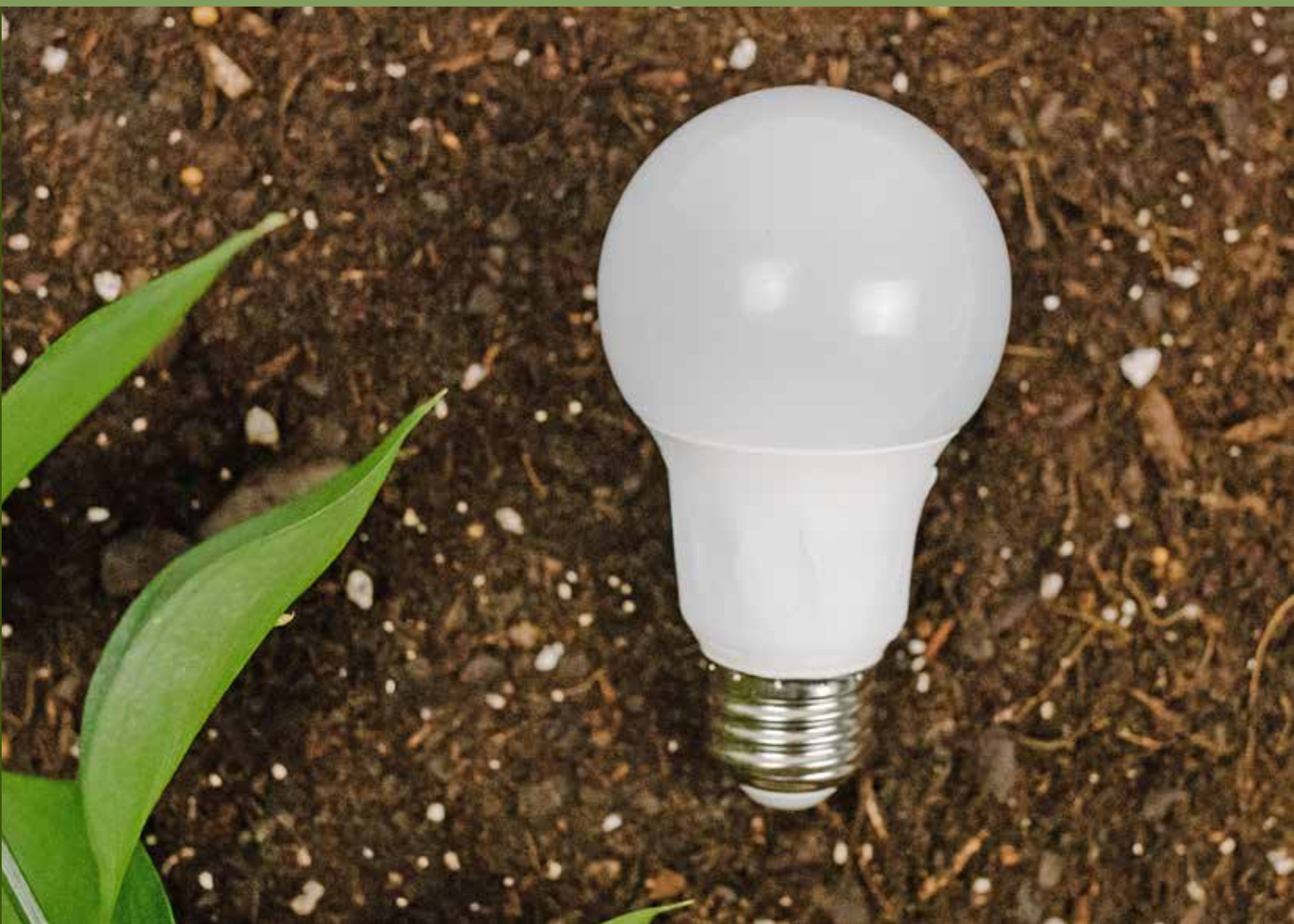
Vanuatu's National Energy Efficiency Strategy and Action Plan (NEESAP) 2022 – 2030



Vanuatu's National Energy Efficiency Strategy and Action Plan (NEESAP) 2022 – 2030

Ministry of Climate Change
Government of Vanuatu
Port Vila, Vanuatu

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Foreward by the Minister

The updated National Energy Roadmap (NERM) 2016 recognized the dual importance of renewable energy and energy efficiency as pivotal to achieve the NERM's vision of energizing Vanuatu's growth and development through the provision of secure, affordable, widely accessible, high quality, clean energy services for an educated, healthy, and wealthy nation.

Vanuatu's energy development in the past decades has focused mainly on the deployment of renewable energy with less attention given to energy efficiency. However, with ever-growing demand for electricity and increasing investment in power generation, increased energy efficiency will prove to be a critical, cost-effective measure alongside investments in new renewable energy generation.

While there have been achievements in the area of energy efficiency, there is a lack of cohesive strategic guidance to direct actions relating to energy efficiency that achieve maximum impact.

This National Energy Efficiency Strategy and Action Plan (NEESAP) document aims to fill this gap by providing a wholistic approach to energy efficiency development in the country, and will serve to add value and complement the NERM 2016. It also aims to support Vanuatu's effort to mitigate and adapt to climate change.

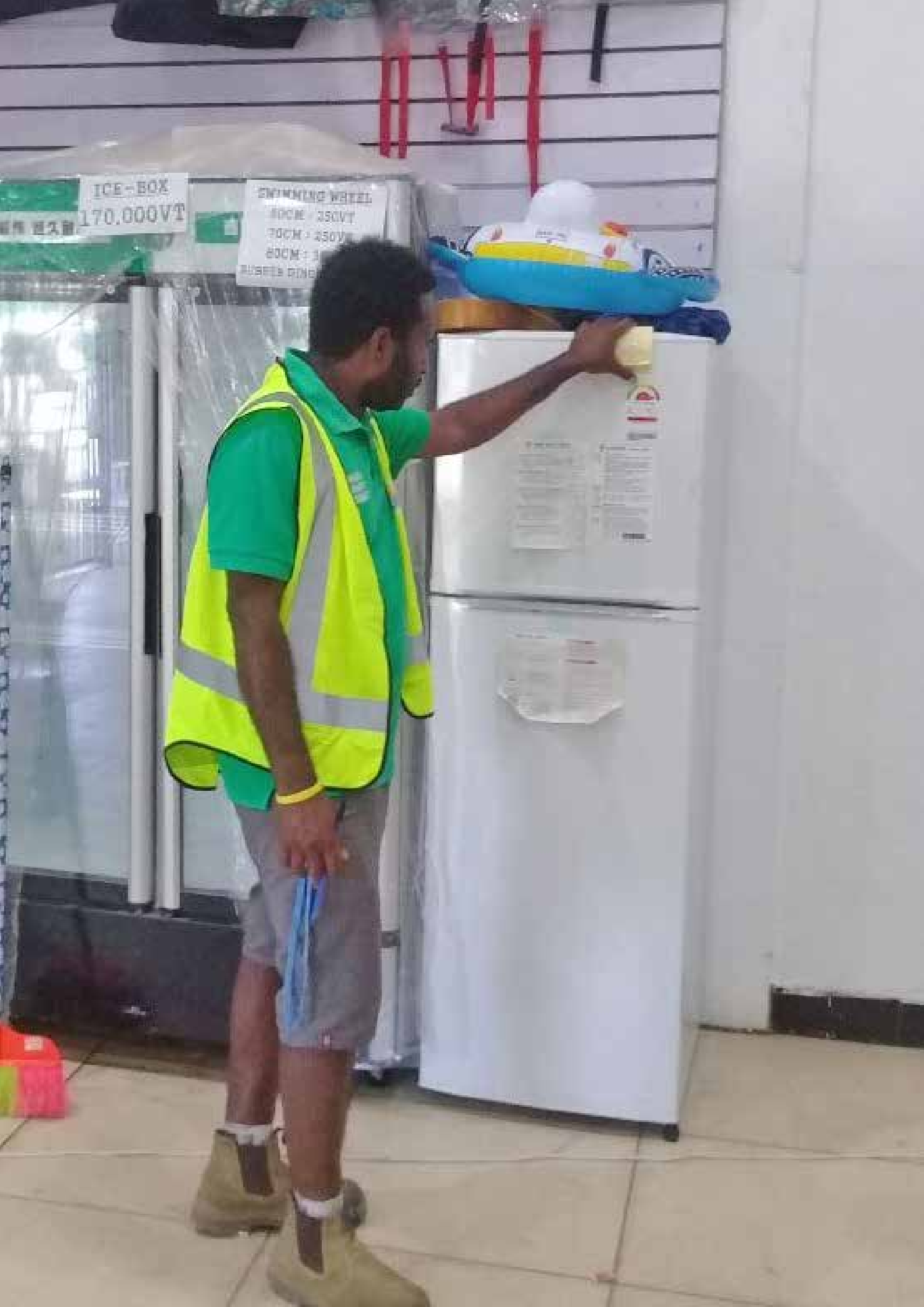
The NEESAP, to be implemented over eight years, was developed through a consultative process and reflects the feedback and inputs received from key stakeholders including the Government, NGOs and the private sector.

I thank the Global Green Growth Institute (GGGI) for its technical support and the Green Climate Fund for the funding to make this Action Plan possible.

The Government remains committed to the implementation of this Action Plan and the achievement of the 12 objectives stipulated therein. Our development partners and funding agencies are hereby invited to collaborate and support the NEESAP technically and financially so that its goals can be achieved by 2030.

Honorable Ralph REGENVANU
Minister of Climate Change and Energy

November 2022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Background

Vanuatu is a small island developing state (SIDS) with an estimated population of around 300,000 and is one of the world's most vulnerable countries to climate change and natural disasters, while its contribution to global GHG emissions is negligible. Approximately 80% of the population lives in rural areas, scattered across 63 inhabited islands. Due to geographical constraints and challenges; livelihood activities are carried out with limited access to public infrastructure services such as energy and water supply (basically anywhere in the country outside of the capital Port Vila). However, Vanuatu is in forefront in combating climate change and committed to formulating strategies, national policies, and best practices for addressing GHG emissions and making a practical contribution to global mitigation efforts.

Vanuatu's development objectives are to be achieved by integrating GHG abatement efforts with other social, environmental, and economic priorities. In its Nationally Determined Contributions (NDC), Vanuatu's planned mitigation intervention includes both Renewable Energy (RE) and Energy Efficiency (EE) measures to be pursued across the board to enable 15% savings in the energy sector. This will result in GHG emission reductions of around 30 $ktCO_2e$/year.

Vanuatu's National Energy Road Map (NERM) 2016-2030[1] , concluded that energy demand in Vanuatu could more than double between 2015 and 2030. This growth is expected to be driven largely by commercial and industrial sectors, followed by residential uptake. The report further estimated that by 2030, almost 54,000 households will receive electricity compared to 17,500 in 2015. As grid expansion projects result in more households getting connected, energy security will be impacted.

The updated NERM recognizes that renewable energy and energy efficiency are equally important ways to achieve the NERM's vision and energy efficiency can be a cost-effective way to meet energy demand while reducing the environmental and social impacts, and cost, of energy infrastructure and use. The NERM further acknowledges that energy efficiency investments can in many cases be more cost-effective than investing in new renewable generation capacity. The greatest immediate potential for energy efficiency improvements is identified in cooking and drying, transport, and electricity use in buildings.

However, in the absence of a robust and conducive regulatory framework including policies, laws, regulations, and standards, there is an uncontrollable influx of inefficient and low-priced appliances and products into the country.

