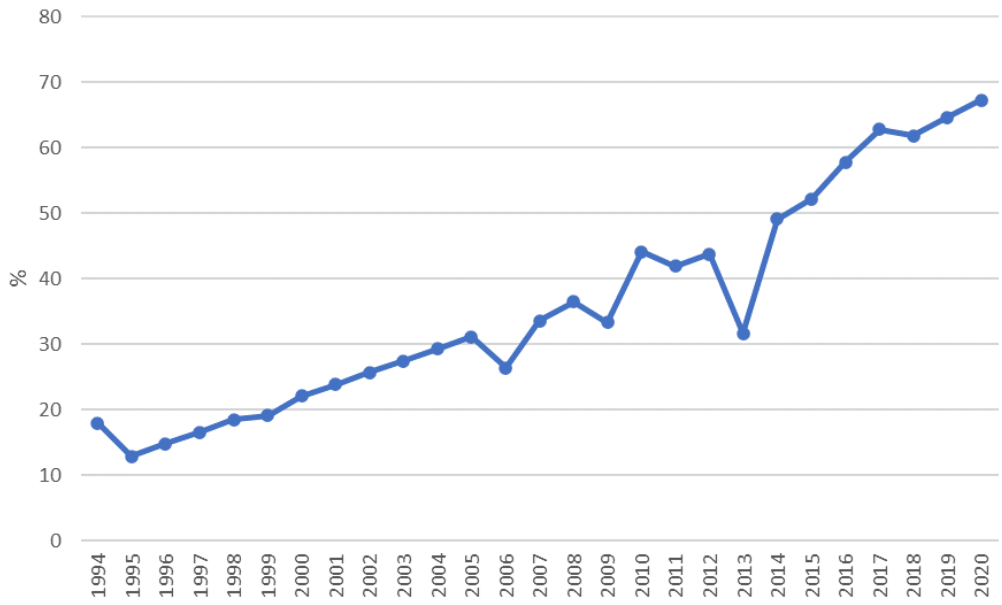
Appliance	Annual Market Value (US$)	Annual Market Size (Units)	Estimated Residential Installed Stock (Units)
Refrigerators and Freezers	502,305	2,011	28,000
Air conditioners	574,407	1,465	7,000
Lighting products	297,755	189,568	80,000
Clothes Washers	154,432	520	10,000
Televisions	442,592	2,665	16,000

Source: United Nations Commodity Trade Statistics Database 2013-2021 (UN Comtrade), and stock estimations by IIEC

- **Refrigerators-Freezers** (all types, excluding HS 841869 spare parts and HS 841861 heat pumps other than air conditioning machines): The annual market value is about US$ 500,000 or 2,000 units per year.
- **Air Conditioners** (all types, excluding air conditioners used for persons in motor vehicles): The annual market value is about US$ 575,000 or 1,500 units per year.
- **Lighting products** (all types of electric filament or discharge lamps): The annual market value is about US$ 300,000 or 190,000 units per year.
- **Clothes washers** (Household washing machines including both wash and dry; excluding spare parts): The annual market value is about US$ 150,000 or 500 units per year.
- **Televisions** (Reception apparatus for televisions, whether incorporating or not incorporating radio-broadcast receivers or sound or video recording): The annual market value is about US$ 440,000 or 2,700 units per year.

3.2 Impacts of Appliances on Electricity Consumption

The demand for household appliances in Vanuatu is primarily driven by two main factors: country economic growth and the success of the rural electrification program. Through an aggressive rural electrification campaign, Vanuatu has significantly increased its electrification rate from under 20% in 1995 to 67% in 2020, as shown in Figure 3-2.



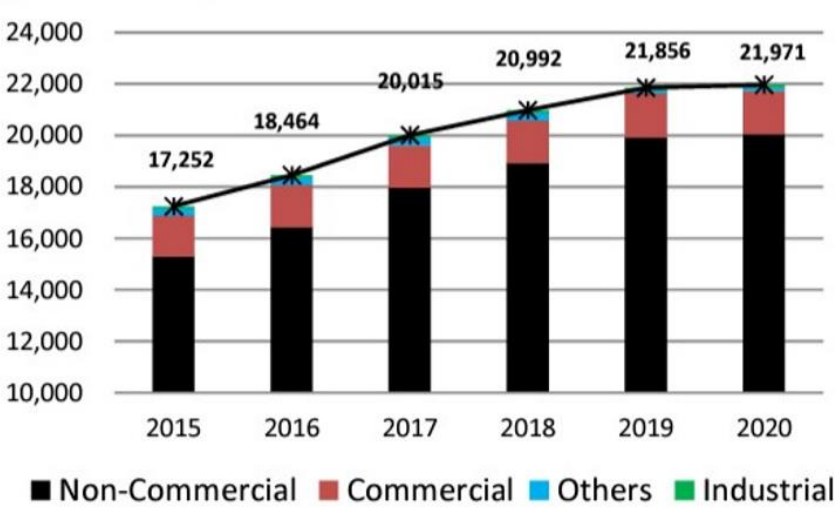
Source: DataBank, World Bank (https://data.worldbank.org/)

Figure 3-2: Electrification Rates in Vanuatu, 1994 - 2020

In line with the economic growth and progress of country's rural electrification program, electricity consumers in Vanuatu consistently grew from about 17,000 customers[5] in 2015 to almost 22,000 customers in 2019, particularly for non-commercial electricity consumers which comprises largely residential electricity consumers. It is important to note that both UNELCO and VUI[6] have implemented a scheme, as part of their investment plan, to reduce the connection cost for residential customers. The upfront connection cost not covered by customers is embedded into the tariff as utility Investments. This approach may be a primary contributing factor to the consistent increase in residential electricity consumers, which is also aligned with the government's policies in promoting electricity access (Utilities Regulatory Authority, 2021).

[5] Four electricity customer classifications in Vanuatu include: 1) Industrial - Private High Voltage Users, Government High Voltage Users, Port Vila Water Usage; 2) Commercial - Business Users; 3) Non-Commercial - Small Domestic Customers, Prepaid Users, Other Low Voltage Users, Government Low Voltage; 4) Others - Streetlights/Sports Field, Energy not invoice (utility's office usage, utility's employee, and installations).

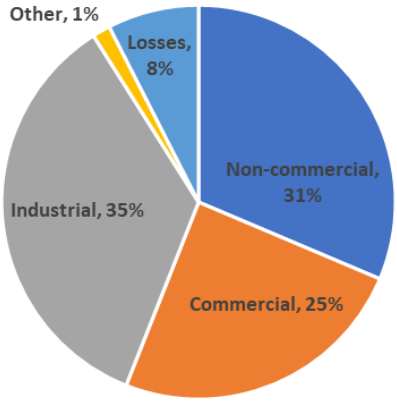
[6] Electricity in Vanuatu is provided to end users by two private entities, UNELCO and VUI, operating under the government's concession agreements to supply the electricity in four main islands (Efate, Espiritu Santo, Tanna, and Malekula). UNELCO is the largest electricity utility in Vanuatu supplying Shefa, Malampa, and Tafea provinces on Efate, while VUI is supplying Sanma province on Espiritu Santo. The Government of Vanuatu is temporarily operating and managing the systems in Tanna and Malekula islands until a new concession is completed.



Source: Electricity Factsheet 2015-2020 (Utilities Regulatory Authority, 2021)[7]

Figure 3-3: Electricity Customers in Vanuatu, 2015 – 2020

In terms of electricity consumption, Vanuatu consumed 70.87 GWh of electricity in 2020 and the industrial sector accounted for the largest consumption (35%), followed by the non-commercial sector (31%) and commercial sector (25%), as shown in Figure 3-4.



Source: Electricity Factsheet 2015-2020 (Utilities Regulatory Authority, 2021)

Figure 3-4: Percentage of Electricity Consumption by User Classification, 2020

Although more detailed data on the utilization of household appliances among these electricity consumers is not available to the project team during the preparation of this report, regulated appliances could significantly contribute to the electricity consumption in both the non-commercial (residential) and

[7] http://ura.gov.vu/attachments/article/97/ElectricityFactSheet20152020.pdf

commercial sector which accounted for approximately 56% of the total electricity consumption in Vanuatu in 2020.

3.3 Supply of Appliances in Vanuatu

The structure of the appliance industry in Vanuatu is relatively straightforward, with most appliance importers also functioning as retailers. As of 2022, there were about ten major importers/retailers supplying regulated appliances in Vanuatu. Some of these importers/retailers supply a wide range of electrical appliances (such as Computer World, Wilco Home Furnishing and Rapid Electric), while some of which only supply specific products and services, for example Supercool Vanuatu and Vila Refrigeration sell and provide installation and maintenance services for air conditioning and refrigerating appliances.

Figure 3-5: Regulated Appliances in Retailers in Port Vila, Vanuatu

3.4 Available Financial Products for Purchasing Appliance in Vanuatu

Vanuatu customers who do not wish to pay the full purchasing price in a single installment may choose to apply for personal loans from local banks or appliance retailers or sign a lay-by agreement with retailers.

- **Personal Loan:** Customers generally have the option to apply for personal loans to purchase appliances from local banks or directly from appliance retailers. All major local banks, such as ANZ, BSP, BRED, and NBV, offer personal loans in Vanuatu. However, loan approvals are subject to the credit approval criteria of each bank. These criteria may include, but are not limited to, employment status, credit history, and current ownership of major assets. Existing personal credit lines through credit cards are also common for appliance purchases in Vanuatu. In addition to personal loans from banks, some retailers, such as Computer World, have directly offered

personal loans to customers to purchase appliances from their shops. The evaluation of customers' credit risks and collection of payments are undertaken by the retailers.

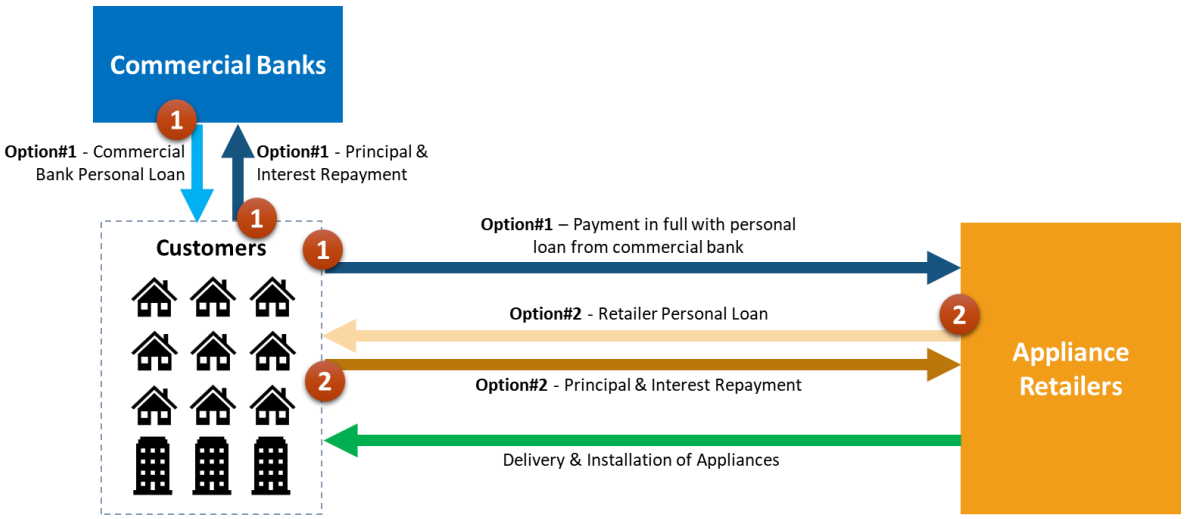


Figure 3-6: Common Personal Loan Options for Purchasing Appliances in Vanuatu

- **Lay-by Agreement:** A lay-by agreement allows customers to purchase appliances and pay the full price over time. Generally, the retailer and customer agree on the method of payment, terms and conditions for the purchase of appliances through an installment plan including the timing and amount of installment payments. Once the first payment is made, the retailer will remove the product from the shelf and deliver it to the customer once all the payments are completed. According to local retailers, the customer usually pays off the full cost of an appliance within 3 to 6 months. If a customer decides to cancel the lay-by agreement, the retailer can charge a cancellation fee to cover the costs of storage, administration, and tax before returning the balance to the customer. The major drawback of the lay-by agreement is that the customer will not be able to obtain the appliance until all the payments are made. However, with less paperwork, the lay-by agreement appears to work well in Vanuatu and is suitable for low-income earners who want to afford refrigerators, freezers, TVs, and clothes washers.

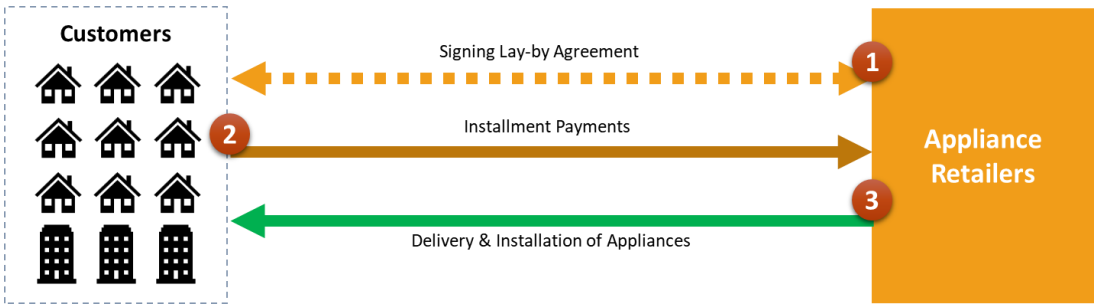


Figure 3-7: Lay-by Agreement for Purchasing Appliances in Vanuatu

4 Potential Financial Mechanism Options for EE Appliances in Vanuatu & Recommendations

4.1 International Experience in Financing EE Appliances

Many forms of financial instruments and incentive programs have been implemented across the globe for decades to promote greater penetration of EE appliances in the residential sector. These financial instruments and incentives are often provided directly by government and energy providers based on a regulatory mandate.

The most common forms of the government financing programs include tax credits or deductions and subsidized (i.e., low-interest) loans. Other forms of financing programs can be used to stimulate customer spending, such as early replacement programs, in which the government subsidizes replacement of old appliances with new more efficient ones or attributes rewards points to consumers who purchase energy-efficient appliances; and the points can then be exchanged for cash or discounted prices for other consumer products later on.

Under the regulatory mandate, energy providers are required to meet annual energy saving targets by undertaking activities directly or by contracting with appliance retailers, energy-efficient equipment suppliers, or energy service companies (ESCOs). Examples of energy provider targets include Energy-Efficiency Resource Standards (EERS), Cap and Trade Mechanisms, Standard Offer, and Utility Investment Target.

The aforementioned financial programs are generally funded by taxpayers. However, these financial instruments and incentives can also be funded through capital raised through bonds, the establishment of taxes on specific products (e.g., inefficient products), or levies or charges on electricity tariffs. Depending on the program designs and objectives of the financial programs, different types of implementing agencies and partners are possible, and these include but not limited to governments, independent agencies (e.g., research institutions), utilities, or a combination of these entities.

Summarized in the table below are financial instruments and incentive programs for EE appliances implemented internationally.

Table 4-1: International Experience in Financial Instruments and Incentives for EE Appliances

Type of Instruments and Incentives	Payment Mechanisms	Implementing Agency	Examples of Implementation Experience
Tax Incentives	Direct tax credits or deductions to end-users	Government	Italy, Japan, Portugal, Thailand, UK, USA
Downstream Rebates	Direct grants/ rebates to end-users	Government, Utilities	Denmark, India, Philippines, Switzerland, Netherland, UK, USA

Type of Instruments and Incentives	Payment Mechanisms	Implementing Agency	Examples of Implementation Experience
Upstream Rebates	Direct grants/ rebates to retailers and manufacturers	Government, Retailers, Manufacturers	China, USA
Early Retirement/ Replacement Program	Direct grants/ rebates to end-users	Government, Utilities	Korea, Mexico, USA
Indirect Subsidies through carbon/eco point system	Points redeemed for discounts in price or cash	Government	Korea, Japan
Subsidized Loans	Low-interest loans for end-users	Government, Utilities, ESCOs, Banks	Thailand, UK, USA
On-Bill Financing	Upfront cost of energy efficient appliances paid back through electricity bills	Government, Utilities	India, Sri Lanka, USA

Reviewing international experience reveals that *downstream rebates* and *tax incentives* are the two most common financial instruments and incentives for EE appliances. The popularity of downstream rebates can be attributed to their relatively straightforward implementation, as long as funding is available. Tax incentives are also popular, as end-users are responsible for the necessary documentation, and if electronic tax filing systems are in place, the administration burden on revenue departments is minimal.

4.2 Relevant Energy Financing Initiatives in Vanuatu

Vanuatu has not yet implemented any financial mechanisms to support uptake of energy efficiency appliances and equipment. However, there are few relevant energy financing initiatives that could shape the development of appropriate financial mechanisms for EE appliances in Vanuatu, and these are briefly described below.

4.2.1 Subsidies for Solar Systems

Subsidies are not new to Vanuatu. Through the Vanuatu Rural Electrification Project (VREP), the Vanuatu Government used donor funding to subsidize the purchase of qualified solar PV systems. VREP was funded by the New Zealand Government through the Pacific Regional Infrastructure Facility (PRIF) and managed by DoE with implementation support from the World Bank. Under Phase I of the project (VREP I), VREP published a product catalogue of accredited “plug and play” solar systems (5W to 30W) available from VREP-accredited vendors in Vanuatu. These "plug and play" solar systems are simple and self-contained, capable of providing lighting, phone and small appliance charging, as well as powering a DC fan and a television. Phase II of VREP (VREP II) expanded the scope of the project from “plug and play” systems to support solar home system (SHS), micro and mini grids in rural areas and strengthen institutions for decentralized electricity services. The VREP II Subsidy Implementation Manual (SIM) specifies 4 sizes of solar home systems: 1) 120 Wp to 160 Wp; 2) 220 Wp to 280 Wp; 3) 450 Wp to 550 Wp, and; 4) 900 Wp to 1100 Wp. VREP II SHS can be offered with DC Output only, AC output only, or

both. VREP published various project operation manuals that can serve as guidelines to develop a similar energy-related subsidy program in Vanuatu. Following the closure of VREP, a list of approved SHS and microgrids has been made available through the Vanuatu National Green Energy Fund (NGEF) as discussed in the subsequent section.

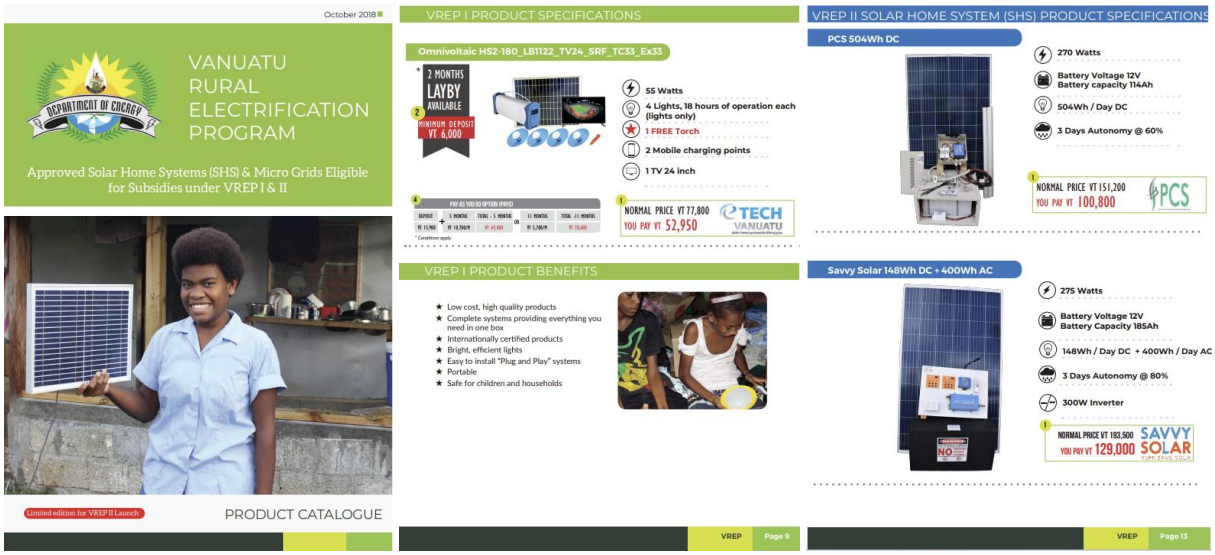
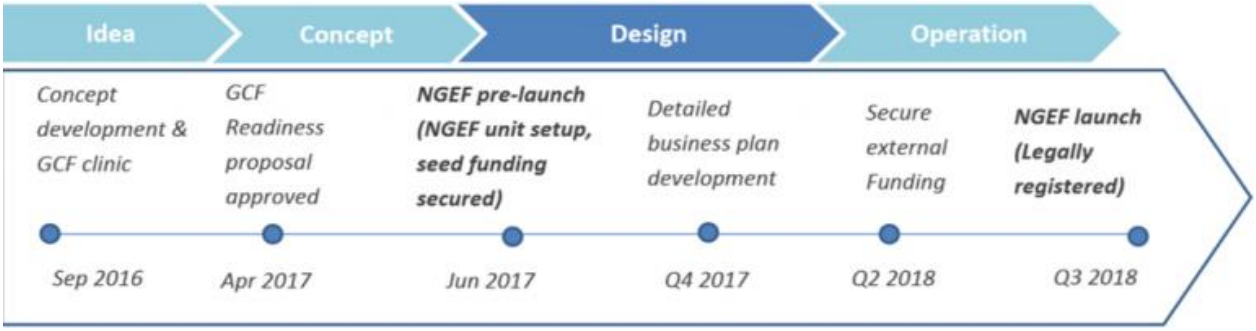


Figure 4-1: VREP Product Catalogue published in 2018

4.2.2 National Green Energy Fund

The Vanuatu National Green Energy Fund (NGEF) was established in 2018 to facilitate capital investment opportunities aimed at improving energy access for households and businesses in rural and peri-urban areas resulting in improved livelihoods, job creation and greater opportunities for income generation through implementation of renewable energy and energy efficiency. The Global Green Growth Institute (GGGI) played a crucial role in conceptualizing and establishing the NGEF, and the NGEF Unit was created within the Department of Energy (DoE) in 2017, initially receiving seed funding from the Government of Vanuatu. In 2018, the National Green Energy Fund Act No. 10 of 2018 was approved, providing a legal framework for the fund's operations. External funding from the Korea International Cooperation Agency (KOICA) was secured to support the implementation of the government's renewable energy policy. The timeline for the establishment of the NGEF is illustrated in the figure below.



Source: https://gggi.org/project/vanuatu-national-green-energy-fund-ngef/

Figure 4-2: Timeline of NGEF Establishment

NGEF will operate as a revolving fund, attracting both domestic and external funds, to attract a larger portion of funding expected to come in from Vanuatu's development partners. The revenues derived from its financial activities are expected to bring in additional funds to NGEF. According to the NGEF Act, the main objectives of NGEF are to:

a) Support projects and activities aligned with the objectives of the National Energy Road Map, which aims to provide accessible, affordable, secure, reliable, and sustainable energy while promoting green growth; and
b) Provide financial support and technical assistance to extend electricity access through using renewable energy sources and promote more efficient energy end-use.

NGEF can disburse its funds through various financial products including but not limited to loans, guarantees or equity, grants and subsidies, and technical assistance. In June 2022, NGEF launched its first-ever product catalogue that provides a list of approved solar home systems and microgrids eligible for funding by NGEF. The approved NGEF solar vendors listed in the catalogue include Energy4All, eTech Vanuatu Limited, and Power and Communications Solutions (PCS). However, no detail on funding application process and eligibility is available in the catalogue.

It should be noted that NGEF can disburse loans on its own, but this arrangement requires well established capacity within NGEF including, but not necessarily limited to, evaluation of feasibility and risk of each loan application, collection of loan repayments, and communication and outreach to potential customers. Operationalization of EE funds in many countries has opted for an on-lend approach which allows the EE funds to utilize the existing market mechanisms, e.g., commercial banks, to evaluate credit risks and manage relevant transactions with customers.