The Global Green Growth Institute (GGGI) as the lead development partner supporting the Government of Vanuatu has commissioned a consulting assignment and appointed Subbarao Consulting Services (SCS) Ltd, New Zealand to develop a robust and inclusive National Energy Efficiency Strategy and Action Plan (NEESAP) and to develop legislative changes to enhance regulation and testing of electrical appliances in Vanuatu. The main goal of this assignment is to address the need for an energy efficiency policy and regulatory framework to enhance and upscale energy efficiency in Vanuatu.

1 https://www.nab.vu/vanuatu-national-energy-road-map

Energy Efficiency Options

The energy efficiency options have been identified based on the survey, stakeholder consultation and review of energy efficiency status in Vanuatu. The following section preset options for Energy Efficiency Enforcement and Equipment Testing and outlines the baseline information, key features, regional and global experiences and learnings, relating to energy efficiency enforcement and equipment testing, and opportunities for Vanuatu. The updated NERM identified three key areas or sub-sectors and end-user with the greatest potential for feasible and cost-effective energy efficiency improvements viz (1) Cooking and drying, (2) Land, air, and marine transport, and (3) Electricity use in buildings. However, these options paper mainly focuses on electrical energy efficiency (demand-side energy efficiency) or electricity use in buildings.

The Rationale for Identified Energy Efficiency Options

The Energy Efficiency Enforcement and Equipment Testing (EEE&ET) benefits are well known, over 100 countries have already implemented or are developing mandatory standards and labels for key appliances resulting in more than half the energy consumption of major appliances like air conditioners, refrigerators, lighting, and televisions, washing machines, and cooking appliances[2]. Further, these gains in EE have been achieved even as the purchase price of these appliances fell by an average of 2-3% per year. The global experience and achievements of energy efficiency enforcement and related impacts show that the mature EE programs with the largest product coverage are of the order of 15% of total economy-wide electricity consumption, and savings for fuel use in buildings are an even greater proportion.

EEE&ET also enable consumers to make an informed choice at the point of purchase along with financial benefits, since energy efficiency (savings) outweighed the costs, thus the consumers have benefited from both lower appliance purchase costs and lower operating costs. The cross-cutting benefits (direct and indirect) of energy efficiency enforcement and equipment testing includes direct and indirect GHG emissions reductions, water consumption reduction, sewage output reduction, employment generation, other health benefits, etc. However, tapping into the vast resource i.e., energy efficiency has always been difficult because energy efficiency is distributed across the institutional, commercial establishments, homes, appliances, businesses, and vehicles.

The Government of Vanuatu (GoV) has set ambitious targets of reaching 100% renewable energy for electricity production by 2030, requiring 5% energy savings through energy efficiency measures in commercial and residential sector[3]. The energy efficiency of electrical appliances, equipment, and lighting products act (Act no 24 of 2016)[4] provides minimum energy performance standards (MEPS), energy standards and labeling (S&L), and registration of electrical appliances, equipment, and lighting products that are energy efficient and for related purposes. The Department of Energy (DOE) is a nodal agency and regulator for implementing EE in Vanuatu and establishes energy-efficiency standards (minimum and mandatory energy performance labeling) for certain appliances and equipment (currently covers more than 6 different product categories). The present energy efficiency of electrical appliances, equipment, and lighting products act (Act no 24 of 2016) has made up of two regulatory requirements:

Schedule 1

Enlist the product classes subject to minimum energy performance standards (the level of energy efficiency specified in the standards for electrical appliances, equipment, and lighting products) and a list of applicable standards (set legally enforceable minimum levels of energy efficiency for appliances to be sold or let for hire a product in Vanuatu).

Schedule 2

Enlist the product classes subject to mandatory energy performance labeling (mandatory on-product labels provide buyers with consistent, reliable information so that consumers can take running costs into account when they purchase new appliances).

However, the present act does not cover a range of appliances and products where growth in ownership of appliances/products is fastest. The following table presents the consolidated (illustrative) list of electrical/electronic equipment covered under MEPS and S&L programs across the globe and in Vanuatu:

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2 International Energy Agency (IEA) Report on Energy Efficiency:2021

3 Vanuatu's Revised and Enhanced 1st Nationally Determined Contribution 2021–2030

4 https://doe.gov.vu/images/mepsl-pad/Official_Act_No.%2025_of_2017_(dated_29%20March_2017).pdf

Table 1

Longlist of appliances under EE/S&L program Vs in Vanuatu

SN	Product	Product included under Act No 24 of 2016
1	Air Compressors	
2	Air conditioners – single phase, three phase Single Duct & Portable, above 65 kW	Yes (Single phase and 3-phase up to 65kW rated total cooling Capacity. Including air source heat Pumps but not water source heat pumps).
3	Ballast (Electronic/Magnetic)	Yes
4	Ceiling Fans	NA
5	Clothes Dryers	NA
6	Clothes Washing Machines (Semi/Top Load/Front Load)	NA
7	Commercial chillers	NA
8	Compact Fluorescent Lamps	Yes
9	Computer Monitors	NA
10	Computers (Laptop/Notebooks)	NA
11	Dishwashers	NA
12	Distribution Transformers	NA
13	Domestic Gas Stove (Liquefied Petroleum Gas (LPG) Stoves)	NA
14	Electric Storage Water Heaters	NA
15	External Power Supplies	NA
16	General Purpose Induction motors (single phase and three phase)	NA
17	Incandescent Lamps	Yes
18	Light Emitting Diodes (LEDs)	NA
19	Linear Fluorescent Lamps	Yes
20	Microwave Oven	NA
21	Office Automation Products (Printer, Copier, Scanner, MFD's).	NA
22	Refrigerated Cabinets	NA
23	Refrigerated Display Cabinets	NA
24	Refrigerators and freezers (Household Refrigerating Appliances- Frost Free (No-Frost) and Direct Cool)	Household refrigerating appliances
25	Street and Public Lighting	NA
26	Televisions	NA
27	Transformers & Converters for Halogens	NA

Table 2
Status of Energy Efficiency Programme in select PICs

Policy	Country	Products Type	Policy Approach	Policy Instrument	Policy Status	Test Method Applied
Consumer Protection -Approved Standards for Restricted Electrical Products- Regulations 2016	Solomon Islands	Tubular Lamps, Non-Directional lamps, Directional Lamps, Fluorescent and HID Lighting, Room ACs - Stationary ACs, Central ACs, Refrigerators-Freezers, Freezers-only	Mandatory	Comparative Label, Minimum Performance Standard	Entered into force, Adopted	AS/NZS 3823.1.1-1.4: 2012
Consumer Protection -Approved Standards for Restricted Electrical Products- Regulations 2016	Solomon Islands	Tubular Lamps, Non-Directional lamps, Directional Lamps, Fluorescent and HID Lighting, Room ACs - Stationary ACs, Central ACs, Refrigerators-Freezers, Freezers-only	Mandatory	Comparative Label, Minimum Performance Standard	Entered into force, Adopted	AS/NZS 3823.1.1-1.4: 2012
Energy Amendment Act 2012	Cook Islands	Central ACs, Room ACs - Stationary ACs, Fluorescent and HID Lighting, Directional Lamps, Non-Directional lamps, Tubular Lamps, Freezers-only, Refrigerators-Freezers	Voluntary	Minimum Performance Standard, Comparative Label	Under development	AS/NZS 4474.1:2007
Energy Efficiency of Electrical Appliances, Equipment and Lighting Products Act No. 24 of 2016	Vanuatu	Tubular Lamps, Non-Directional lamps, Fluorescent and HID Lighting, Room ACs - Stationary ACs, Central ACs, Refrigerators-Freezers, Freezers-only	Voluntary	Comparative Label, Minimum Performance Standard	Entered into force, Adopted	AS 4934.2-2011; AS/NZS 4934.1:2014
Regulations under Consumer Protection Act 2015	Tonga	Tubular Lamps, Non-Directional lamps, Directional Lamps, Fluorescent and HID Lighting, Room ACs - Stationary ACs, Central ACs, Refrigerators-Freezers, Freezers-only	Voluntary	Comparative Label, Minimum Performance Standard	Under development	AS/NZS 3823.1.1-1.4: 2012
Samoa Energy Efficiency (Approved Energy Using Products Standards) Regulations 2018	Samoa*	Non-Directional lamps, Fluorescent and HID Lighting, Room ACs - Stationary ACs, Central ACs, Refrigerators-Freezers, Freezers-only	Mandatory	Comparative Label	Entered into force, Adopted	

Trade Standards (Household Electric Refrigerating Appliances) Order 2007, under the Trade Standards Quality Control Decree 1992, no.24	Fiji	Refrigerators-Freezers, Freezers-only	Mandatory	Comparative Label, Minimum Performance Standard	Entered into force, Adopted, Revised	FS/AS/NZS 4474.1.2007, FS/AS/NZS 4474.2.2009
Tuvalu Energy Efficiency Act of 2016	Tuvalu	Tubular Lamps, Non-Directional lamps, Directional Lamps, Fluorescent and HID Lighting, Room ACs - Stationary ACs, Central ACs, Refrigerators-Freezers, Freezers-only	Voluntary	Comparative Label, Minimum Performance Standard	Entered into force, Adopted	AS/NZS 3823.1.1-1.4: 2012

In order to progress towards achieving more secure, clean, and flexible energy systems requires stringent and effective policies, relevant legislation, information-based planning and infrastructure, and private sector and community participation, amongst others, to facilitate activities towards meeting the national energy targets. The following section includes additional measures (additional appliances and expansion of standards and labeling) and EE enforcement opportunities in Vanuatu

Options for Enhancing Energy Efficiency in Vanuatu

The Government of Vanuatu and the Department of Energy are committed to enhancing energy efficiency in Vanuatu and achieving the NDCs commitment. Based on the SWOT and PESTEL analysis, stakeholder consultations, and review of the available data, regional and global best practices following potential options have been identified.

Table 3
Options for Enhancing Energy Efficiency in Vanuatu Vanuatu

Options	Details
1	Expansion of Schedule 1 (Additional appliances/products)
2	Adoption/Recognition of other comparative MEPS and labeling standards apart from AS/NZS
3	New minimum performance standards (MEPS) and improved labeling and quality requirements
4	Testing Laboratory
5	Awareness and Capacity Building (Web base/mobile application for informed decision making)
6	Introduction of extended producer responsibility (EPR)
7	Phase-out of incandescent lamps and CFLs
8	Default temperature setting for Air Conditioner
9	Incentivisation for Energy Efficiency (Direct/Indirect) e.g. funding for energy efficiency upgrades, through a special fund, buy back or credit for new energy efficiency appliances etc.
10	Procurement Standards for Government Buildings and Offices
11	Energy Audits for Building (Institutional & Commercial Buildings) and institutions
12	Green Building Interventions including the revised building codes

The above options are discussed in detail in the option paper report. However, the key challenges, barriers faced during the analysis, and limitations includes the following:

01 Lack of statistical data/market data, the product/ appliances wise import and sales data were not available, hence it is difficult to quantity/ number of units of high EE and sub-standard imported products, new and refurbished appliances etc.

02 There is a general lack of statistical data in each of the pacific Island countries/pacific region. Similar to Vanuatu, all PICs have limited human resources and the capability to compile import data on any kind of product; none of the PICs has import data per market channels and country of manufacture. Hence, it was difficult to conduct the regional analysis (geographical analysis).

03 Capacity limitation within the DoE on implementation and enforcement of the Act, annual report, analysis, etc.

04 The analysis of the custom data shows mainly the country of origin based on import value; which is not a very reliable and accurate method since the import value share is influenced by exchange rates and equipment costs.

05 Bulk purchase and import: The annual data also cannot be harmonized since import/purchase is also affected due to the bulk purchase of electrical appliances by local wholesalers, retailers or private companies (e.g. hotel sector) in a given year.