It is apparent that NGEF has been instrumental in increasing electricity access and renewable energy investments to achieve the NERM targets in the long term. NGEF has funded the installation of solar PV systems for 36 primary schools and 15 secondary schools throughout Vanuatu.[8]

[8] https://www.facebook.com/profile.php?id=100064306833628

Source: dailypost.vu/news/ngef-launches-new-product-catalogue-of-home-systems-and-microgrids/article_3214b85c-2f6b-55ed-b966-1bff768619f6.html

Figure 4-3: Launch of NGEF Solar PV Product Catalogue, June 2022

4.2.3 Energy Efficiency Lending and Leasing Program Design

In late 2022, GGGI prepared a design document for energy efficiency lending and leasing programs in Vanuatu. Based on the final report[9], the potential of On-Bill Financing (OBF) to boost energy efficiency in the residential, business and government sectors was explored. However, following the review of the Vanuatu electricity industry, market size, and feedback from UNELCO, the OBF solution was excluded from the final program design report, and the following three options of EE financing programs have been recommended by GGGI.

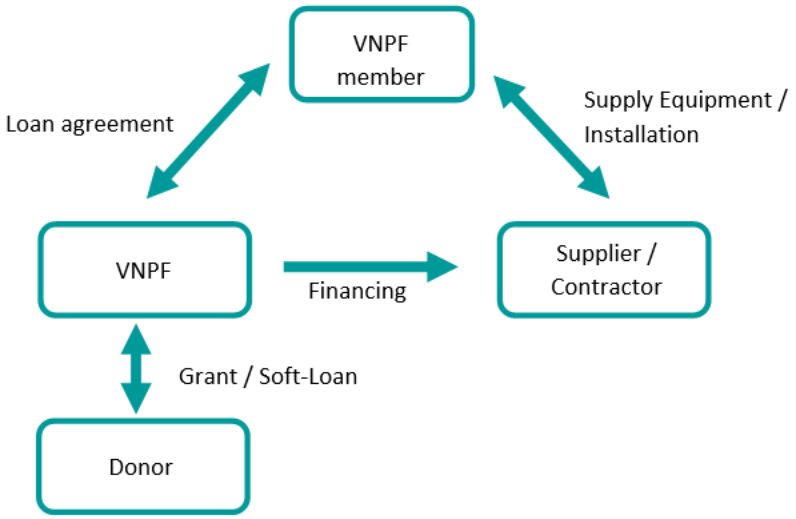
1) Option 1: Soft loans program for EE domestic appliances
2) Option 2: Leasing program for EE & RE equipment for schools, aid-posts and cooperatives
3) Option 3: Green loans for transition to EE buildings

Brief descriptions of the abovementioned options are given below.

- **Option 1: Soft loans program for EE domestic appliances:** This program aims at providing low-interest loans for members of the Vanuatu National Provident Fund (VNPF) to purchase EE appliances. The existing VNPF's members financial services lending scheme will be utilized to support the operationalization of the proposed soft loans program. The program will develop a list of qualifying appliances based on Energy ratings. VNPF will be responsible for evaluation of

[9] Energy Efficiency Facilitated Financing (EEFF) for Vanuatu – Green Lending & Leasing Programmes – Design Document; GGGI Project VU09 – How to Boost and Achieve Energy Efficiency Targets in Vanuatu through Facilitated Financing Mechanisms?, Final Report, October 2022

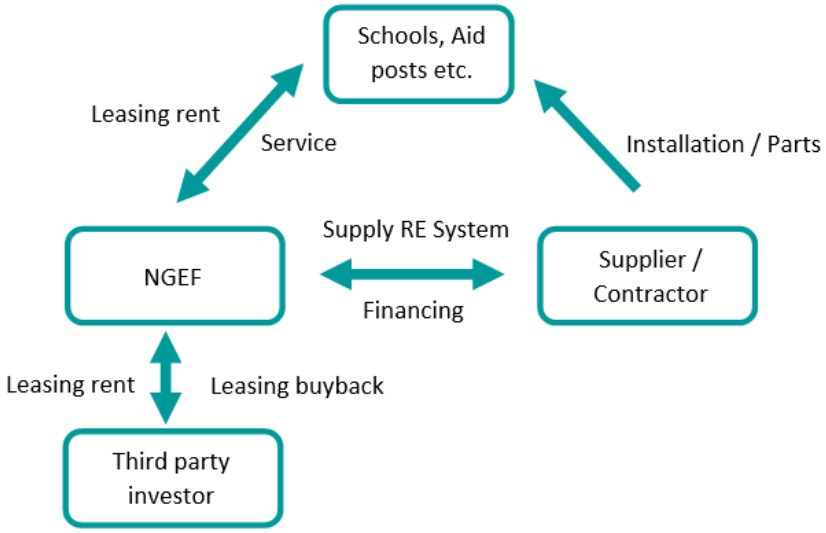
credit risks of its members and would interact with the suppliers for the payment of the EE equipment upon delivery to the customers and VNPF members whose applications have been successful. The overall implementation model for this program option is shown in Figure 4-4.



Source: Energy Efficiency Facilitated Financing (EEFF) for Vanuatu, Final Report, October 2022

Figure 4-4: Soft Loans Program for EE Appliances for VNPF Members

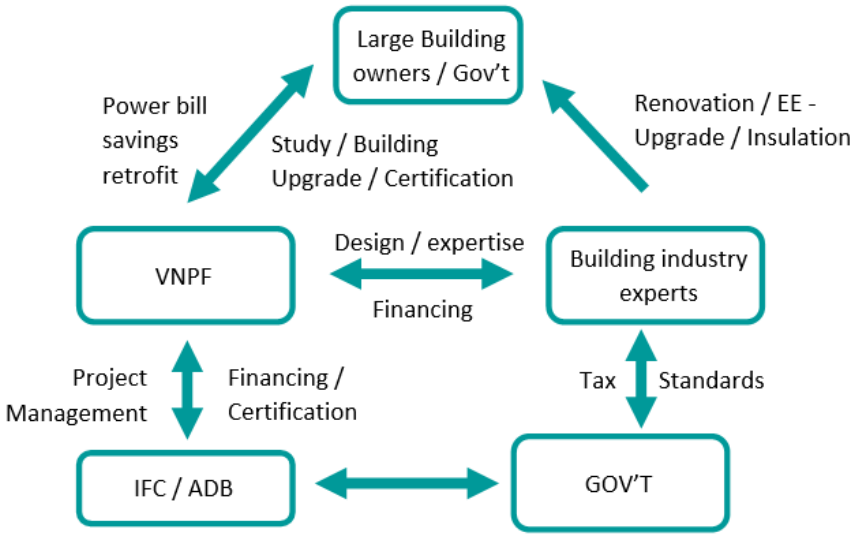
- **Option 2: Leasing program for EE & RE equipment for schools, aid posts and cooperatives:** This program option is derived from the existing NGEF 70/30 grant and loan scheme. and the priority target groups remain schools, aid posts, cooperatives, and farmers/community associations. The principle is to lease an RE asset/installation and provide EE electricity services, with a particular focus on institutions in rural and off-grid areas. NGEF will manage and coordinate the leasing scheme, which includes its financial administration and the coordination of logistics with suppliers. NGEF will receive remuneration through the leasing fee.



Source: Energy Efficiency Facilitated Financing (EEFF) for Vanuatu, Final Report, October 2022

Figure 4-5: Leasing Program for EE & RE equipment for Schools, Aid-posts, and Cooperatives

- **Option 3: Green loans for transition to EE buildings:** The focus of this program option is on large-sized buildings with significant environmental footprint which would drive the bulk of the unrealised potential for energy savings. EE building projects will be financed through green loans through the VNPF Engineering division and follow a three steps approach with at first a baseline study to determine the nature of the works and the potential savings using a costs/savings ratio, followed by the signing of a green loan contract with the building owner to set the scope and reversal of savings over a pre-determined period of time, and last, a series of tenders to realise the different jobs and complete the project. The green loan scheme requires endorsement from the VNPF Board and VNPF needs to build the capacity of its existing engineering and properties division to handle the responsibilities being assigned.



Source: Energy Efficiency Facilitated Financing (EEFF) for Vanuatu, Final Report, October 2022

Figure 4-6: Green Loans for Transition to EE buildings

4.3 Potential Financial Mechanism Options for EE Appliances in Vanuatu

The total market size of all regulated appliances and lighting products in Vanuatu is estimated at about US$2 million per year (see Table 3-3). Based on the trade statistics, the average price per unit of lighting products is approximately US$15, while the unit price of non-lighting products (i.e., refrigerators, freezers, room air conditioners, clothes washers, and TVs) is about US$250. The average market price per unit of lighting products based on the retailer surveys conducted by the project team could not be determined due to the wide variety of lighting products available from retailers in Port Vila. However, the retailer survey found that the listed prices of refrigerators, freezers, room air conditioners, clothes washers and TVs are higher than the trade statistics, as shown in Table 4-2. In general, higher unit prices reflect larger sizes/capacities, more functionalities, and brand popularities. It is worth noting that understanding the average unit prices of appliances helps determine the average size of each financial transaction and guide the design and implementation of the financial mechanisms with suitable administration procedures which would incur minimal cost but yet effective.

Table 4-2: Range of Listed Prices of Non-Lighting Regulated Products

Type of Appliance	Range of Listed Prices (US$)
Two-Door Refrigerator	800 – 2,000
Chest Freezer	600 – 800
Split-Type Room Air Conditioner	800 – 1,500
Clothes Washer	1,000 – 2,000
Television	600 – 1,000

Source: Retailer surveys conducted by IIEC in 2022

As highlighted in its Nationally Determined Contribution (NDC), Vanuatu aims to pursue EE measures across different end-use sectors to enable 15% savings in the energy sector. Appropriate financial instruments and incentives can help increase demand for EE appliances and promote energy savings in households and commercial establishments in Vanuatu. Considering that there are existing personal loan mechanisms being implemented by local appliance retailers and banks in Vanuatu to finance appliance purchases, DoE and NGEF have an opportunity to strengthen and expand the scope of these personal loan mechanisms to specifically support EE appliance purchases.

Based on the discussions with DoE and NGEF in November 2022, there are no existing government or donor funds allocated for grant or subsidy-related EE initiatives. In view of this, two financial mechanisms for EE appliances, namely 1) **soft personal loans**; and 2) **portfolio guarantee mechanism**, are recommended for DoE and NGEF for review and selection for pilot implementation. Both potential mechanisms will require minimal financial contributions from the Vanuatu Government (i.e., DoE and NGEF) as the majority of capital/funding to finance EE appliances will come from appliance retailers, local banks, and other institutions. More details of each financial mechanism are discussed below.

4.3.1 Soft Personal Loans for EE Appliances

This is similar to the soft loans program for EE domestic appliances which has already been discussed in Section 4.2.3. Although the soft loans program proposed by GGGI aims to utilize VNPF as the main implementing agency and primarily targets VNPF members, the proposed GGGI program should be modified to include other licensed banks in Vanuatu to capture a broader range of potential clients (non-VNPF members) and also to increase available capital/funding opportunities for EE appliances. Note that the lenders participating in the soft loans program will need a substantial amount of funding to cover the market segment targeted by the program, for example about US$2 million will be required to cover all regulated appliances and lighting products in Vanuatu (see Table 3-3).

It is envisaged that the modified soft loan program will not require DoE/NGEF to provide funding for the total loan portfolio, since VNPF and participating banks can use their available funds to finance the program. However, VNPF and participating banks may not be able to provide sufficiently attractive soft interests for EE appliances as they have to maintain their profit margins. Therefore, it is crucial for DoE and NGEF to provide additional EE incentives to customers who intend to purchase EE appliances. Additional funds and budgets will be necessary to support the provision of these EE incentives. For instance, an interest buy-down scheme that reduces the interest rate by 1% would require an annual budget of US$20,000 for a US$2 million loan portfolio. It is important to note that the design criteria for

these EE incentives should consider various issues, including gender-related considerations, livelihood empowerment, and overall improvement in quality of life.