06 COVID-19 restrictions hampered the detailed field survey and limited the stakeholder consultation.

Vanuatu's National Energy Efficiency Strategy and Action Plan (NEESAP): 2022 - 2030

Vanuatu's National Energy Efficiency Strategy and Action Plan (NEESAP): 2022 – 2030 is, an initiative to create a sustainable, aggressive national commitment to energy efficiency through the collaborative efforts of the regulators (DoE), electric utilities, private sectors, development partners and consumers/public and other national and international experts. The NEESAP for Vanuatu has an 8-year implementation timeframe (2022 – 2030) with a clear vision, mission, and quantifiable targets including its results framework.

Vanuatu's National Energy Efficiency Strategy and Action Plan (NEESAP): 2022 – 2030, has been developed using the Theory of Change (TOC) framework and focused on the options identified for Enhancing Energy Efficiency in Vanuatu.

NEESAP: Theory of Change (TOC)

A theory of change is a method that explains how a given intervention, or set of interventions, is expected to lead to specific development change, drawing on a causal analysis based on available evidence. A theory of change for enhancing energy efficiency in Vanuatu has been applied after sound analyses, consultation with key stakeholders, and learning about what works and what does not in Vanuatu. The TOC helps to identify solutions to effectively address the causes of problems that hinder progress and guide decisions on which approach should be taken, considering comparative advantages, effectiveness, feasibility, and uncertainties that are part of any change process. A theory of change also helps to identify the underlying assumptions and risks that will be vital to understand and revisit throughout the process to ensure the approach will contribute to the desired changes. Table 2: Definitions: Theory of Change Methodology

Goal	Goal is the long-term changes we desire to achieve.
Objective	Objectives are the desirable results that must be achieved in order to reach the Goal. It is to be noted that the objectives defined in the TOC are direct extracts of the options proposed in the options paper developed for the Energy Efficiency Enforcement Assessment report (EEEAR). The options are presented in the following table for reference.
Outcome	The outcome is the desired change in the condition of some kind –whether a policy, law, behaviour, attitude, knowledge, or state of the environment– among people, institutions, and environments.
Output	Output is the results of the activities.
Assumptions	Assumptions are the underlying conditions that must exist for the change you're describing to take place.
Activities	The action that must be taken by the organizations or stakeholders and its grantees to deliver outputs and bring about outcomes and goals – for example, project, partnering, program, legislation, regulation, organizing, etc.
Target Indicator	Target indicators are measurable evidence of meeting a goal. Target indicators are designed to reflect the amount of change that must occur over a specified time period in order for a successful outcome to be declared. Indicators can be either quantitative or qualitative.

The development of the TOC framework starts with the desired change (goal) and then works backward as illustrated in the figure below:

Figure 1
TOC framework

The key steps used for building the Theory of Change to achieve the goal of "achieving 15% savings in the energy sector in the energy sector equivalent to 30 $ktCO_2e$/year by cpursuing EE measures" are discussed below.

Step 1 Define the Goal that is to be achieved in the long term.

Step 2 Identify or define the objectives that need to be achieved in order to reach the desired goal.

Step 3 Backwards mapping and connecting the preconditions or requirements necessary to achieve that goal and explaining why these preconditions are necessary and sufficient.

Step 4 Determine the outcomes that are expected to be produced to achieve the desired change.

Step 5 Develop indicators to measure your outcomes to assess the performance of your initiative.

Step 6 Formulate assumptions i.e., events and conditions that need to exist/ occur if the outputs are to be achieved.

Step 7 Identifying the activities i.e., interventions that your initiative will perform to create your desired change.

Objective	Outcome	Target Indicator	Output	Assumptions	Activity
Objective 1 To increase the list of appliances/products covered under Schedule 1 of the EE act of 2016	Outcome 1.1 List of appliances/products covered under mandatory scheme are revised, leading to reduction in influx of in-efficient products in Vanuatu	No of products under Voluntary scheme brought to mandatory Scheme	Output 1.1 Inefficient products forced out of market.	Support from department of Customs and Inland Revenue and Department of Environment	Activity 1.1 Introduce amendment in Schedule 1 to include recommended products under the mandatory scheme
		Number of revisions	Output 1.1.2 Schedule 1 reviewed and revised biannually.	Product import data collected annually and analysed to understand which products are emerging (purchased more) in market	Activity 1.1.2 Prepare plan for expansion of Schedule 1 and its implementation for 2025 and 2027
		Number of times market Surveillance carried out in a year	Output 1.1.3 Penalty imposed on importers/ retailers for importing products not meeting the compliance requirement	DoE team carry out market surveillances on quarterly basis	Activity 1.1.3 Market Surveillance to check compliance requirement of products
Objective 2 To adopt /recognize other comparative MEPS and labelling standards apart from AS/NZS	Outcome 2.1 Council of Minister endorse labels other than AS/NZS	Study completed; Increase in number of adopted MEPS and labelling standards	Output 2.1 Entry level products that are EE and designed for entry level markets are imported to Vanuatu and market competitiveness increased	Importers/retailers are able to develop new partnerships and business relationships with supplier.	Activity 2.1 Study to compare MEPS and labelling standard of well-developed and developing economies for each product under Schedule 1 to determine partial or full adoption.
		Officer appointed	Output 2.1.2 Nodal officer for overseeing Appliance registration and market surveillance appointed		Activity 2.1.2 Recruitment of Nodal officer for overseeing Appliance registration and market surveillance
		Number of fake certificates rejected	Output 2.1.3 Dumping of inefficient appliances and fake certificates avoided.		Activity 2.1.3 Strengthening of existing electronic certification authorization and approval process

Objective 3 To introduce new minimum energy performance standards (MEPS) and improved labelling and quality requirements	Outcome 3.1 Introduced amendments in Schedule 1 and 2 of EE act of 2016	Increase in EE of imported lighting products; Increase in EE refrigeration and air conditioner	Output 3.1.1 Existing MEPS and labelling standards are reviewed and compared to increase its coverage	Import data on type of products, units and their country of origin are available	Activity 3.1.1 Periodic review of MEPS and its coverage Activity 3.1.2 New MEPS and labelling standard are identified to ensure products imported to Vanuatu are at par with globally manufacturing and EE standards.
Objective 4 To develop domestic compliance testing capability	Outcome 4.1 Third-party testing laboratory established, and domestic testing capability enhanced[5]	Number of third-party testing laboratory established/accredited	Output 4.1.1 Check testing procedure established including sampling plan		Activity 4.1 Develop procedures for performing check testing including sampling plan based the products/appliances listed under the Schedule 1 (on annual basis) Activity 4.1.2 Float competitive tender to establish one or more third-party laboratories Activity 4.1.3 Accreditation to the successful bidder Activity 4.1.4 Contract/agreement signed to check testing
Objective 5 To develop web base/ mobile application for informed decision making	Outcome 5.1 Consumers/buyer make informed purchased decision and opt for products with higher EE over cheap and inefficient ones.	Increase in sales of EE products; Increase in percentage of users of tool	Output 5.1 Consumers/potential buyers aware of the annual savings potential in electricity bills based on his/her choice of product.	Promotion of the developed tool are carried out using ICT modes to make people aware of the developed tool.	Activity 5.1 Development of decision support tool, hosted either on DoE's website or mobile application based

5 Preferred location for setting up third-party testing laboratory is Port Villa

Objective 6 Introduction of Extended Producer Responsibility (EPR)	Outcome 6.1 EPR scheme becomes operational	Project Completion Status	Output 6.1 Existing e-Waste regulations reviewed to accommodate EPR	EPR policy instruments and measures identified: Take-back requirements, Economic instrument, Standards, other industry based-measures	Activity 6.1 Undertake research/feasibility studies including on the benefits and opportunities of establishing EPR Activity 6.1.2 Consultation of stakeholders, local government, academia, NGOs and INGOs, etc. Activity 6.1.3 Development of legislation to support the introduction of EPR (Development of E-waste act/ amendment to Waste Management Act No. 24 of 2014) Activity 6.1.4 Devise a Communication strategy to inform all the actors in the product chain, including consumers, about the programme and to enlist their support and co-operation

Objective 7 To phase-out incandescent lamps and CFLs completely	Outcome 7.1.1 LED distribution centres established and operational	Program implementing agency identified/ established	Output 7.1.1 LED distribution centres identified and established	Implementing agency recognized and established; Nodal officer appointed	Activity 7.1.1 Identification/Establishment of LED distribution program Implementing agency/organization Activity 7.1.2 Develop Annual workplan, programs and set annual targets Activity 7.13 Implement Annual Workplan to achieve set targets
		Officer appointed	Output 7.1.2 Project officer for overseeing the project implemented appointed		Activity 7.1.2 Recruitment of new project officer for overseeing the program implementation
	Outcome 7.2.1 Consumers and Retailers are aware of benefits and saving potential of LED. Outcome 7.2.2 Consumers participate and support LED distribution program Outcome 7.2.2 LED distribution centres identified and established	Percentage increase in demand of LED's	Output 7.2.1 Increased demand for LEDs in market	Affects people behaviour and increase acceptance towards buying LED	Activity 7.2.1 Develop and carry-out awareness creation programs on LED adoption
		Number of jobs created	Output 7.2.2 Direct and In-direct job creation; Increased opportunities for Women's; Staff training opportunities		Activity 7.2.2 Conduct training and capacity building of volunteers & field officers carrying out awareness programs in rural areas

	Outcome 7.3.1 At least 1 LED bulbs in Rural houses and 2 in urban houses installed by 2025. Outcome 7.3.2 Complete phase-out of Incandescent and CFL's from residential sector achieved	% of old incandescent bulbs in stock collected and destroyed	Output 7.3.1 Import of new Incandescent bulbs stopped	Import of Incandescent bulbs stopped immediately after the regulation is passed; Bulk procurement of LED bulbs and distribution	Activity 7.3.1 Introducing regulation to phase-out incandescent lamp immediately (exception for some use)
Objective 8 Default temperature setting for Air Conditioner	Outcome 8.1 Users aware of energy saving potential and health benefits associated with operating air conditioners with the thermal comfort range of 24 to 27 degree [6] [7] Outcome 8.2 New air-conditioners imported comes with default temperature setting of 24degree Celsius	% reduction in annual Electricity bill compared to baseline	Output 8.1.1 Reduction in average electricity consumption of government and institutional buildings Output 8.1.2 Reduction in GHG emissions Output 8.1.3 Improved health	Government has legal power and enforcement capability	Activity 8.1 Introduce guidelines to mandatory regulate the default temperature setting for all government, commercial and institutional buildings.
		% of consumer having AC are aware and regulate the temperature of their AC's at 24degree Celsius	Output 8.2 Reduction in electricity bill of consumers having Air conditioners		Activity 8.2 Awareness creation on proper use of air conditioner for residential and commercial application and importers encouraged to import models that comes with default temperature settings

6 ASHRAE Standard 55-2013 Thermal Environmental Conditions for Human Occupancy

7 BEE Notifies New Energy Performance Standards for Air Conditioners, Ministry of Power, India (2020), https://beeindia.gov.in/sites/default/files/press_releases/FAQ.pdf

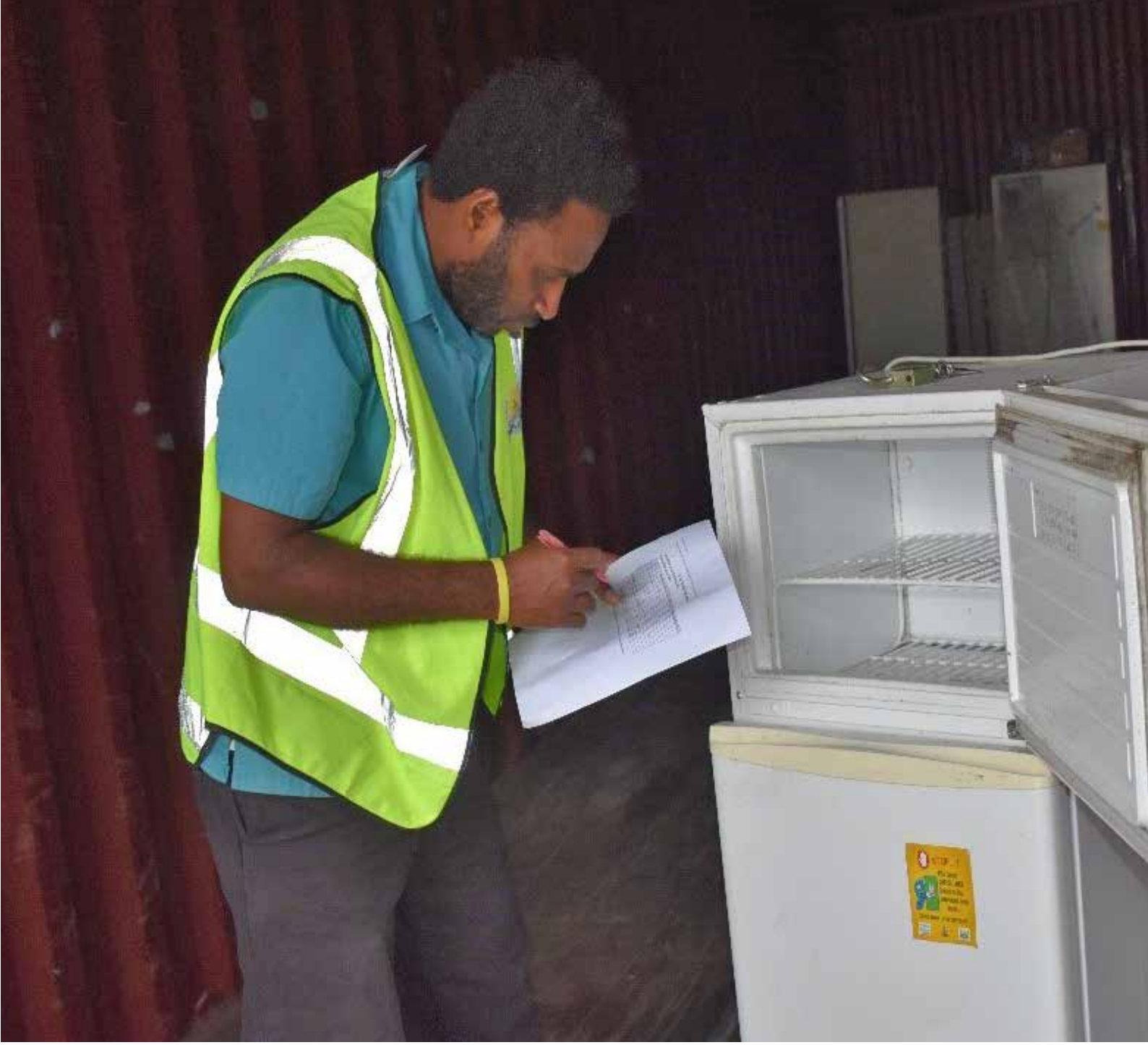
Objective 9 To introduce incentivisation for Energy Efficiency (Direct/Indirect)	Outcome 9.1 Cost parity between high energy label and comparatively lower energy label products achieved Outcome 9.2 Barriers in upscaling of EE reduced Outcome 9.3 Overcome market barriers	Increase in sales of 3 star and above products	Output 9.1.1 Products with higher EE are cross-subsidised Output 9.1.2 Products that are less EE have comparatively higher import duty	Activity 9.1 Review of import duty levels to introduce dynamic form of import duty based on energy labels and exploring options to provide relaxation in other taxes like VAT

Objective 10 To introduce procurement Standards for Government Buildings and Offices	Outcome 10.1 Finalization of standard for approval from project board and DoE	Project Completion Status	Output 10.1.1 Identification and development of green public procurement (GPP) criteria with involvement of different ministry, vendors and other stakeholders Output 10.1.2 Draft standard presented to stakeholders for review Output 10.1.3 Product groups to be covered identified and finalized	Activity 10.1 Establishment of centralized procurement system for EE equipment's and appliances
	Outcome 10.2 Procurement Standard implemented by DoE	Officer appointed	Output 10.2 Accounting officer is appointed	Activity 10.2 Appointment/ recruitment of accounting officer responsible for all procuring activities
		Progress of project	Output 10.3 Public procurement standard approved and implemented	Activity 10.3 Consultant hired for reviewing international best practices in sustainable procurement, stock taking of status of sustainable procurement across government organizations, preparing a draft Public Procurement standard

Objective 11 Improvement/ enhancement of EE in Government, institutional, commercial & residential buildings[8]	Outcome 11.1.1 Walk through and Detailed Energy audit conducted in Government, Institutional and Commercial Buildings	Officer recruite	Output 11.1.1 Amendment in EE act of 2016 to define roles and responsibilities of newly recruited nodal officer and consumers	Energy Conservation Building Codes is in place; Energy audit template developed	Activity 11.1.1 Recruitment of nodal officer for overseeing Energy audit and Green Building initiatives
	Outcome 11.1.2 Energy audit report reviewed and approved by Nodal officer.	Number of EA carried out annually in government and institutional building; Number of EA carried out annually in commercial buildings; Annual Energy savings from green buildings; Emission reduction achieved	Output 11.1.2.1 Categories of buildings/ consumers defined for voluntary and mandatory energy audit as per connected load Output 11.1.2.2 M&V protocol set for tracking savings achieved		Activity 11.1.2 Establish Energy Audit and Green Building Unit and Prepare guidelines for implementation of Energy audit scheme
	Outcome 11.1.3 M&V done on annual basis to tracking annual energy savings achieved and emission reduction	Recruited team member	Output 11.1.3 Energy Auditors recruited		Activity 11.1.3 Recruitment of young professionals in Energy audit and Green Building unit
	Outcome 11.1.4 Energy system becomes more efficient, reliable and resilient due to reduction in T&D Losses	Number of firms/ ESCOs accredited; Decrease in T&D losses	Output 11.1.4.1 Accreditation of Energy auditor firms/ Energy Services Company (ESCO)		Activity 11.1.4 Hiring of Energy auditor firms/ Energy Services Company (ESCO)

8 Industrial audit (Commercial building) activities will cover only equipment's and appliances because Vanuatu does not have large process industries.

Objective 12 To introduce Green Building Interventions	Outcome 12.1 New government, institutional and commercial buildings comply with ECBC and Green building guidelines	Project Completion Status	Output 12.1 Green building interventions identified and implemented in new government, residential and commercial buildings	Activity 12.1 Development and Endorsement of a Green building guideline
	Outcome 12.2 Retrofit of old buildings to incorporate green building measures	Project Completion Status	Output 12.2.1 ECBC codes introduced	Activity 12.2.1 Development and introduction of ECBC codes
		Project Completion Status	Output 12.2.2 Green Building certification and rating systems introduced	Activity 12.2.2 Hiring consultants for development of Green Building rating and certification system
		Number of converted/ new Green Building	Output 12.2.3 Awareness on benefits of green building created	Activity 12.2.3 Publicity through media (e.g., print media, television shows, radio programs, internet) to promote the adoption of green building guidelines



NEESAP: Results and Monitoring Framework

The Results and Monitoring Framework for the Vanuatu's National Energy Efficiency Strategy and Action Plan (NEESAP): 2022 – 2030, includes the logical framework demonstrating short-term to medium-term goal, activities to be implemented, timeframe, data collection source, responsible stakeholder, baseline and target indicators and assumption. Furthermore, Results and Monitoring Framework also include demonstrate gender mainstreaming consideration and the contribution of the activities to the NERM and NSDP targets including international development goals.

Objective 1

To increase the list of appliances/products covered under Schedule 1 of the EE act of 2016.

Outcome 1.1

List of products covered under mandatory scheme increased gradually and influx of in-efficient products reduced in Vanuatu.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Baseline value	Target Values	Data collection and reporting			Gender mainstreaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 1.1: Inefficient products forced out of market	Activity 1.1: Introduce amendment in Schedule 1 to include recommended products under the mandatory scheme	Director of the Department of Energy	2022-2023	No of products under Voluntary scheme brought to mandatory Scheme	Number	6	2023: 0, 2025: 7, 2027: 15, 2030: 25	Biannually	EE act of 2016	Appliance and labelling officer	Y	ENV 2.3, ECO 2.1	SDG-7, SDG-13, SDG-8
Output 1.2: Schedule 1 reviewed and revised biannually.	Activity 1.2: Prepare plan for expansion of Schedule 1 and its implementation for 2025 and 2027	Manager Energy Security	2024-2027	Number of revisions	Number	0	2023: 1, 2025: 1, 2027: 1, 2030: 1	Biannually	EE act of 2017	Appliance and labelling officer	Y	ECO 4.1, ECO 2.1	
Output 1.3: Penalty imposed on importers/ retailers for importing products not meeting the compliance requirement.	Activity 1.3: Market Surveillance to check compliance requirement of products	Appliance & Labelling Officer	2022-2030	Number of times market Surveillance carried out in a year	Number	2	2023: 4, 2025: 4, 2027: 4, 2030: 4	Annually	Annual report submitted to regulator of EE act of 2016	Appliance and labelling officer	Y	ENV 5.4	

Objective 2

To adopt /recognize other comparative MEPS and labelling standards apart from AS/NZS.

Outcome 2.1

Council of Minister endorse labels other than AS/NZS.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 2.1: Entry level products that are EE and designed for entry level markets are imported to Vanuatu and market competitiveness increased	Activity 2.1: Study to compare MEPS and labelling standard of well-developed and developing economies for each product under Schedule 1 to determine partial or full adoption.	Consultants and Appliance & Labelling Officer	2022-2023	Study completed; Increase in number of adopted MEPS and labelling standards	Percent; Number	0 1	2023: 25%, 2025: 100%; 2023: 1, 2025: 5	Half-yearly	Project evaluation/ M&V report	Appliance and labelling officer/ Manager Energy Security	Y	ENV 2.3, ECO 2.1	SDG-7, SDG-13, SDG-8
Output 2.2: Nodal officer for overseeing Appliance registration and market surveillance appointed	Activity 2.2: Recruitment of Nodal officer for overseeing Appliance registration and market surveillance	Manager Energy Security	2023-2025	Officer appointed	Number	0		Annually	Annual workplan of DoE	Manager Energy Security Unit	Y	ENV 5.4	
Output 2.3: Dumping of inefficient appliances and fake certificates avoided.	Activity 2.3: Establish electronic certification authorization and approval process	Nodal officer for Appliance registration and market surveillance	2023-2024	Number of fake certificates rejected	Number	0		Annually	Annual Reports	Manager Energy Security Unit	Y	ECO 2.9	

Objective 3

To introduce new minimum energy performance standards (MEPS) and improved labelling and quality requirements.

Outcome 3.1

Introduced amendments in Schedule 1 and 2 of EE act of 2016.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Baseline value	Target Values	Data collection and reporting			Gender mainstreaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 3.1.1: Existing MEPS and labelling standards are reviewed and compared to increase its coverage Output 3.1.2: New MEPS and labelling standard are identified to ensure products imported to Vanuatu are at par with globally manufacturing and EE standards.	Activity 3.1.1: Periodic review of MEPS and its coverage	Manager Energy Security and Nodal officer for Appliance registration and market surveillance	2022-2030	Increase in EE of imported lighting products; Increase in EE refrigeration and air conditioner	Percent; Percent	0% 0%	2023: 1%, 2025: 3%, 2027: 5% 2023: 0%, 2025: 1%, 2027: 2%, 2030: 5%	Annually; Annually	Annual report submitted to Regulator	Appliance and labelling officer	Y	ENV 2.3, ECO 2.1	SDG-7, SDG-13, SDG-8

Objective 4

To develop domestic compliance testing capability.