Overall implementation arrangement and fund flow of the soft personal loans program for EE appliances with an interest buy-down incentive are shown in Figure 4-7.

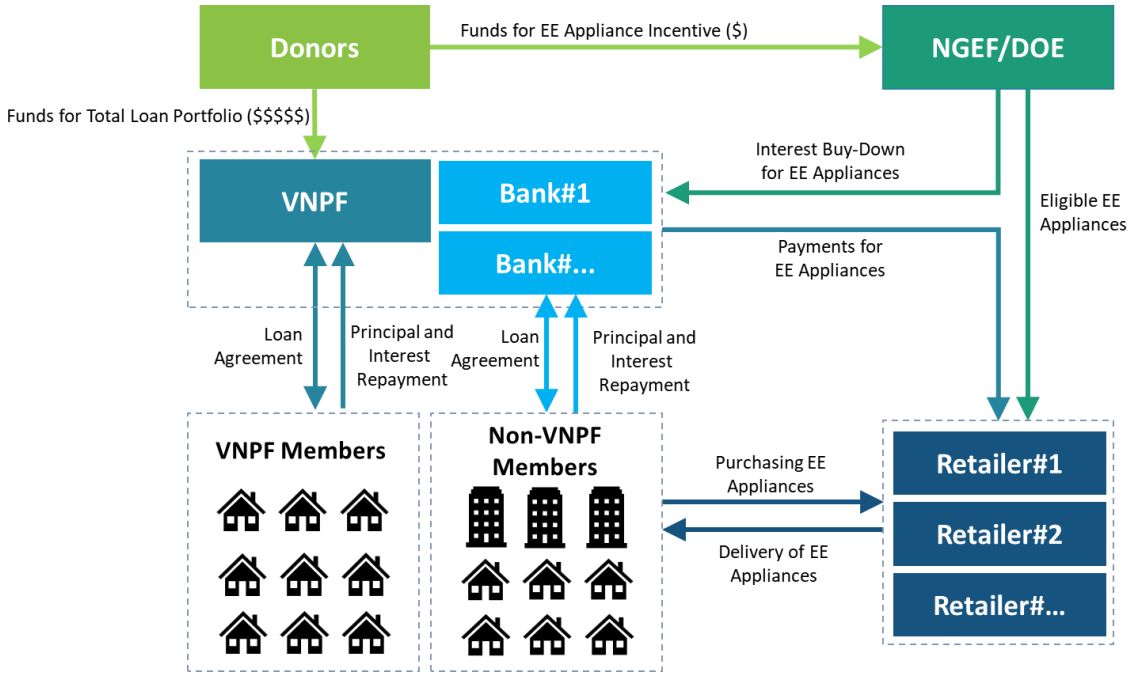


Figure 4-7: Overall Implementation Plan and Fund Flow of Soft Personal Loans Program

4.3.2 Portfolio Guarantee Mechanism for EE Appliance Lending

Another possible financing mechanism is a portfolio guarantee mechanism for existing personal loans for EE appliances being implemented by appliance retailers and local banks. The portfolio guarantee mechanism aims to reduce credit risks for lenders, allowing them to offer more favourable loan terms and conditions for EE appliances. The key feature of this mechanism is that it focuses on the overall loan portfolio for EE appliances rather than individual transactions, thereby minimizing credit risk for lenders such as appliance retailers and commercial banks. This, in turn, enables them to expand their lending to a larger customer base. The portfolio guarantee mechanism can be combined with the soft loans program to enhance the overall effectiveness of the financing programs for EE appliances in Vanuatu.

Figure 4-8 illustrates the design concept of the portfolio guarantee mechanism, which assumes that 30% of the loan portfolio for EE appliances would default. In this example, the lenders (appliance retailers or banks) would be able to recover about half of the defaulted loans through repossession and resale of appliances, equivalent to approximately 15% of the loan portfolio. Consequently, the remaining 15% represents the net default rate, which would be shared between the portfolio guarantee facility and the lenders.

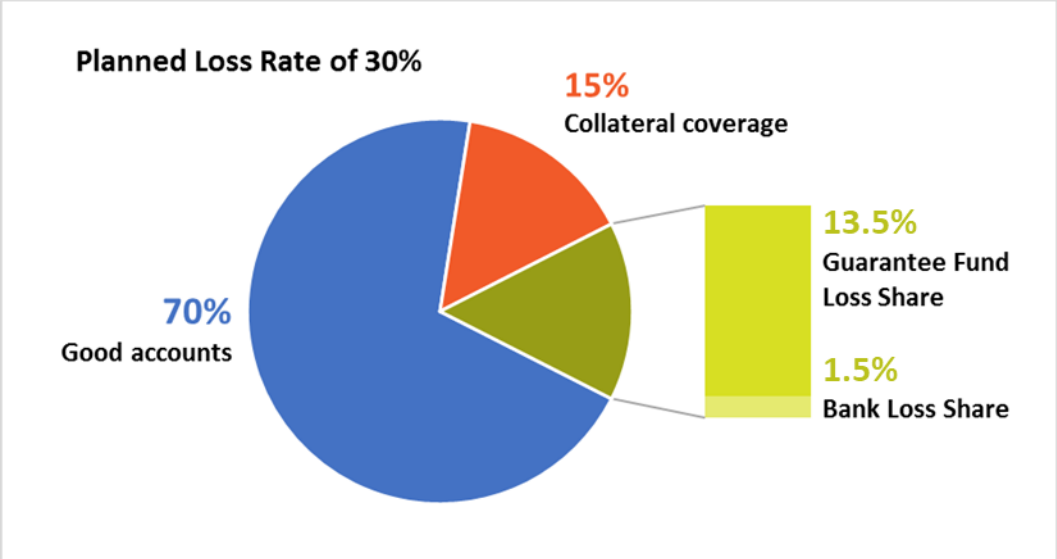


Figure 4-8: Portfolio Guarantee Mechanism for EE Appliances

Under the portfolio guarantee mechanism, the maximum loan portfolio that can be guaranteed will be determined by dividing the amount of the guarantee fund by the agreed default rate and the loss share responsibility of the guarantee fund. Estimation of the guarantee fund sizes and maximum loan portfolio that can be guaranteed based on the agreed default rate and loss share is shown in Table 4-3.

Table 4-3: Estimation of Guarantee Fund Size and Maximum Loan Portfolio

Account Item	Label	Refrigerator/ Freezer	Room Air Conditioner
Listed Unit Prices (US$)	A	800-2,000	800-1,500
Estimated Price per EE Unit (US$)	A	800	1,200
Guarantee Fund size (US$)	**B**	**50,000**	**80,000**
Planned default rate	C	30%	30%
Less estimated realized value from repossession and resale of appliance units from loans that defaulted	D	15%	15%
Net planned default rate	E = C-D	15%	15%
Loss Share in the planned default			
Fund	F	0.9	0.9
Bank & Retailer	G	0.1	0.1
Donor Fund share in the loss of the principal amount	H = E*F	13.5%	13.5%
Bank share in the loss in the loss of the principal amount	I = E*G	1.5%	1.5%
Maximum Loan Portfolio that can be guaranteed (US$)	**J = B/H**	**370,370**	**592,593**
No of units	K = J/A	463	494
Estimated local market size (units)	L	2,000	1,500

Account Item	Label	Refrigerator/ Freezer	Room Air Conditioner
% of the estimated local market size	M = K/L	23%	33%

The operationalization of the portfolio guarantee mechanism will be spearheaded by DoE and NGEF, with appliance retailers and local banks as key project partners. The guarantee fund can be co-managed by DoE and NGEF, while credit evaluation and approval can be the responsibility of appliance retailers and local banks, following a set of guidelines agreed upon by DoE and NGEF. Overall implementation arrangement and fund flow of the portfolio guarantee mechanism are shown in Figure 4-9.

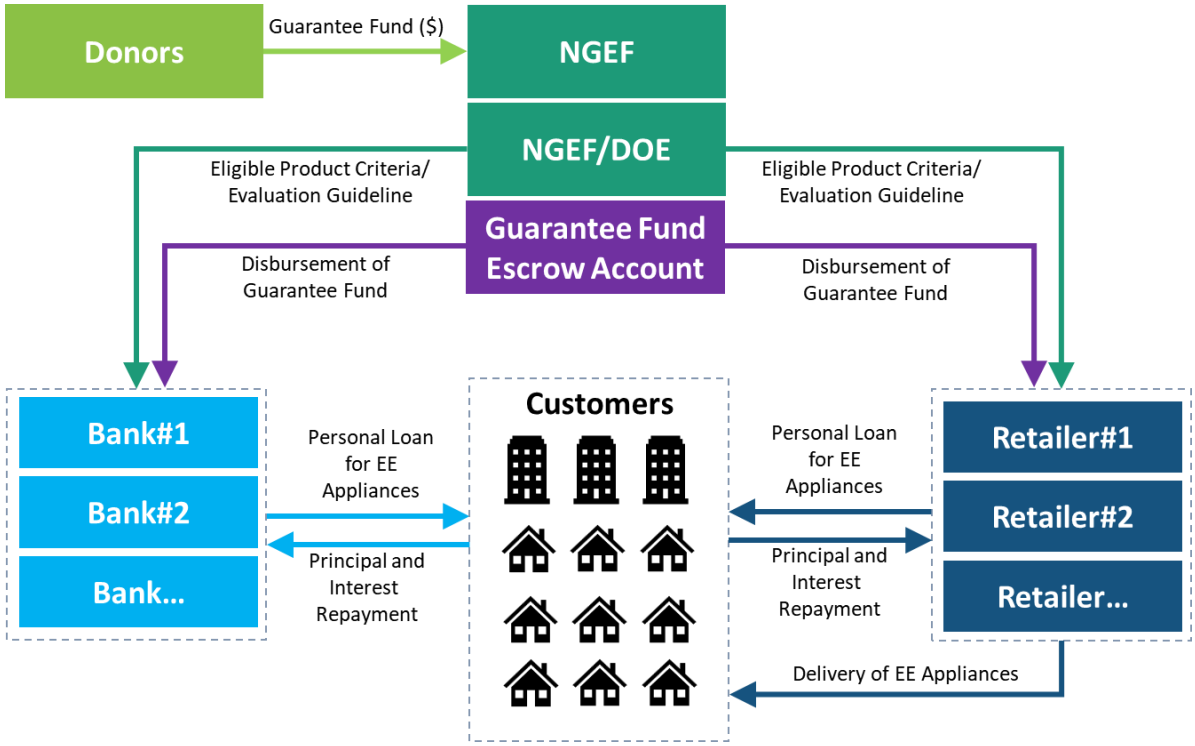


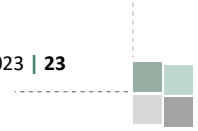
Figure 4-9: Overall Implementation Plan and Fund Flow of Portfolio Guarantee Mechanism

4.4 Other Potential EE Fiscal Instruments for Vanuatu

The challenging situation in public fiscal policy means that the overall policy should result in a net neutral or positive impact on public finances. This would, therefore, allow greater acceptance by the government. EE fiscal policies could also be part of a more comprehensive "Green" economic recovery fiscal package, that shifts the economic focus to climate-friendly and future-proof jobs and infrastructure. In principle, taxes are considered as positive revenue fiscal instruments and would serve as the basis for the budget-positive or budget-neutral scheme, while subsidies are negative revenue fiscal instruments. The potential budget-positive EE fiscal instruments for Vanuatu are discussed below.

- **Indirect Tax Increases:** Excise tax can be considered as an option for imposing a tax on energy-inefficient appliances. The existing MEPS and labelling regulations can facilitate the implementation of a targeted fiscal policy that penalizes energy-inefficient equipment. However, the introduction or modification of an excise tax scheme requires a comprehensive feasibility assessment. This assessment should include a review of the legislative reform process, necessary changes to IT systems and procedures by the tax revenue and customs organizations, as well as a broader stakeholder analysis involving manufacturers and importers. It is crucial to consider all relevant aspects of an excise tax change to ensure effective implementation.