Outcome 4.1

Third-party testing laboratory established.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Baseline value	Target Values	Data collection and reporting			Gender mainstreaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 4.1 Check testing procedure established including sampling plan	Activity 4.1.1: Develop procedures for performing check testing including sampling plan based the products/ appliances listed under the Schedule 1 (on annual basis) Activity 4.1.2: Float competitive tender to establish one or more third-party laboratories Activity 4.1.3 Accreditation to the successful bidder Activity 4.1.4: Contract/ agreement signed to conduct random test on at least 10 models of AC's and Refrigerators each annually	Department of Energy Manager Admin, Finance & Procurement	2023-2024	Testing procedure developed; Sampling plan generated; Number of third-party testing laboratory established/ accredited; Number of products tested	Number; Number; Number	0 0 0	2023:1, 2023:1, 2025:1, 2027:1, 2030:1 2023:0, 2025: 1, 2023: 0 2025: 2	Annually, Annually	Annual Report of DoE; Annual workplan of DoE	Appliance and labelling officer, Manager Admin, Finance & Procurement		ECO 4.0	SDG-7, SDG-13, SDG-7 SDG-7, SDG-13, SDG-8

Objective 5

To develop web base/mobile application for informed decision making.

Outcome 5.1

Consumers/buyer make informed purchased decision and opt for products with higher EE over cheap and inefficient ones.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 5.1: Consumers/ potential buyers aware of the annual savings potential in electricity bills based on his/her choice of product.	Activity 5.1: Development of decision support tool, hosted either on DoE's website or mobile application based	Consultants	2023-2025	Increase in percentage of users of tool	Percent	0	2023: 0%, 2025:15%, 2027:25%, 2030: 50%	Annually	Annual Report of DoE	Appliance and labelling officer	Y	ECO 2.9, SOC 6.9, SOC 4.1	SDG-7, SDG-13, SDG-8

Objective 6

Introduction of Extended Producer Responsibility (EPR).

Outcome 6.1

EPR scheme becomes operational.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Baseline value	Target Values	Data collection and reporting			Gender mainstreaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 6.1: Existing e-Waste regulations reviewed to accommodate EPR	Activity 6.1.1: Undertake research/feasibility studies including on the benefits and opportunities of establishing EPR Activity 6.1.2: Consultation of stakeholders, local government, academia, NGOs and INGOs, etc. Activity 6.1.3: Development of legislation to support the introduction of EPR (Development of E-waste act/ amendment to Waste Management Act No. 24 of 2014) Activity 6.1.4: Devise a communication strategy to inform all the actors in the product chain, including consumers, about the programme and to enlist their support and co-operation	Consultants Department of Energy and Department of Environmental Protection and Conservation	2025-2027 2027-2028	Copy of Cost Benefit Analysis report on establishing EPR Number of legislative amendments on Waste Management Act to include EPR	Number; Number	1	2020:50%, 2027:100%	Quarterly	Project M&V report	Manager Energy Security Unit		ENV 2.4, ENV 2.5	SDG-3, SDG-7, SDG-12, SDG-13, SDG-8

Objective 7

To phase-out incandescent lamps and CFLs completely.

Outcome 7.1

LED distribution centres established and operational.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 7.1.1: Program implementing agency identified/ established	Activity 7.1.1: Establish LED distribution program Implementing agency/ organization	Department of Energy	2023-2024	Activity completion status	Percent	0%	2023: 100%,	Annually	Annual Workplan DoE	Manager Energy Security Unit		ENV 2.3, ECO 2.1	SDG-7, SDG-13, SDG-8
Output 7.1.2: Project officer for overseeing the project implemented appointed	Activity 7.1.2: Recruitment of new project officer for overseeing the program implementation	Manager Energy Security	2023-2024	Officer appointed	Number	0	2023: 1,	Annually	Annual Workplan DoE	PSO-Energy Efficiency and Conservation		ENV 5.4	

Outcome 7.2

Consumers and Retailers are aware of benefits and saving potential of LED; Consumers participate and support LED distribution program.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 7.2.1: Increased demand for LEDs in market	Activity 7.2.1: Develop and carry-out awareness creation programs on LED adoption	Principal Scientific Officer (Energy Efficiency & Conservation)	2023-2025	Percentage increase in demand of LED's	Percent	0%	2025: 15-20%, 2027: 40%, 2030: 100%	Half-yearly	Annual Report of DoE	PSO-Energy Efficiency and Conservation	Y	ECO 1.9, ECO 2.9	SDG-7, SDG-13, SDG-8
Output 7.2.2.1: Direct and In-direct job creation Output 7.2.2.2: Increased opportunities for Women's Output 7.2.2.3: Staff training opportunities	Activity 7.2.2: Conduct training and capacity building of volunteers & field officers carrying out awareness programs in rural areas	Principal Scientific Officer (Energy Efficiency & Conservation)	2023-2025	Number of jobs created	Number	0	2023: 10, 2025: 20, 2027: 30, 2030: 50	Half-yearly	Annual Report of DoE	PSO-Energy Efficiency and Conservation	Y	ECO 4.5, ECO 4.6	

Outcome 7.3

At least 1 LED bulbs in Rural houses and 2 in urban houses installed by 2025; Complete phase-out of Incandescent and CFL's from residential sector achieved.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Baseline value	Target Values	Data collection and reporting			Gender mainstreaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 7.3.1: Import of new Incandescent bulbs stopped	Activity 7.3.1: Introducing regulation to phase-out incandescent lamp immediately (exception for some use)	Department of Energy	2023-2024	% Of old incandescent bulbs in stock collected and destroyed	Percent	0%	2023: 20%, 2025: 60%, 2027: 100%,	Half-yearly	Annual Report of DoE	PSO-Energy Efficiency and Conservation	Y	ECO 1.9, ECO 2.9	SDG-7, SDG-13, SDG-8, SDG-10
Output 7.3.2: Bulk procurement of LED bulbs and distribution	Activity 7.3.2: Launch LED distribution program in phases (Phase 1- for urban areas and Phase 2- for rural areas)	TBD	2025-2027	Achievement of target set under Phase- 1 of LED distribution program; Achievement targets set under Phase-2 of LED distribution program; At least 2 awareness creation programs carried out annually in rural and urban areas annually by 2025.	Percent; Percent; Percent	0% 0% 0	2025: 25%(2024), 2027: 50%(2026), 2030: 100%(2028), 2025: 25%, 2027: 50%, 2030: 100%, 2025: 2	Quarterly	Project M&V report	Program Officer/ Manager Energy Security Team	Y	ENV 2.3, ECO 2.1	

Outcome 7.4

Retrofitting/replacement of lightings in all Government and Institutional Buildings completed.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 7.4: Reduction in price of LED and energy savings	Activity 7.4.1: Bulk Procurement of LED lightings for replacement in Government and Institutional Buildings	Finance & Procurement Offer	2024-2027	Energy Savings achieved due to replacement of lighting in government and institutional building; % of government buildings having LED lightings; % of institutional buildings having LED lightings; % of Street lighting replaced with LED; % decrease in LED lighting price per watt due to bulk procurement by government.	kWh, Percent, Percent, Percent, Percent	0 0% 0% 0% 0%	2023: TBD, 2025: TBD, 2027: TBD, 2030: TBD, 2023: 0%, 2025: 50%, 2027: 100%, 2023: 0%, 2025: 50%, 2027: 100%, 2023: 0%, 2025: 50%, 2027: 100%, 2023: 0%, 2025: 5%, 2027: 7%, 2030: 10%	Half-yearly	Program M&V report	Manager Energy Security Unit and LED distribution program officer	Y	ECO 4.1, ECO 2.1, ECO 1.2	SDG-7, SDG-13, SDG-8

Outcome 7.5

All households and commercial centres have installed LED lightings by year 2030.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of mea-sure	Base-line value	Target Values	Data collection and reporting			Gender main-stream-ing	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collec-tion		NSDP	SDG
Output 7.5.1: LED demand increased, and market established	Activity 7.5.1: Introduce regulations to phaseout CFL for residential application in 2025 and commercial application by 2027	Principal Scientific Officer (Energy Efficiency & Conservation)	2025-2026	% CFL bulbs collected and destroyed	Percent	0%	2023: 0%, 2025: 20%, 2027: 60%, 2030: 100%	Annually	Recycling program Annual report	Department of Environmental Protection and Conservation	Y	ENV 2.3	SDG-3, SDG-7, SDG-13, SDG-8, SDG-12
Output 7.5.2: Avoidance of anthropogenic mercury pollution	Activity 7.5.2: Start recycling program	Department of Energy and Department of Environmental Protection and Conservation	2025-2030	% Of CFL bulbs existing in country collected for recycling	Percent	0%	2025: 20%, 2027: 50%, 2030: 100%	Annually	Recycling program Annual report	Department of Environmental Protection and Conservation	Y	ENV 2.4	

Objective 8

Default temperature setting for Air Conditioner.

Outcome 8.1

Users aware of energy saving potential and health benefits associated with operating air conditioners with the thermal comfort range of 24 to 27 degree; New air-conditioners imported comes with default temperature setting of 24degree Celsius.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Baseline value	Target Values	Data collection and reporting			Gender mainstreaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 8.1.1: Reduction in average electricity consumption of government and institutional buildings Output 8.1.2: Reduction in GHG emissions Output 8.1.3: Improved health	Activity 8.1: Introduce guidelines to mandatory regulate the default temperature setting for all government and institutional buildings	Department of Energy	2023-2024	% Reduction in annual Electricity bill compared to baseline	Percent	0%	2023: 0%, 2025:3-5%	Annually	Energy Audit reports	Energy audit and Green Building unit	Y	ECO 2.1	SDG-7, SDG-13, SDG-8
Output 8.2: Reduction in electricity bill of consumers having Air conditioners	Activity 8.2: Awareness creation on proper use of air conditioner for residential and commercial application and importers encouraged to import models that comes with default temperature settings	Principal Scientific Officer (Energy Efficiency & Conservation)	2023-2026	% Of consumer having AC are aware and regulate the temperature of their AC's at 24degree Celsius	Percent	0%	2023:25%, 2025:100%	Annually	Training and awareness creation program report	Energy audit and Green Building unit	Y	ECO 1.9, ECO 2.9	

Objective 9

To introduce incentivisation for Energy Efficiency (Direct/Indirect).

Outcome 9.1

Cost parity between high energy label and comparatively lower energy label products achieved; Barriers in upscaling of EE reduced; Overcome market barriers.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 9.1.1: Products with higher EE are cross-subsidised Output 9.1.2: Products that are less EE have comparatively higher import duty	Activity 9.1: Review of import duty levels to introduce dynamic form of import duty based on energy labels and exploring options to provide relaxation in other taxes like VAT	Appliance and labelling officer and Department of Customs and Inland Revenue	2023-2025	Increase in sales of 3 star and above products	Percent	0%	2023: 0%, 2025: 5%, 2027: 20%, 2030: 30%	Half-yearly	Department of Customs and Inland Revenue	Appliance and labelling officer	Y	ENV 2.3	SDG-7, SDG-13, SDG-8

Objective 10

To introduce procurement Standards for Government Buildings and Offices.