- **Environmental Taxes:** According to the report on existing instruments and reform efforts of relevance for greening taxes and subsidies in the Pacific Island Countries and Territories (PICTs), published in 2018, Vanuatu is considering the reduction of Customs duty for more efficient appliances. Additionally, a measure is already in place concerning ozone-depleting substances. This measure requires a permit from the Department of Environment, and documents are inspected during the import process. Non-compliant products are seized as a result.



5 CONCLUSION & NEXT STEPS

International experiences have indicated that downstream rebates and tax incentives are the two most common financial instruments and incentives for EE appliances. However, these popular mechanisms may not be suitable for Vanuatu. Downstream rebates typically require significant funding, which may not be readily available in Vanuatu. Furthermore, Vanuatu does not have income tax for corporations or individuals, making incentives through tax reductions or refunds non-existent.

Although the potential financial mechanisms proposed in Section 4.3 do not require a significant amount of funding, the DoE and the NGEF have not yet confirmed the availability of funding to support the development and operationalization of these mechanisms. Considering this, it is recommended for DoE to explore funding opportunities to support the development and implementation of the proposed financial mechanisms, and initiate discussions with potential program partners to pilot the proposed financial mechanisms.

The following steps are recommended for DoE and NGEF to develop the pilot phase the potential financial mechanisms.

1) **Seek additional fundings for EE financial mechanisms:** The proposed EE financial mechanisms require a relatively small amount of funding to support the operationalization of the total loan portfolio. It is estimated that funding ranging from US$50,000 to US$300,000 could support a total loan portfolio of up to US$300,000 to 2 million (see *Annex B for estimation of guarantee fund size and loan portfolio*). Various potential climate finance sources in Vanuatu have been compiled and published by the Ministry of Climate Change Adaptation[10]. DoE/NGEF can utilize the directory to initiate formal funding requests to fulfill their funding requirements. One potential avenue for funding could involve a bilateral agreement on climate change cooperation that was signed between Vanuatu and Switzerland on November 11, 2021, during the COP26 climate conference. This cooperation aims to implement private sector-driven low-carbon initiatives in Vanuatu, aligning with the national sustainable development goals and the targets outlined in Vanuatu's Nationally Determined Contribution (NDC). These objectives are fully aligned with the proposed EE financial mechanisms.

2) **Engage local program partners and select one EE financial mechanism for piloting:** DoE and NGEF should establish a committee or task force to initiate discussion with potential partners, such as appliance retailers and financial institutions. Basic frameworks and structures of the EE financing mechanisms and overall implementation arrangements for the pilot phase need to be addressed and discussed. It is recommended that, for the pilot phase implementation, only one EE financial mechanism be selected, and relevant issues to be considered during the selection process of the proposed financial mechanisms would include, but not necessarily limited to, those outlined in the table below.

[10] Directory of Climate Finance Sources in the Republic of Vanuatu, Ministry of Climate Change Adaptation, 3rd Edition, November 2017

Table 5-1: Issues to be Considered for Selection of Proposed EE Financial Mechanisms

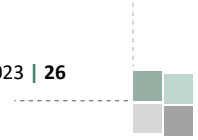
Issues for Consideration	Soft Personal Loan	Loan Portfolio Guarantee
Funding Requirement	• Depending on % interest buy-down	• Depending on default rate and agreed share in the loss of the principal amount
Implementation Arrangement	• Stakeholders are familiar with implementation arrangements. • Retailers act as the demand aggregators for NGEF/DoE and banks. • Different agreements between NGEF/DoE, retailers and banks to be established	• Stakeholders may not be familiar with the concept. • Both banks and retailers can act as the demand aggregators for NGEF/DoE. Retailers also act as the EE financiers. • Standard agreements between NGEF/DoE and each demand aggregator are applicable.

The level of seed funding secured can be considered as the key criterion for DoE and NGEF in selecting the EE financial mechanism for the pilot phase. When the seed funding is less than US$100,000, the loan portfolio guarantee option may be favored over the soft personal loan option. However, it is important to note that implementing the portfolio guarantee mechanism can present challenges for Vanuatu since the portfolio guarantee concept for EE appliance is new to most local stakeholders. Therefore, if a substantial amount of seed funding is available, the soft personal loan option may be given priority.

The overarching goal of the selected EE financing mechanism will be to provide incentives for high-efficiency appliances through existing market-based financial mechanisms. It is important to encourage retailers, that can make products available across Vanuatu, especially in different main islands, participate in the pilot phase. This is to ensure that the availability of EE appliances is not limited to specific areas, but those customers across the country have access to them. The scope of the pilot phase would include collaboration with retailers and communities to establish distribution networks for EE appliances in remote areas. This is to ensure equitable access to financial supports and EE appliances for all segments of end-users, including households headed by women and vulnerable groups.

3) **Design pilot financial mechanisms and sign MOUs:** A more comprehensive framework for the pilot phase of the selected financial mechanism will be developed. This detailed design will encompass various aspects, including eligibility requirements, process flow, institutional structure, communication and outreach activities, expected impacts and an implementation plan. (See *Annex C for more information on the initial design approach for the proposed portfolio guarantee mechanism*). The detailed framework will be presented for consultations with program partners, and Memorandum of Understandings (MOUs) will be signed with all program partners.

4) **Implement the pilot phase and conduct evaluation:** It is recommended to pilot the financial mechanism for a minimum of six months. During this period, feedback from program partners and customers will be collected, analyzed, and evaluated. The results obtained from the pilot phase will serve as a foundation for refining the financial mechanism before proceeding with large-scale implementation. The proposed implementation plan for the pilot phase is shown in *Annex D*. The initial estimation of the impacts on energy savings and GHG emission reduction from the financial mechanism reveals that the pilot implementation phase has the potential to achieve annual energy savings of 239 MWh and an annual GHG emission reduction of 136 tCO2. These estimates rely on the assumptions that DoE and NGEF can secure seed funding of US$260,000 to implement a portfolio guarantee to facilitate the purchase of EE refrigerator/freezers, air conditioners, clothes washers, and televisions by residential consumers in Vanuatu. For more detailed information regarding this initial estimate, please refer to *Annex E for Estimated Impacts of Pilot EE Financial Mechanism*.



6 ANNEXES

Annex A	Summary of Stakeholder Meetings on Financing Mechanisms
Annex B	Estimation of Guarantee Fund Size and Loan Portfolio
Annex C	Preliminary Terms and Conditions of the Pilot Portfolio Guarantee Facility
Annex D	Implementation Plan for Pilot Phase
Annex E	Estimated Impacts of Pilot EE Financial Mechanism
Annex F	Consultation Meeting on Recommendations on the Selected Financing Mechanism

6.1 Annex A: Summary of Stakeholder Meetings on Financing Mechanisms

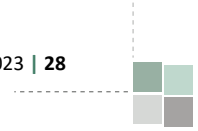
The Project Team discussed with various national stakeholders who could potentially support and catalyze development and implementation of financing mechanisms to promote greater uptake of EE appliances in Vanuatu in November 2022. These stakeholders include the National Green Energy Fund (NGEF), financial institutions (i.e., National Bank of Vanuatu, Bank South Pacific, ANZ Bank, BRED Bank) and appliance importers/retailers (i.e., Computer World and Rapid Electrical). Main findings from the meetings with these stakeholders are summarized below.

- **National Green Energy Fund (NGEF):** The Project Team met with Mr. Georgewin Garae (NGEF Fund Manager) and Mr. Joshua Nari (NGEF Fund Manager). Mr. Georgewin mentioned that although one of the objectives of NGEF is to provide financial support and technical assistance to facilitate more efficient end-use of energy, NGEF has to date focused primarily on increasing electricity access and renewable energy investments. NGEF also agreed to the questionable potential of the On-Bill Financing (OBF) program in Vanuatu due to limited interests from the electric utilities. NGEF welcomes innovative ideas on development and implementation of financing mechanisms to promote uptake of EE appliances, however, additional seed funding will be required to operationalize these EE financing mechanisms since the current NGEF budget has no provision for supporting promotion and adoption of EE appliances.

- **Computer World, Port Vila:** Computer World is a fast-growing electrical and electronic equipment and IT suppliers in Port Vila, Vanuatu. The Project Team met with Mr. Yair Tendler (Managing Director) and Mr. Eyal Tendler. Computer World has been actively involved in importing and selling products that comply with the Energy Efficiency of Electrical Appliances, Equipment, and Lighting Products Act No. 24 of 2016. They have also been engaged in participating in consultation meetings organized by the DoE. Computer World has implemented its own financing program for its products, enabling customers to make partial down payments, take appliances home, and repay the remaining amounts over time. Evaluation of customers' credit risks and collection of payments are undertaken by Computer World. However, this existing financing program does not specifically target EE appliances. Computer World mentioned that they do not need low-cost financing for their operation. Instead, they suggested that the Vanuatu Government should focus on developing and implementing a de-risking mechanism that supports retailers in selling more EE appliances.

- **Rapid Electrical, Port Vila:** The Project Team visited the Rapid Electrical shop in Port Vila to review off-the-shelf products carried by local appliance retailers and to conduct a quick interview with sale staff to understand what types of financial products offered by local retailers for walk-in customers. In addition to cash, debit card and credit card payments, Rapid Electrical offer a lay-by agreement service which allows customers to purchase appliances and pay the full price overtime. A brief description of the lay-by agreement is given in Section 3.4.

- **ANZ Vanuatu:** The Project Team met with Mr. Jason Ernest, the Senior Retail Manager of ANZ Vanuatu to update the status of personal loans or other financial products offered by ANZ



Vanuatu that can be utilized to promote uptake of EE appliances in Vanuatu. According to Mr. Ernest, ANZ Vanuatu have not yet introduced any financial products specifically targeting home appliances. The most relevant financial products could be personal loans that rely on value and quality of assets, such as cars or large appliances/equipment, as the loan collaterals. ANZ Vanuatu does not implement any other types of consumer financing mechanisms, e.g., on-wage financing. The ANZ Vanuatu website (https://www.anz.com/vanuatu/en/interest-rates) indicates that the interest rates for home loans range from 7.95% to 10.45% per annum. Secured personal loans have an interest rate of 16.4% per annum, while unsecured personal loans have an interest rate of 21.4% per annum.

- **Bank of South Pacific (Vanuatu) Limited:** The Project Team had a meeting with Mr. Kalo Simon, Lending Sales Manager, Retail Banking, to discuss about relevant financial products for household appliances. Similar to ANZ Vanuatu, BSP Vanuatu does not have any specific financial products for purchasing household appliances. The BSP personal loan is probably the most relevant product that Vanuatu consumers can apply for and use it to finance the purchase of cars, computers or even electrical appliances. BSP offers flexible repayment options, i.e., weekly, biweekly or monthly, and the interest rate is determined case-by-case. According to the BSP Vanuatu website (https://www.bsp.com.vu/about-us/rates-fees/product-interest-rates/), secured and unsecured personal loans have a variable interest rate of 17.75% and 19.75% respectively.

- **BRED Bank, Vanuatu:** The Project Team met with Mr. Santos Vatoko, Head of Business Banking to inquire about details of personal loans and other financial products that can be used to support the purchase of energy-efficient appliances. Based on the discussion, it was revealed that BRED Bank's personal loan product is similar to those offered by other commercial banks in Vanuatu. It includes a range of consumer loan options and a flexible repayment scheme that allows borrowers to choose weekly, fortnightly, or monthly repayment terms. BRED Bank implemented a COVID-19 relief package for personal loan in 2020 which allowed deferred loan repayments (principal and interest) for 6 months, and home loans, residential land loans, car loans, consumer loans (unsecured or secured/ partially secured) were included in the package. BRED Bank is also participating in the Special COVID-19 Banking Facility (SCBF) to support the flow of credit to eligible businesses that have been impacted by the COVID-19 pandemic. Under the Facility, the Vanuatu Government provides a guarantee of up to 100% to approved lenders for new eligible loans. The purpose of this Facility is to encourage lenders to provide credit to businesses by enhancing their willingness and ability to do so. The desired outcome for businesses is to gain access to additional funding, which can help them mitigate the economic impact of the COVID-19 pandemic. Eligible loans under the Facility can amount to a maximum of VT15.0 million per entity. In the event of default in loan repayment, the lenders can make a maximum loss claim guarantee up to that amount.
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6.2 Annex B: Estimation of Guarantee Fund Size and Loan Portfolio

Account Item	Label	Refrigerator/ Freezer	Room Air Conditioner	Clothes Washer	TV
Listed Unit Prices		800-2000	800-1500	1000-2000	600-1000
Estimated Price per EE Unit (US$)	A	800	1,200	1,500	800
Guarantee Fund size (US$)	**B**	**50,000**	**80,000**	**40,000**	**90,000**
Planned default rate	C	30%	30%	30%	30%
Less estimated realized value from repossession and resale of appliance units from loans that defaulted	D	15%	15%	15%	15%
Net planned default rate	E = C-D	15%	15%	15%	15%
Loss Share in the planned default					
Fund	F	0.9	0.9	0.9	0.9
Bank & Retailer	G	0.1	0.1	0.1	0.1
Donor Fund share in the loss of the principal amount	H = E*F	13.5%	13.5%	13.5%	13.5%
Bank & Retailer share in the loss of the principal amount	I = E*G	1.5%	1.5%	1.5%	1.5%
Maximum Loan Portfolio that can be guaranteed (US$)	**J = B/H**	**370,370**	**592,593**	**296,296**	**666,667**
No of units	K = J/A	463	494	198	833
Estimated local market size (units)	L	2,000	1,500	600	2,700
% of the estimated local market size	M = K/L	23%	33%	33%	31%

6.3 Annex C: Preliminary Terms and Conditions of the Pilot Portfolio Guarantee Facility

1. Proposed Terms and Conditions of the Pilot Portfolio Guarantee Facility	
Purpose of the Guarantee Facility	To promote the acquisition energy efficient appliances in households and commercial establishments in Vanuatu
Loan Guarantee Fund Size	Equal to the agreed assumed average default rate times the total loan portfolio generated.
Agreed Assumed Average Default Rate	To be determined. However, it should be higher than the actual average default rate of appliance retailer and bank partners.
Guarantee Rate	Up to 90% of the outstanding principal of the loan in default will be guaranteed as long as the loan guarantee facility (LGF) has funding.
Guarantee Fee	None
Events of Default	i) Failure of the borrower to make three consecutive principal and interest payments or arrears have reached 90 days, whichever comes first, ii) Borrower has been appropriately warned, iii) Efforts have been made to reschedule or restructure the borrower's loan
Claim Procedures	i) Submission of proofs of events of default (i) to (iii) ii) Submission of Notice of Guarantee Claim

2. The Portfolio	
Eligibility Criteria for Financing	Energy efficient appliances included in the lists to be provided by DoE. The list will be subject to review and update every 1 years.
Eligibility Criteria of Borrowers	In accordance with the approval guidelines and policies adopted by appliance retailer and bank partners.
Loan Origination	Will primarily be the responsibility of appliance retailer and bank partners.
Credit Evaluation and Approval	In accordance with the credit approval guidelines and policies adopted by appliance retailer and bank partners. Appliance retailer and bank partners will be responsible for collecting, assessing borrowers' credit worthiness, and making credit approval decisions.
Lending Interest Rate	Lower than market rates
Maximum Portfolio Volume	To be computed (see examples in Annex B)
Disbursement of Guaranteed Loans	Deposited to the program partners' bank accounts.
Inclusion Period	Inclusions to the Portfolio guarantee coverage occur upon receipt by DoE/NGEF of an Inclusion Notice to be submitted by appliance retailer

	and bank partners on a monthly basis. The eligible loans are deemed to be covered from their effective date.
Exclusion Process	A loan which has been included in the Portfolio but later found not compliant with eligibility criteria (not included in the list of approved equipment), shall be excluded from the Guaranteed Portfolio.
Disbursement End Date	To be determined

3. Funds Flow
NGEF shall establish a Deposit Account and an LGF Reserve Account with an Escrow Agent. The US$ XXX,XXX or its equivalent in Vatu shall initially be placed in the Deposit Account. Based on a Monthly Report, the Escrow Agent shall transfer funds from the Deposit Account to the LGF Reserve Account an amount equal to the agreed assumed default rate of the principal amount of all new Loans added to the Portfolio indicated in the Monthly Report. Claims on the guarantee will be drawn only from the LGF Reserve Fund. Interest income realized from the LGF Reserve Account shall accrue to NGEF as an added incentive.

4. Miscellaneous	
Program Promotion	DoE/NGEF will prepare promotional materials. Promoting the financing program will be jointly responsible by all program partners.
Monitoring and Reporting	All appliance retailer and bank partners shall provide DoE/NGEF with a Monthly Report on the loan portfolio covered by the Guarantee within 30 calendar days after the end of each month (the "Report Date"). This report will include essential information such as the name of the borrower, original loan principal amount, outstanding balances, and loan status, among other relevant details. DoE/NGEF is also responsible for developing appropriate report templates and establishing a record-keeping system for the program.
Monitoring and Audits	All appliance retailer and bank partners shall include appropriate provisions in each loan agreement to be covered by the Guarantee, allowing access to documents and premises related to the Guarantee by authorized representatives of DoE/NGEF. This access is necessary to verify the use of the Guarantee and comply with any audit or control activities carried out by duly authorized bodies under applicable law.

6.4 Annex D: Implementation Plan for Pilot Phase

The proposed implementation plan for the pilot phase, as outlined in the table below, spans over an 18-month period comprising multiple key actions such as identification of funding sources, agreement with program partners, detailed design of the selected financial mechanism, data collection and evaluation, and program revision for large-scale implementation.

Action	Responsibility	Timeline
Identify and secure fundings for EE financial mechanisms	DoE/ NGEF	Month 1-3
Establish a development committee/task force	DoE/ NGEF/ Potential Program Partners	Month 4
Consult with potential program partners and select one EE financial mechanism for piloting	Committee/ Task Force	Month 5
Conduct detailed design of the pilot financial mechanism (based on the preliminary terms and conditions outlined in Annex C)	Committee/ Task Force (with support from a consultant)	Month 6-7
Sign MOUs with program partners for implementation of the pilot phase	DoE/ NGEF/ Program Partners	Month 8
Launch and implement the pilot phase	DoE/ NGEF/ Program Partners	Month 9-14
Collect feedback from program partners and customers	DoE/ NGEF/ Program Partners	Month 9-15
Conduct evaluation of the pilot phase implementation	DoE/ NGEF	Month 16
Revise the pilot phase for large scale implementation	DoE/ NGEF/ Program Partners	Month 17-18

6.5 Annex E: Estimated Impacts of Pilot EE Financial Mechanism

Assumptions - Appliance Market and Efficiency

Appliance -	Estimated Annual Market Size (Units)	Average Size	Annual Energy Consumption (kWh) - Standard Unit	Annual Energy Consumption (kWh) - EE Unit	Per Unit Savings (kWh)	% EE Improvement
Refrigerators and Freezers	2,011	250 Liters	320	200	120	38%
Air conditioners	1,465	2.64 kW	2,200	500	1,700	77%
Clothes Washers	520	7 kg	570	180	390	68%
Televisions	2,665	43 inches	350	140	210	60%

Assumptions - Economic, Operation and Emission Factor

Annual Market Growth (%)	4%
% Utilization of Financial Mechanism	100%
Emission Factor (tCO2/MWh)	0.572

Source: https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Oceania/Vanuatu_Oceania_RE_SP.pdf, 2020

Assumptions - Guarantee Fund Size

Guarantee Fund Size (US$)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Refrigerator/ Freezer	50,000	0	0	0	0	0	0	0	0	0
Air Conditioner	80,000	0	0	0	0	0	0	0	0	0
Clothes Washer	40,000	0	0	0	0	0	0	0	0	0
TV	90,000	0	0	0	0	0	0	0	0	0

Appliance Market Size (Units)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Refrigerators and Freezers	2,011	2091	2175	2262	2352	2446	2544	2646	2752	2862
Air conditioners	1,465	1524	1585	1648	1714	1783	1854	1928	2005	2085
Clothes Washers	520	541	563	586	609	633	658	684	711	739
Televisions	2,665	2772	2883	2998	3118	3243	3373	3508	3648	3794

Annual EE Appliance Uptake (Units)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Refrigerators and Freezers	463	0	0	0	0	0	0	0	0	0
Air conditioners	494	0	0	0	0	0	0	0	0	0
Clothes Washers	198	0	0	0	0	0	0	0	0	0
Televisions	833	0	0	0	0	0	0	0	0	0

Annual Energy Savings (kWh)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Refrigerators and Freezers	55,560	55,560	55,560	55,560	55,560	55,560	55,560	55,560	55,560	55,560
Air conditioners	59,280	59,280	59,280	59,280	59,280	59,280	59,280	59,280	59,280	59,280
Clothes Washers	23,760	23,760	23,760	23,760	23,760	23,760	23,760	23,760	23,760	23,760
Televisions	99,960	99,960	99,960	99,960	99,960	99,960	99,960	99,960	99,960	99,960
Total	**238,560**	**238,560**	**238,560**	**238,560**	**238,560**	**238,560**	**238,560**	**238,560**	**238,560**	**238,560**

Annual CO2 Emission Reduction (tCO2)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Refrigerators and Freezers	32	32	32	32	32	32	32	32	32	32
Air conditioners	34	34	34	34	34	34	34	34	34	34
Clothes Washers	14	14	14	14	14	14	14	14	14	14
Televisions	57	57	57	57	57	57	57	57	57	57
Total	**136**	**136**	**136**	**136**	**136**	**136**	**136**	**136**	**136**	**136**

Cumulative CO2 Emission Reduction (tCO2)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Refrigerators and Freezers	32	64	95	127	159	191	222	254	286	318
Air conditioners	34	68	102	136	170	203	237	271	305	339
Clothes Washers	14	27	41	54	68	82	95	109	122	136
Televisions	57	114	172	229	286	343	400	457	515	572
Total	**136**	**273**	**409**	**546**	**682**	**819**	**955**	**1,092**	**1,228**	**1,365**

6.6 Annex F: Consultation Meeting on Recommendations on the Selected Financing Schemes

6.6.1 Key Takeaways from the Consultation Meeting

Key takeaways from the consultation meeting are summarized below.

- GGGI confirmed that on-bill financing is not supported by local electric utilities in Vanuatu.
- NGEF can provide loans to consumers. However, it will be challenging for NGEF to directly handle a large-scale personal loan program without strengthening its capacity in processing loan applications and performing risk assessment for each loan application, not to mention additional time and resources required for management of repayment collection. It is considered more effective for NGEF to act as a fund manager and collaborate with banks and appliance retailers for implementation of the selected financial mechanism. This partnership would leverage the existing infrastructure and expertise of local stakeholders while allowing NGEF to focus on fund management and oversight.
- It is important to ensure that the benefits of the chosen EE financial mechanism are accessible across different main islands in Vanuatu. The detailed design of the chosen EE financial mechanism should encourage participation from retailers that can provide EE appliances across the country, and establish collaboration with banks, retailers and communities to enhance equitable access to financial supports and EE appliances for all segments of end-users, including households headed by women and vulnerable groups.
- An average interest rate of personal loans for purchasing appliances in Vanuatu is about 20%. One appliance retailer commented that a preferred interest rate for consumers could be around 10% to 15%. Another alternative to promote uptake of EE appliances is to offer a longer loan tenure. Note that the standard repayment period a lay-by agreement in Vanuatu ranges from 3 to 6 months.
- The recommendation for selecting an appropriate EE financial mechanism should include initial guidance on how DoE and NGEF assess the circumstances and choose the most suitable financial mechanism.

6.6.2 Consultation Meeting Agenda

AGENDA
Enhance Vanuatu's Market for Energy Efficient Appliances

CONSULTATION MEETING: Financing Mechanism Options for the Incentivization towards the Purchase of Energy Efficient Appliances

17 May 2023, 13.30 – 15.00 pm (Vanuatu Time), Digital Platform

Vanuatu has targeted 15% savings in the energy sector as part of its Nationally Determined Contributions (NDC). The uptake of energy-efficient appliances has been identified as one of the key measures to achieve Vanuatu's commitments. The "**Enhance Vanuatu's Market for Energy Efficient Appliances**" project, funded by the Green Climate Fund (GCF) through the Climate Technology Centre and Network (CTCN) is implemented by the Department of Energy (DoE), aims to support *accelerating the transition to energy-efficient appliances* through 1) improvement of the recently introduced standards and labelling programme for electrical appliances; 2) introduction of MV&E activities and a product registration system; and 3) introduction of financial mechanisms. The International Institute for Energy Conservation or IIEC (www.iiec.org) was engaged by CTCN to provide technical assistance (TA).