Outcome 10.1

Finalization of standard for approval from project board and DoE.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 10.1.1: Identification and development of green public procurement (GPP) criteria with involvement of different ministry, vendors and other stakeholders Output 10.1.2: Draft standard presented to stakeholders for review Output 10.1.3: Product groups to be covered identified and finalized	Activity 10.1: Establishment of centralized procurement system for EE equipment's and appliances	Manager Admin, Finance & Procurement	2023-2025	Project Completion Status	Percent	0%	2023: 25%, 2025: 100%	Semesterly	Annual report of DoE	Manager Energy Security Unit	Y	ECO 2.9	SDG-7, SDG-13, SDG-8
Output 10.2: Accounting officer appointed	Activity 10.2: Appointment/ recruitment of accounting officer responsible for all procuring activities	Manager Admin, Finance & Procurement	2023-2026	Officer appointed	Number	0	2023: 1,	Annually	Annual Workplan DoE	PSO-Energy Efficiency and Conservation	Y	ECO 4.5	
Output 10.3: Public procurement standard approved and implemented	Activity 10.3: Consultant hired for reviewing international best practices in sustainable procurement, stock taking of status of sustainable procurement across government organizations, preparing a draft Public Procurement standard	Manager Admin, Finance & Procurement and Manager Energy Security	2024-2025	Progress of project	Percent	0	2025: 100%,	Annually	Annual Workplan DoE	Manager Energy Security Unit	Y	ECO 4.5	

Objective 11

Implementation of mandatory Energy Audits for Government, Institutional & Commercial Buildings and DISCOMs.

Outcome 11.1

Walk through and Detailed Energy audit conducted in Government, Institutional and Commercial Buildings;
Energy audit report reviewed and approved by Nodal officer;
M&V done on annual basis to tracking annual energy savings achieved and emission reduction;
Energy system becomes more efficient, reliable and resilient due to reduction in T&D Losses.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 11.1.1: Amendment in EE act of 2016 to define roles and responsibilities of newly recruited nodal officer and consumers	Activity 11.1: Recruitment of nodal officer for overseeing Energy audit and Green Building initiatives	Manager Admin, Finance & Procurement and Manager Energy Security	2023-2024	Officer recruited	Number	0	2023: 1,	Annually	Annual Workplan DoE	PSO-Energy Efficiency and Conservation	Y	ECO 4.5	SDG-7, SDG-13, SDG-8, SDG-11

Output 11.1.2: Output 11.1.2.1: Categories of buildings/ consumers defined for voluntary and mandatory energy audit as per connected load Output 11.1.2.2: M&V protocol set for tracking savings achieved	Activity 11.2: Establish Energy Audit and Green Building Unit and Prepare guidelines for implementation of Energy audit scheme	Energy Audit and Green Building team	2023-2024	Number of EA carried out annually in government and institutional building; Number of EA carried out annually in commercial buildings; Annual Energy savings from green buildings; Emission reduction achieved	Number; Number; Wh; tCO_2e	0 0 0 kWh 0 tCO_2e	2023: 0, 2025: 5, 2027: 5, 2030: 5, 2023: 0, 2025: 5, 2027: 5, 2030: 5, 2023: TBD, 2025: TBD, 2027: TBD, 2030: TBD 2023: TBD, 2025: TBD, 2027: TBD, 2030: TBD	Annually	Annual report of Energy Audit and Green Building Unit	Nodal officer for Energy Audit and Green Building	Y	ENV 2.3, ECO 2.3
Output 11.1.3: Energy Auditors Recruited	Activity 11.3: Recruitment of young professionals in Energy audit and Green Building unit	Manager Admin, Finance & Procurement and Manager Energy Security	2024-2025	Recruited team member	Number	0	2025: 3,	Annually	Annual Workplan DoE	PSO-Energy Efficiency and Conservation	Y	ECO 4.5, SOC 2.4
Output 11.1.4.1: Accreditation of Energy auditor firms/ Energy Services Company (ESCO)	Activity 11.4: Hiring of Energy auditor firms/ Energy Services Company (ESCO)	Director of Department of Energy	2024-2026	Number of firms/ ESCOs accredited; Decrease in T&D losses	Number; Percent	0 0%	2025: 4, 2025: 1%, 2027: 3%	Annually	Annual report	PSO-Energy Efficiency and Conservation	Y	ECO 4.1, ECO 4.5

Outcome 11.2

Retained human capacity due to regular train the trainer course.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 11.2.1: Training course developed with train the trainer approach Output 11.2.2.1: Energy Audit and Green building team capable to carry-out audits Output 11.2.2.2: Local experts qualified to take over training responsibility from international experts	Activity 11.2.1: Trainers contracted (international) to develop and deliver training Activity 11.2.2: Training and capacity building for Energy Audit and Green Buildings Team and other interested stakeholders	Manager Admin, Finance & Procurement and Manager Energy Security Principal Scientific Officer (Energy Efficiency & Conservation)	2024-2026	Project Progress; Capacity Building completed; Number of people employed	Percent Percent Number	0% 0% 0	2025: 50%, 2027: 100% 2025: 50%, 2027: 100% 2025: 5, 2027: 10	Annually Annually	Annual report Annual report	Manager Energy Security Unit Manager Energy Security Unit and PSO Energy Efficiency and Conservation	Y Y	ECO 4.5 ECO 4.6, SOC 2.4	SDG-7, SDG-13, SDG-8, SDG-4

Outcome 11.3

Implementation of Energy Efficiency measures.

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collec-tion		NSDP	SDG
Output 11.3: Reduced financial burden on ESCOs	Activity 11.3.1: Establishment of separate fund and budget for Energy audit	Manager Admin, Finance & Procurement	2025-2027	Energy Savings achieved compared to baseline due to implementation of EE measures	Percent	0%		Annually	Energy audit report and M&V report	Nodal officer for Energy Audit and Green Building	Y	ECO 1.2, ENV 2.6	SDG-7, SDG-13, SDG-8, SDG-17, SDG-9

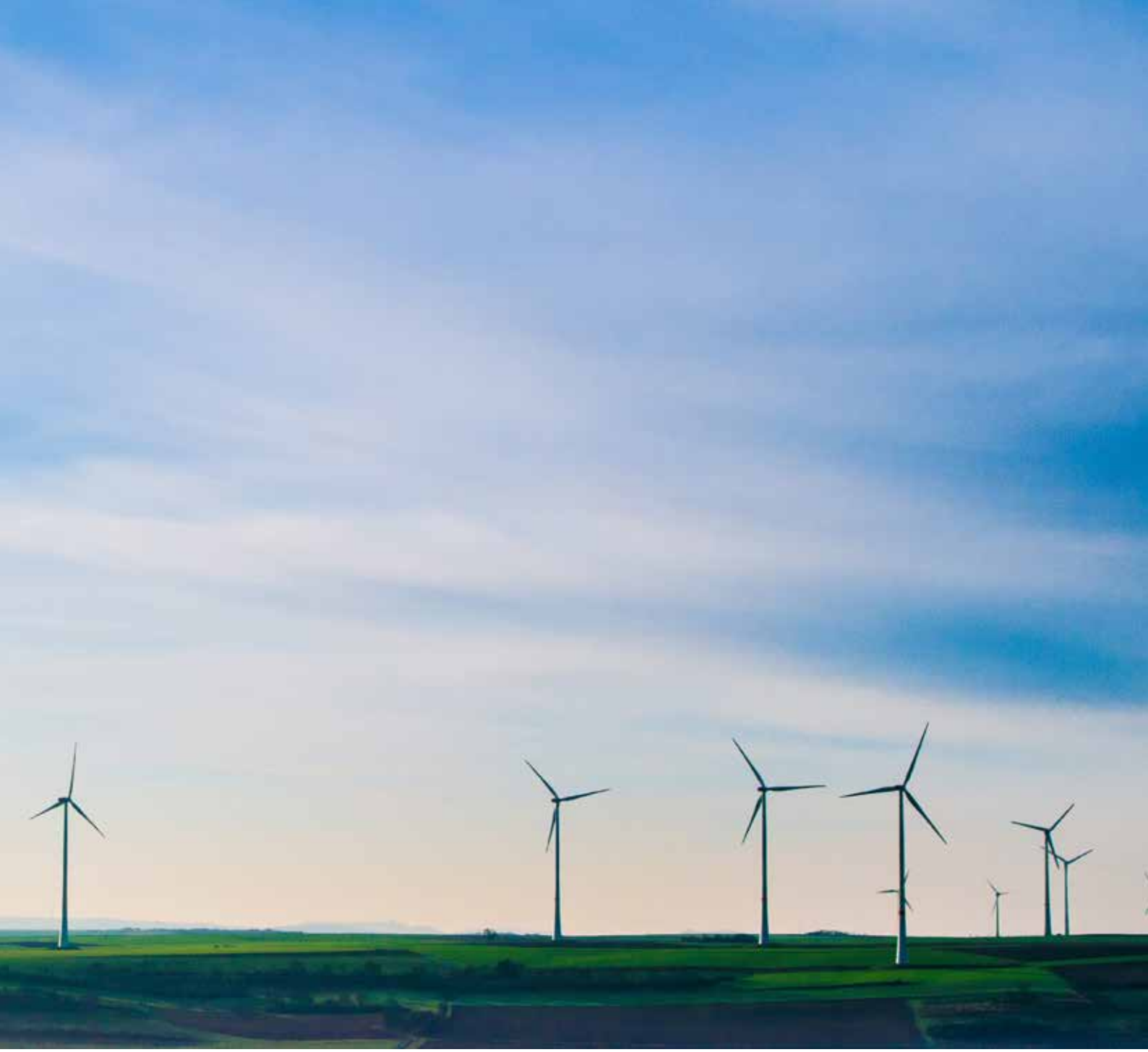
Objective 12

To introduce Green Building Interventions.

Outcome 12.1

New government, institutional and commercial buildings comply with ECBC and Green building guidelines;
Retrofit of old buildings to incorporate Green building measures .

Outputs	Activities	Responsibility (Implementing Agency)	Time-frame	Target Indicator	Unit of measure	Base-line value	Target Values	Data collection and reporting			Gender main-streaming	Relation with NSDP and SDG	
								Frequency of data collection	Data collection Instruments/ data source	Responsibility of data collection		NSDP	SDG
Output 12.1:Green building interventions identified and implemented in new government, residential and commercial buildings	Activity 12.1: Development and Endorsement of a Green building guideline	Energy Audit and Green Building team	2025-2027	Project Completion Status	Percent	0%	2027: 100%	Annually	Annual report of DoE	Manager Energy Security Unit/ Nodal officer for Energy Audit and Green Building	Y	ENV 2.3, ENV 2.2, ENV 2.4	SDG-7, SDG-13, SDG-8, SDG-11
Output 12.2: ECBC codes introduced	Activity 12.2: Development and introduction of ECBC codes	Consultants	2023-2025	Project Completion Status	Percent	0%	2023: 25%, 2025: 100%	Annually	Annual report of DoE	Manager Energy Security Unit/ Nodal officer for Energy Audit and Green Building	Y	ENV 2.4, ECO 2.3	
Output 12.3: Green Building certification and rating systems introduced	Activity 12.3: Hiring consultants for development of Green Building rating and certification system	Manager Admin, Finance & Procurement and Manager Energy Security	2025-2027	Project Completion Status	Percent	0%	2025: 25%, 2027: 100%	Annually	Annual report of DoE	Manager Energy Security Unit/ Nodal officer for Energy Audit and Green Building	Y	ECO 4.5	
Output 12.4: Awareness on benefits of green building created	Activity 12.4: Publicity through media (e.g., print media, television shows, radio programs, internet) to promote the adoption of green building guidelines	Principal Scientific Officer (Energy Efficiency & Conservation)	2025-2028	Number of converted/ new Green Building	Number	0	2023: 0, 2025: 2, 2027: 5, 2030: 10	Annually	Annual report of DoE	PSO Energy Efficiency and Conservation	Y	ECO 2.9, ECO 1.9	



NEESAP: Financial and Resource Planning

The financial and resource planning of Vanuatu's National Energy Efficiency Strategy and Action Plan (NEESAP): 2022 – 2030, includes the tentative budget, human, equipment, and technical requirement for successful implementation of the various activities identified as part of NEESAP

Objective 1

To increase the list of appliances/products covered under Schedule 1 of the EE act of 2016.