This consultation meeting is organized under the third component of the Financial Mechanism and will present recommendations for financing mechanisms to promote greater uptake of energy-efficient appliances and lighting products in Vanuatu and discuss findings and the way forward.

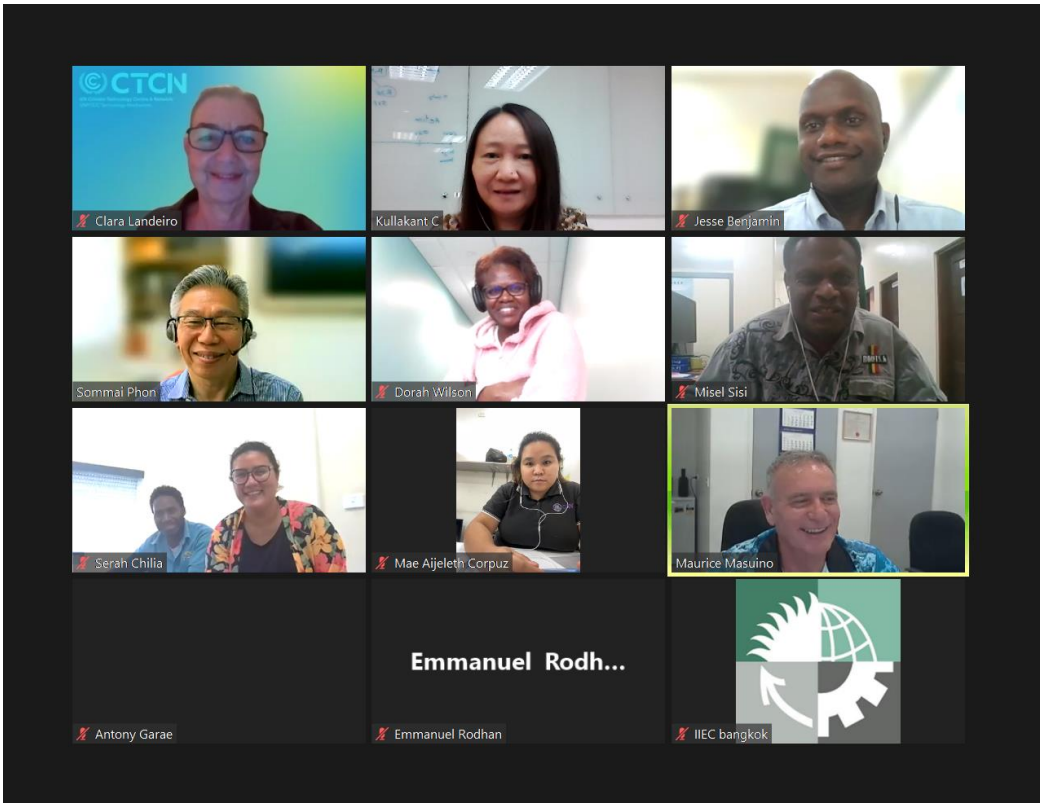
Expected Stakeholders' Participation:

- **Project Sponsor**: UNFCCC Climate Technology Centre and Network (CTCN)
- **Project Proponent**: Department of Energy
- **National Designated Entity (NDE) to the UNFCCC Technology Mechanism:** Ministry of Climate Change Adaptation, Meteorology, Geo-Hazards, Environment, Energy and Disaster Management
- Project Team/consultant: Led by the International Institute for Energy Conservation (IIEC)
- **Key Stakeholders**
  - Ministry of Finance
  - Financial Institutions
  - Electrical Appliance Stores

17 May 2023	
13.30 – 13.40	Welcome Remark 1. CTCN/NDE 2. Department of Energy
13.40 – 13.50	A round of introduction and online group photo
13.50 – 14.30	Financing Mechanism Options for Energy Efficient Appliances in Vanuatu (International Institute for Energy Conservation) • Background and Context of Project • Possible Options for Financing Mechanisms • Recommendations on Financial Mechanisms
14.30 – 15.00	Discussion - Potential issues, risks, questions, and concerns

6.6.3 List of Participants

Organization	Name	Title	Type of Contact	Sex
Department of Energy	Misel Sisi	Manager	Government	M
Department of Energy	Willie Obed		Government	M
Department of Energy	Serah Chilia		Government	F
Department of Energy	Antony Garae	Director	Government	M
National Green Energy Fund (NGEF), DoE	Georgewin Garae	NGEF Fund Manager	Government	M
Climate Technology Centre and Network (CTCN)	Clara Landeiro	Regional Manager, Asia-Pacific	Project Sponsor	F
Global Green Growth Institute (GGGI), Vanuatu	Jesse Benjamin	Senior Officer	Inter-governmental Organization	M
Computer World	Mae Aijeleth Corpua		Appliance Retailer	F
Rapid Electric	Emmanuel Roshan	Sales Manager	Appliance Retailer	M
Vila Refrigeration	Vania Kalomor	Manager	Appliance Retailer	M
South Pacific Electrics	Maurice Masuino		Appliance Retailer	M
Vate Electrics	Antoine BOUDIER	General Manager	Appliance Retailer	M
Bank South Pacific (Vanuatu) Limited (BSP)	Christophe Barang		Bank	M
Consultant	Dorah Wilson	Gender Expert	Project Team	F
International Institute for Energy Conservation	Sommai Phon-amnuaisuk	Director, Asia-Pacific	Project Team	M
International Institute for Energy Conservation	Kullakant Chertchutham		Project Team	F


CTCN
Clara Landeiro
Kullakant C
Jesse Benjamin
Sommai Phon
Dorah Wilson
Misel Sisi
Serah Chilia
Mae Aijeleth Corpuz
Maurice Masuino
Emmanuel Rodh...
Antony Garae
Emmanuel Rodhan
IIEC bangkok

6.6.4 Presentation

IIEC

CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Enhance Vanuatu's Market for Energy Efficient Appliances

Financing Mechanism Options for incentivization towards the Purchase of Energy Efficient Appliances

Consultation Meeting

Wed, 17th May 2023 01:30 PM Vanuatu Time

Sommai Phon-Amnuaisuk, Director, Asia-Pacific
International Institute for Energy Conservation (IIEC)

PRESENTATION OUTLINE

- Introduction to CTCN Project
- Appliance Market in Vanuatu
- Potential Financial Mechanism Options
- Conclusions & Recommendations

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About the Project

Enhance Vanuatu's Market for Energy Efficient Appliance

- Funded by **Green Climate Fund (GCF)** through the **Climate Technology Centre & Network (CTCN)**
- **Applicant:** Department of Energy, Vanuatu
- **National Designated Entity (NDE):** Ministry of Climate Change Adaptation, Meteorology, Geo-Hazards, Environment, Energy and Disaster Management
- **Consultant:** International Institute for Energy Conservation (IIEC)

CTCN Support (December 2021 – June 2023)

- Assessment of the market for refrigerators, freezers, air conditioners, televisions, clothes washers, and lighting products
- Evaluation and recommendations of the MEPSL program
- Assessment and upgrade of the existing Vanuatu Electronic Single Window (VeSW) registration system and development of an MV&E plan
- Development of financial mechanisms for the incentivization of the purchase of energy-efficient appliances

CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

The Climate Technology Centre and Network promotes the transfer of climate technologies at the request of developing countries for energy-efficient, low-carbon and climate resilient development. By connecting stakeholders with technology experts from around the world, CTCN delivers customized capacity building and technical assistance aligned with national climate objectives.

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About International Institute for Energy Conservation (IIEC)

IIEC
International Institute for Energy Conservation

A non-governmental, not-for-profit organization, established in 1984 to foster the sustainable energy development in developing countries and emerging economies.

Experience in EE and RE projects in more than 50 countries Worldwide

Clients: Governments, foundations, multilateral development agencies, and private sector

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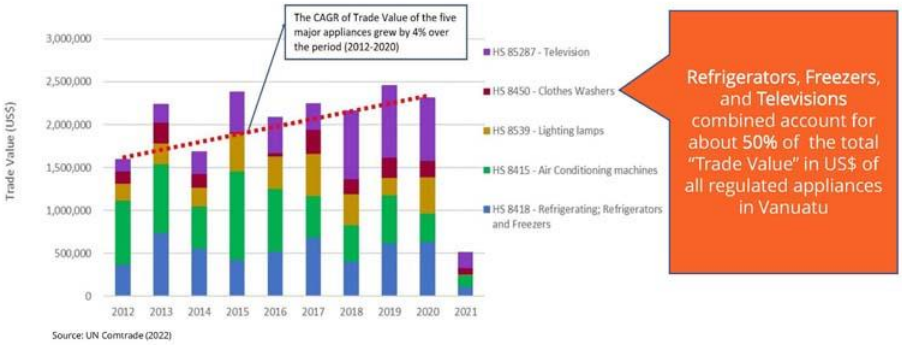
Appliance Market in Vanuatu

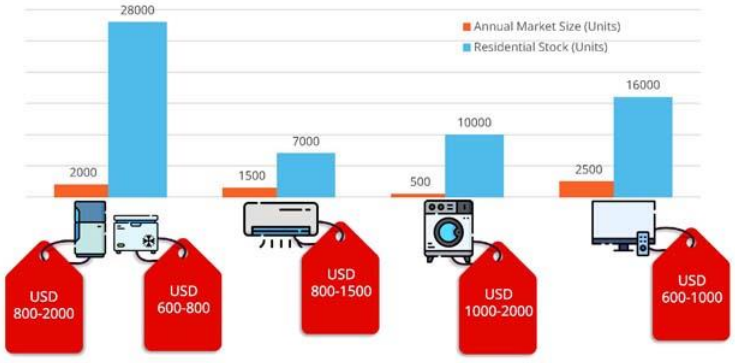


Refrigerators, Freezers, and Televisions combined account for about 50% of the total "Trade Value" in US$ of all regulated appliances in Vanuatu

5

Estimated Annual Market Size and Unit Prices

Estimated Total Annual Market Size ≈ USD 2 million (based on trade flow data 2012 - 2020)



6

Financial Mechanisms for Energy Efficiency

- **Right financial mechanisms can promote uptake of energy efficient appliances**
  - Often provided by government and energy providers (energy utilities)
  - In some countries, energy providers are required to meet annual energy savings targets by undertaking activities directly or contracting with appliance retailers, energy-efficient equipment suppliers, or energy service companies (ESCOs)
  - Examples of energy provider targets include **Energy-Efficiency Resource Standards (EERS)** and **Standard Offer**
- **Many forms of financial instruments/ mechanisms have been implemented across the globe.**
  - Tax **Incentives**; **Rebates/Subsidies** (Downstream/ Upstream); Early Replacement Program; Indirect Subsidies through carbon/eco point system; Subsidized **Loans**; Pay-roll Loans; On-Bill Financing

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How Different EE Financial Instruments/ Incentives Work?