Outcome 1.1

List of products covered under mandatory scheme increased gradually and influx of in-efficient products reduced in Vanuatu.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 1.1: Introduce amendment in Schedule 1 to include recommended products under the mandatory scheme	Director of Department of Energy	2022-2023	Recurrent DoE budget	Internal	1	NA	Submit the proposed amendment to the state law office for their issuing the Ministerial order
Activity 1.2: Prepare plan for expansion of Schedule 1 and its implementation for 2025 and 2027	Manager Energy Security	2024-2027	Recurrent budget of the DoE	Internal	2	NA	Current DoE staff
Activity 1.3: Market Surveillance to check compliance requirement of products	Appliance & Labelling Officer	2022-2030	Recurrent DoE budget	Internal	2	NA	Gain understanding on the EE Act and the EE Operating Manuel
Sub-Total for Activity			0				

Objective 2

To adopt /recognize other comparative MEPS and labelling standards apart from AS/NZS.

Outcome 2.1

Council of Minister paper prepared to endorse labels other than AS/NZS.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 2.1: Study to compare MEPS and labelling standard of well-developed and developing economies for each product under Schedule 1 to determine partial or full adoption.	Consultants and Appliance & Labelling Officer	2023-2025	60,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Activity 2.2: Recruitment of Nodal officer for overseeing Appliance registration and market surveillance	Manager Energy Security (This task is currently undertaken by the Appliance and Labelling Officer)	2022-2023	Recurrent DoE budget	Internal	1	NA	Officer in charge recently appointed
Activity 2.3: Establish electronic certification authorization and approval process	Nodal officer for Appliance registration and market surveillance	2023-2024	Recurrent DoE budget	internal	5	Desktops/ Laptops, IT infrastructure	DoE officers
Sub-Total for Activity			60,000				

Objective 3

To introduce new minimum energy performance standards (MEPS) and improved labelling and quality requirements.

Outcome 3.1

Introduced amendments in Schedule 1 and 2 of EE act of 2016.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 3.1: Periodic review of MEPS and its coverage	Manager Energy Security, PSO -EE & C and Appliance and Labelling Officer	2022-2030	150,000	Development Partner/Donor	4	NA	Hiring International and Local consultants Existing MEPS
Sub-Total for Activity			150,000				

Objective 4

To develop domestic compliance testing capability.

Outcome 4.1

Third-party testing laboratory established.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 4.1: Develop procedures for performing check testing including sampling plan based the products/ appliances listed under the Schedule 1 (on annual basis)	Department of Energy	2023-2024	Recurrent DoE budget	Internal	2	Desktops/ Laptops, IT infrastructure	DoE officers
Activity 4.2: Float competitive tender to establish one or more third-party laboratories	Manager Admin, Finance & Procurement	2023-2024	1,000,000	Development Partner/Donor	2	EE testing Laboratory infrastructure	Hiring International and Local consultants
Sub-Total for Activity			1,000,000				

Objective 5

To develop web base/mobile application for informed decision making.

Outcome 5.1

Consumers/buyer make informed purchased decision.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 5.1: Development of decision support tool, hosted either on DoE's website or mobile application based	Manager Energy Security	2023-2025	500,000	Development Partner/Donor	5	Relevant IT infrastructure	Hiring International and Local consultants
Sub-Total for Activity			500,000				

Objective 6

Introduction of Extended Producer Responsibility (EPR).

Outcome 6.1

EPR scheme becomes operational.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 6.1: Undertake research/ feasibility studies including on the benefits and opportunities of establishing EPR	Manager Energy Security	2025-2027	100,000	Development Partner/Donor	3	NA	Hiring International and Local consultants
Activity 6.2: Development of legislation to support the introduction of EPR (Development of E-waste act/ amendment to Waste Management Act No. 24 of 2014)	Department of Energy and Department of Environmental Protection and Conservation	2027-2028	50,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Activity 6.3: Consultation of stakeholders, local government, academia, NGOs and INGOs, etc.	Department of Energy and Department of Environmental Protection and Conservation	2027-2028	10,000	Development Partner/Donor	6	NA	Hiring International and Local consultants
Activity 6.4: Devise a communication strategy to inform all the actors in the product chain, including consumers, about the programme and to enlist their support and co-operation	Department of Energy and Department of Environmental Protection and Conservation	2027-2028	20,000	Development Partner/Donor	1	NA	Hiring International and Local consultants
Sub-Total for Activity			150,000				

Objective 7

To phase-out incandescent lamps and CFLs completely.

Outcome 7.1

LED distribution centres established and operational.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 7.1.1: Identification/Establishment of LED distribution program Implementing agency/organization	Department of Energy	2023-2024	150,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Activity 7.1.2: Recruitment of new project officer for overseeing the program implementation	Manager Energy Security	2023-2024	50,000	Internal	1	NA	Development of Job Description
Sub-Total for Activity			200,000				

Outcome 7.2

Consumers and Retailers are aware of benefits and saving potential of LED;
Consumers participate and support LED distribution program.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 7.2.1: Develop and carry-out awareness creation programs on LED adoption	Principal Scientific Officer (Energy Efficiency & Conservation)	2023-2025	100,000	Development Partner/Donor	3	Relevant public campaign infrastructure	Development of relevant resources for awareness raising (electronic & printed)
Activity 7.2.2: Conduct training and capacity building of volunteers & field officers carrying out awareness programs in rural areas	Principal Scientific Officer (Energy Efficiency & Conservation)	2023-2025	150,000	Development Partner/Donor	3	Relevant IT infrastructure	evelopment of relevant resources for training & capacity building (electronic & printed)
Sub-Total for Activity			250,000				

Outcome 7.3

At least 1 LED bulbs in Rural houses and 2 in urban houses installed by 2025;
Complete phase-out of Incandescent and CFL's from residential sector achieved.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 7.3.1: Introducing regulation to phase-out incandescent lamp immediately (exception for some use)	Department of Energy	2023-2024	100,000	Development Partner/Donor	2	NA	Development of appropriate regulation/Hiring International and Local consultants
Activity 7.3.2: Launch LED distribution program in phases (Phase 1- for urban areas and Phase 2- for rural areas)	TBD	2025-2027	100,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Sub-Total for Activity			200,000				

Outcome 7.4

Retrofitting/replacement of lightings in all Government and Institutional Buildings completed.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 7.4.1: Bulk Procurement of LED lightings for replacement in Government and Institutional Buildings	Finance & Procurement Offer	2024-2027	1,000,000	Development Partner/Donor	3	Procurement of LED bulbs	QA/QC Support/Hiring International and Local consultants
Sub-Total for Activity			1,000,000				

Outcome 7.5

All households and commercial centres have installed LED lightings by year 2030.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 7.5.1: Introduce regulations to phaseout CFL for residential application in 2025 and commercial application by 2027	Principal Scientific Officer (Energy Efficiency & Conservation)	2025-2026	100,000	Development Partner/Donor	2	NA	Development of appropriate regulation/Hiring International and Local consultants
Activity 7.5.2: Start recycling program	Department of Energy and Department of Environmental Protection and Conservation	2025-2030	1,000,000	Development Partner/Donor	10		Design & Development of recycling programme/ Hiring International and Local consultants
Sub-Total for Activity			1,100,000				

Objective 8

Default temperature setting for Air Conditioner.

Outcome 8.1

Users aware of energy saving potential and health benefits associated with operating air conditioners with the thermal comfort range of 24 to 27 degree;
New air-conditioners imported comes with default temperature setting of 24degree Celsius.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 8.1: Introduce guidelines to mandatory regulate the default temperature setting for all government and institutional buildings.	Department of Energy	2023-2024	150,000	Development Partner/Donor	3	NA	Development of relevant guidelines/Hiring International and Local consultants
Activity 8.2: Awareness creation on proper use of air conditioner for residential and commercial application and importers encouraged to import models that comes with default temperature settings	Principal Scientific Officer (Energy Efficiency & Conservation)	2023-2026	100,000	Development Partner/Donor	2	Relevant public campaign infrastructure	Development of relevant resources for awareness raising (electronic & printed)
Sub-Total for Activity			250,000				

Objective 9

To introduce incentivisation for Energy Efficiency (Direct/Indirect).

Outcome 9.1

Cost parity between high energy label and comparatively lower energy label products achieved;
Barriers in upscaling of EE reduced;
Overcome market barriers.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 9.1: Review of import duty levels to introduce dynamic form of import duty based on energy labels and exploring options to provide relaxation in other taxes like VAT	Appliance and labelling officer and Department of Customs and Inland Revenue	2023-2025	150,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Sub-Total for Activity			150,000				

Objective 10

To introduce procurement Standards for Government Buildings and Offices.

Outcome 10.1

Finalization of standard for approval from project board and DoE.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 10.1: Establishment of centralized procurement system for EE equipment's and appliances	Manager Admin, Finance & Procurement	2023-2025	100,000	Development Partner/Donor	2	NA	Development of relevant procurement guidelines/ Hiring International and Local consultants
Activity 10.2: Appointment/ recruitment of accounting officer responsible for all procuring activities	Manager Admin, Finance & Procurement	2023-2026	Recently appointed (Recurrent budget)	Internal	1	NA	Recently appointed by the DoE
Activity 10.3: Consultant hired for reviewing international best practices in sustainable procurement, stock taking of status of sustainable procurement across government organizations, preparing a draft Public Procurement standard	Manager Admin, Finance & Procurement and Manager Energy Security	2024-2025	100,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Sub-Total for Activity			200,000				

Objective 11

Implementation of mandatory Energy Audits for Government, Institutional & Commercial Buildings and DISCOMs.

Outcome 11.1

Walk through and Detailed Energy audit conducted in Government, Institutional and Commercial Buildings;
Energy audit report reviewed and approved by Nodal officer;
M&V done on annual basis to tracking annual energy savings achieved and emission reduction;
Energy system becomes more efficient, reliable and resilient due to reduction in T&D Losses.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 11.1: Recruitment of nodal officer for overseeing Energy audit and Green Building initiatives	Manager Admin, Finance & Procurement and Manager Energy Security	2023-2024	50,000	Internal	1	NA	Development of Job Description
Activity 11.2: Establish Energy Audit and Green Building Unit and Prepare guidelines for implementation of Energy audit scheme	Energy Audit and Green Building team	2023-2024	500,000	Development Partner/Donor	4	Office infrastructure	Hiring International and Local consultants
Activity 11.3: Recruitment of young professionals in Energy audit and Green Building unit	Manager Admin, Finance & Procurement and Manager Energy Security	2024-2025	50,000	Internal	1	NA	Development of Job Description
Activity 11.4: Hiring of Energy auditor firms/ Energy Services Company (ESCO)	Director of Department of Energy	2024-2026	100,000	Development Partner/Donor	2	NA	Hiring International and Local ESCO's
Sub-Total for Activity			700,000				

Outcome 11.2

Retained human capacity due to regular train the trainer course.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 11.2.1: Trainers contracted (international) to develop and deliver training	Manager Admin, Finance & Procurement and Manager Energy Security	2024-2026	250,000	Development Partner/Donor		Training infrastructure	Hiring International and Local consultants
Activity 11.2.2: Training and capacity building for Energy Audit and Green Buildings Team and other interested stakeholders	Principal Scientific Officer (Energy Efficiency & Conservation)	2024-2026	100,000	Development Partner/Donor		Training infrastructure	Hiring International and Local consultants
Sub-Total for Activity			200,000				

Outcome 11.3

Implementation of Energy Efficiency measures.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 11.3.1: Establishment of separate fund and budget for Energy audit	Manager Admin, Finance & Procurement	2025-2027	500,000	Development Partner/Donor	3	NA	Design of funding programme/Hiring International and Local consultants
Sub-Total for Activity			500,000				

Objective 12

To introduce Green Building Interventions.