Type of Instruments and Incentives	Payment Mechanisms
Tax Incentives	Direct tax credits or deductions to **end-users**
Downstream Rebates	Direct grants/ rebates to **end-users**
Upstream Rebates	Direct grants/ rebates to **retailers** and **manufacturers**
Early Retirement/ Replacement Program	Direct grants/ rebates to **end-users**
Indirect Subsidies through carbon/eco point system	Points redeemed for discounts in price or cash
Subsidized Loans	Low-interest loans for **end-users**
Payroll Loans (On-Wage Financing)	Upfront cost of energy efficient appliances paid back through **payrolls**
On-Bill Financing	Upfront cost of energy efficient appliances paid back through **electricity bills**

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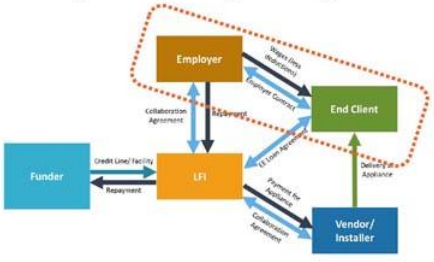
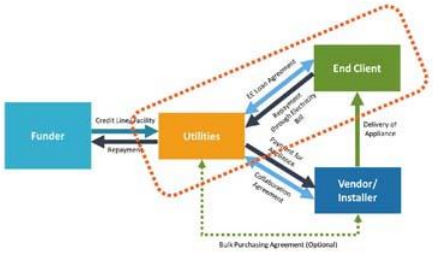
Payroll Loan and On-Bill Financing

Utilize employers and utilities as "de-risking" mechanisms

Payroll Loan (On-Wage Financing)



On-Bill Financing



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International Experience on EE Financial Instruments/ Incentives

Type of Instruments and Incentives	Implementing Agency	Examples of Implementation Experience
Tax Incentives	Government	Italy, Japan, Portugal, Thailand, UK, USA
Downstream Rebates	Government, Utilities	Denmark, India, Philippines, Switzerland, Netherland, UK, USA
Upstream Rebates	Government, Retailers, Manufacturers	China, USA
Early Retirement/ Replacement Program	Government, Utilities	Korea, Mexico, USA
Indirect Subsidies through carbon/eco point system	Government	Korea, Japan
Subsidized Loans	Government, Utilities, ESCOs, Banks	Thailand, UK, USA
Payroll Loans (On-Wage Financing)	Government	Ghana
On-Bill Financing	Government, Utilities	India, Sri Lanka, USA

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Relevant Energy Financing In Vanuatu – Government Initiatives

- Subsidies for Solar Systems
  - Funded by donor funding through the Vanuatu Rural Electrification Project (VREP).
  - VREP developed a list of certified products eligible for subsidies.
  - VREP Phase I – Plug and Play Solar System (5W to 30W).
  - VREP Phase II – Solar Home System (SHS).
  - Following the closure of VREP, a list of approved SHS and microgrids has been made available through NGEF.
- National Green Energy Fund (NGEF)
  - Conceptualized in 2016 and launched in 2018, NGEF aims to facilitate investments to improve energy access, renewable energy and energy efficiency in Vanuatu.
  - NGEF will operate as a revolving fund.
  - Potential financial products – loans, guarantees or equity, grants and subsidies and TA.
  - NGEF has been instrumental in increasing energy access and renewable energy investments, but energy efficiency related initiatives have been limited to date.
- No existing government/donor funds allocated for EE related financial mechanisms

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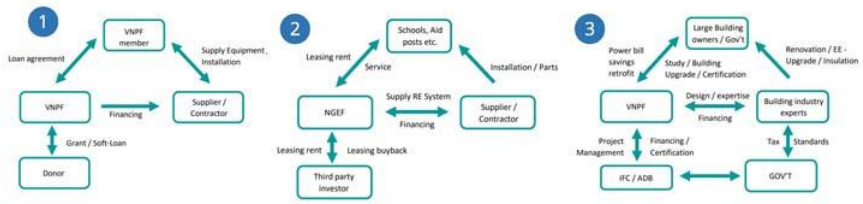
Relevant Energy Efficiency Financing In Vanuatu – GGGI

- EE Lending and Leasing Program Design Options for Appliances

1. Soft loans program for EE domestic appliances – through the Vanuatu National Provident Fund (VNPF)
2. Leasing program for schools, aid-posts and cooperatives
3. Green loans for transition to EE buildings



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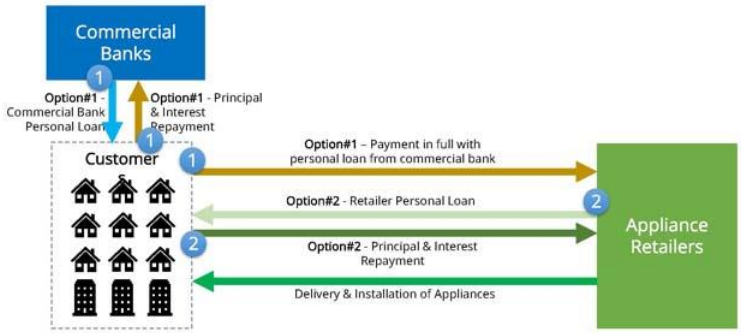
Existing Financing Options for Appliance Purchasing (1)

- Personal Loan



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Existing Financing Options for Appliance Purchasing (2)

- Lay-by Agreement

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Potential EE Financial Mechanism Options for Regulated Appliances in Vanuatu

- **Direct personal loans will be challenging for FIs without demand aggregators**
  - High transaction cost per each loan
  - Risk associated with repayments
- **Two proposed options**
  - **Soft Personal Loans for EE Appliances** with retailers acting as demand aggregator and interest buy-down
  - **Portfolio Guarantee Mechanism** for EE Appliance Lending
- **Other potential fiscal instruments (for inefficient appliances)**
  - Indirect tax increase (e.g., excise tax)
  - Environmental tax

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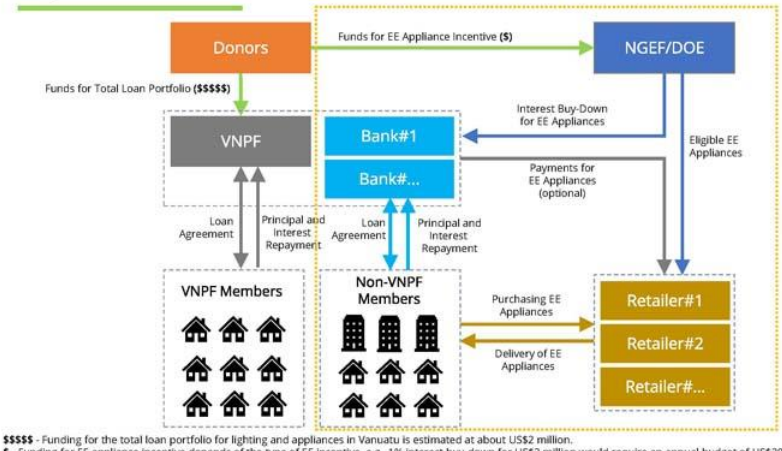
Soft Personal Loans for EE Appliances + Demand Aggregators & Interest Buy-Down



$$$$$ - Funding for the total loan portfolio for lighting and appliances in Vanuatu is estimated at about US$2 million.
$ - Funding for EE appliance incentive depends of the type of EE incentive, e.g., 1% interest buy-down for US$2 million would require an annual budget of US$20,000.

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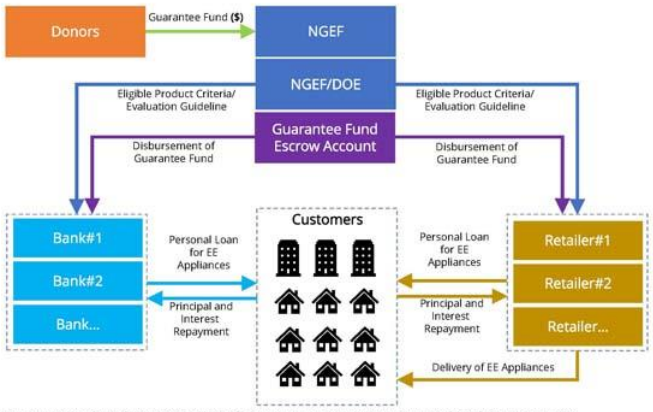
Portfolio Guarantee Mechanism



$ - It is estimated that a guarantee fund of US$260,000 will be sufficient to generate the maximum loan portfolio of about US$2 million.

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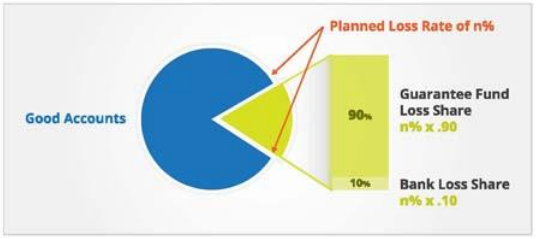
Guarantee Fund and Loan Portfolio

- A Loan Guarantee Fund (LGF) equal to the agreed assumed default rate of the original principal amount of the loan portfolio will be set up.
- The initial design proposes that the LGF shall guarantee up to 90% of the outstanding principal amount of a loan that defaults as long as the LGF has funding.



$$\text{Maximum Loan Portfolio} = \frac{\text{Loan Guarantee Fund}}{\text{Agreed Default Rate x .90}}$$

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Estimated Guarantee Fund Size and Loan Portfolio

Account Item	Label	Refrigerator/ Freezer	Room Air Conditioner	Clothes Washer	TV
Listed Unit Prices		800-2000	800-1500	1000-2000	600-1000
Estimated Price per EE Unit (US$)	A	800	1,200	1,500	800
Guarantee Fund size (US$)	B	50,000	80,000	40,000	90,000
Planned default rate	C	30%	30%	30%	30%
Less estimated realized value from repossession and resale of appliance units from loans that defaulted	D	15%	15%	15%	15%
Net planned default rate	E = C-D	15%	15%	15%	15%
Loss Share in the planned default					
Fund	F	0.9	0.9	0.9	0.9
Bank & Retailer	G	0.1	0.1	0.1	0.1
Donor Fund share in the loss of the principal amount	H = E*F	13.5%	13.5%	13.5%	13.5%
Bank & Retailer share in the loss of the principal amount	I = E*G	1.5%	1.5%	1.5%	1.5%
Maximum Loan Portfolio that can be guaranteed (US$)	J = B/H	370,370	592,593	296,296	666,667
No of units	K = J/A	463	494	198	833
Estimated local market size (units)	L	2,000	1,500	600	2,700
% of the estimated local market size	M = K/L	23%	33%	33%	31%

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Comparison of Proposed Options

Component	Soft Personal Loan	Portfolio Guarantee
Fund Size	Depending on % interest buy-down	Depending on default rate and agreed share in the loss of the principal amount
Implementation Arrangement	Stakeholders are familiar with implementation arrangements. Retailers act as the demand aggregators for NGEF/DOE and banks. Different agreements between NGEF/DOE, retailers and banks to be established	Stakeholders may not be familiar with the concept. Both banks and retailers can act as the demand aggregators for NGEF/DOE. Retailers also act as the EE financiers. Standard agreements between NGEF/DOE and each demand aggregator are applicable.
Program Scope	Regulated appliances	Regulated appliances

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Conclusion & Recommendations

- **Downstream rebate and tax incentives are the two most common financial instruments and incentives for EE appliances**
  - Not particularly appropriate for Vanuatu due to the amount of funding required and tax exemption for corporations and individuals in Vanuatu

- **Considering that no funding has been committed for development of EE financial mechanism, the following steps are recommended:**
  - DOE/NGEF to explore potential funding venues (USD 50,000 to 300,000 for portfolio guarantee mechanisms).
  - DOE/NGEF to establish a committee/task force to choose a financial mechanism for pilot demonstration.
  - Conduct detailed program designs and implement the pilot phase.

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THANK YOU

International Institute for Energy Conservation (IIEC)
www.iiec.org

7 REFERENCES

ADB, Pacific Finance Sector Briefs – Vanuatu, October 2019

GGGI, *Vanuatu National Green Energy Fund (NGEF)*, https://gggi.org/project/vanuatu-national-green-energy-fund-ngef/

GGGI, Energy Efficiency Facilitated Financing (EEFF) for Vanuatu – Green Lending & Leasing programmes - DESIGN DOCUMENT, October 2022

LBNL, Country Review of Energy-Efficiency Financial Incentives in the Residential Sector, May 2011

Ministry of Climate Change Adaptation, Directory of Climate Finance Sources in the Republic of Vanuatu 3rd Edition, November 2017,

Reserve Bank of Vanuatu, *About Monetary Policy*, https://www.rbv.gov.vu/index.php/en/monetary-policy/about-monetary-policy

United Nations Commodity Trade Statistics Database (UN Comtrade)

Utilities Regulatory Authority, Electricity Factsheet 2015-2020, 2021

UN Women, Asia and the Pacific, *Vanuatu*, https://asiapacific.unwomen.org/en/countries/fiji/co/vanuatu

World Bank, *World Bank Open Data*, https://data.worldbank.org/