Outcome 12.1

New government, institutional and commercial buildings comply with ECBC and Green building guidelines;
Retrofit of old buildings to incorporate Green building measures.

Activities	Responsibility (Implementing Agency)	Timeframe	Total Budget (USD)	Budget Source	Human (Numbers)	Equipment Requirements	Technical Requirements
Activity 12.1: Development and Endorsement of a Green building guideline	Energy Audit and Green Building team	2025-2027	150,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Activity 12.2: Development and introduction of ECBC codes	Manager Energy Security	2023-2025	150,000	Development Partner/Donor	2	NA	Hiring International and Local consultants
Activity 12.3: Hiring consultants for development of Green Building rating and certification system	Manager Admin, Finance & Procurement and Manager Energy Security	2025-2027	200,000	Development Partner/Donor	3	NA	Hiring International and Local consultants
Activity 12.4: Publicity through media (e.g., print media, television shows, radio programs, internet) to promote the adoption of green building guidelines	Principal Scientific Officer (Energy Efficiency & Conservation)	2025-2028	250,000	Development Partner/Donor	5	Relevant public campaign infrastructure	Development of relevant resources for awareness raising (electronic & printed)
Sub-Total for Activity			750,000				

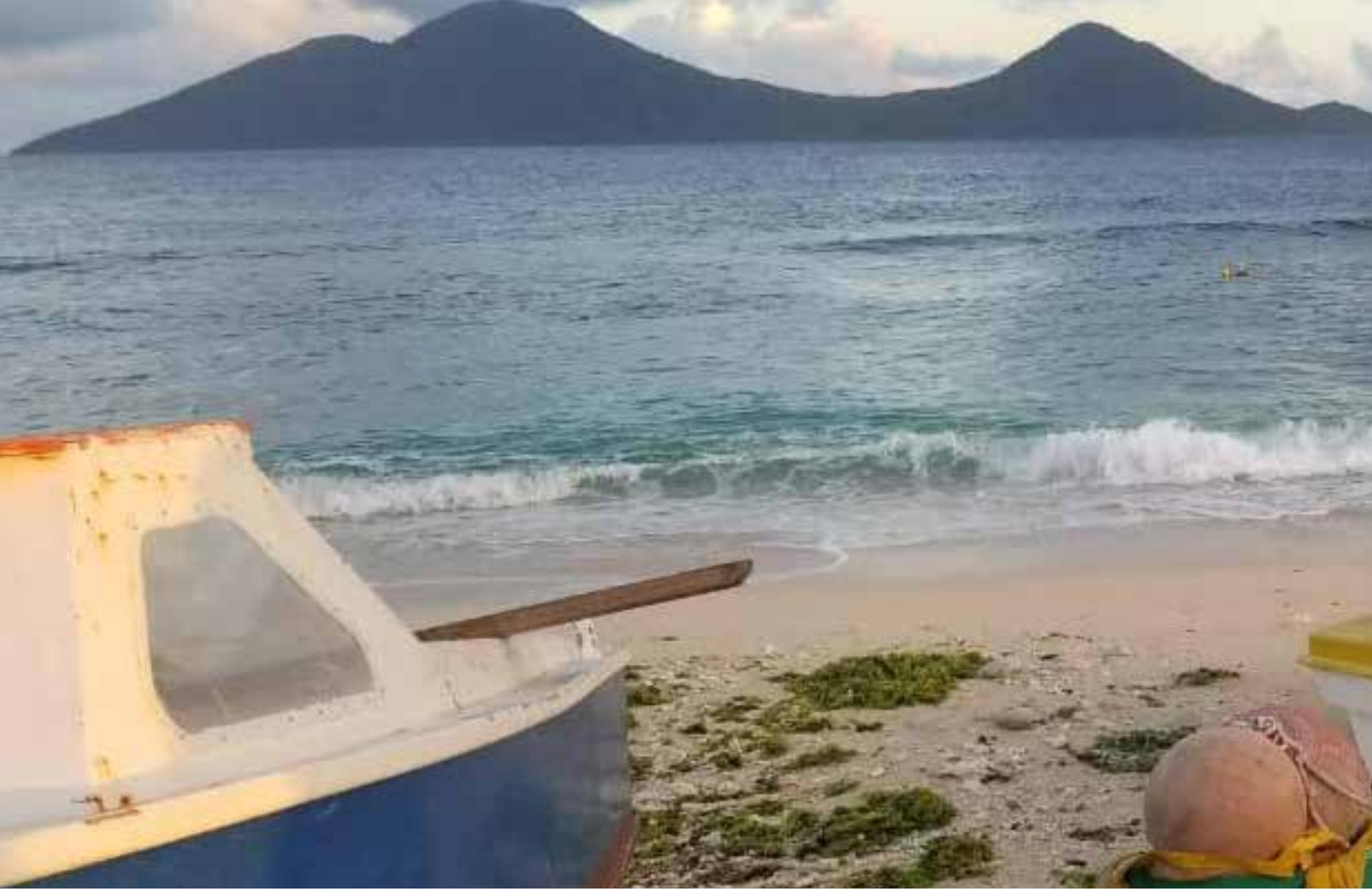
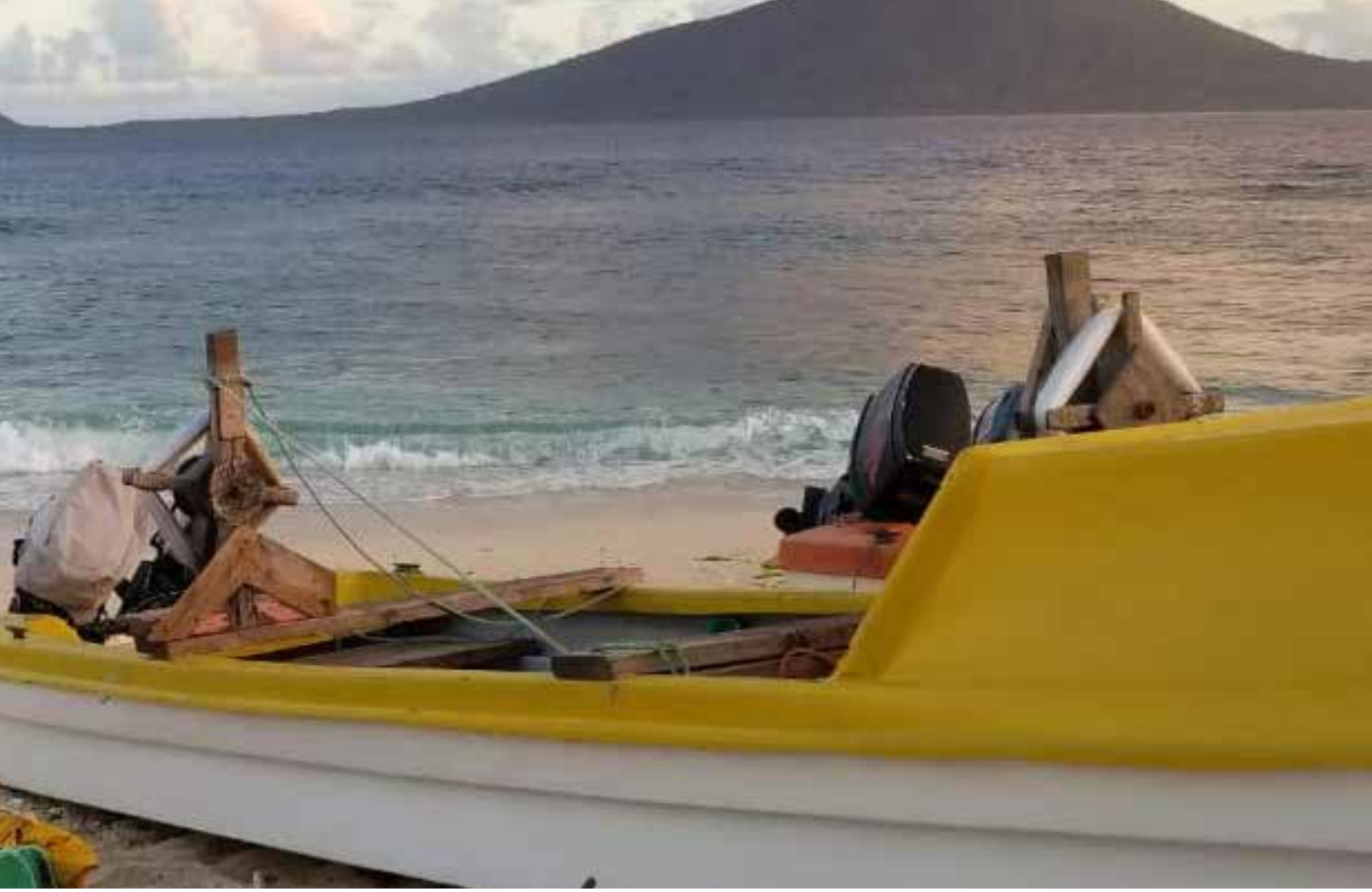


Table 4

Budget Summary (2022-2030)

2022	2023	2024	2025	2026	2027	2028	2029	2030	Total Budget
1,499,500	1,499,500	1,499,500	1,499,500	373,000	373,000	373,000	373,000		7,490,000



Conclusion/Limitations

The key challenges, barriers faced during the analysis, and limitations includes the following:

01 Lack of statistical data/market data, the product/ appliances wise import and sales data were not available, hence it is difficult to quantity/ number of units of high EE and sub-standard imported products, new and refurbished appliances etc.

02 There is a general lack of statistical data in each of the pacific Island countries/pacific region. Similar to Vanuatu, all PICs have limited human resources and the capability to compile import data on any kind of product; none of the PICs has import data per market channels and country of manufacture. Hence, it was difficult to conduct the regional analysis (geographical analysis).

03 Capacity limitation within the DoE on implementation and enforcement of the Act, annual report, analysis, etc.

04 The analysis of the custom data shows mainly the country of origin based on import value, which is not a very reliable and accurate method since the import value share is influenced by exchange rates and equipment costs.

05 Bulk purchase and import: The annual data also cannot be harmonized since import/purchase is also affected due to the bulk purchase of electrical appliances by local wholesalers, retailers or private companies (e.g., hotel sector) in a given year.

06 COVID-19 restrictions hampered the detailed field survey and limited the stakeholder consultation.

References

The key challenges, barriers faced during the analysis, and limitations includes the following:

UJALA India's UJALA Story – Energy Efficient Prosperity" – by Energy Efficiency Services Limited (EESL), https://eeslindia.org/img/uajala/pdf/UJALA_Case_Studies_1.pdf

Energy Efficiency Services Limited (EESL), India, https://eeslindia.org/en/home/

Guide to Building Sustainable Testing Capacity in ECOWAS (2021), https://www.clasp.ngo/wp-content/uploads/2021/05/ECOWAS-Sustainable-Testing-Capacity-Guide-Feb-2021.pdf

International Energy Agency (IEA) Report on Energy Efficiency:2021, https://www.iea.org/reports/energy-efficiency-2021

Achievements of Energy Efficiency Appliance and Equipment Standards and Labelling Programmes, IEA/4E TCP (2021), https://www.iea.org/reports/achievements-of-energy-efficiency-appliance-and-equipment-standards-and-labelling-programmes

Fourth meeting of the Conference of the Parties to the Minamata Convention on Mercury (COP-4) - Second segment, https://www.mercuryconvention.org/en/meetings/cop4

ASHRAE Standard 55-2013 Thermal Environmental Conditions for Human Occupancy

BEE Notifies New Energy Performance Standards for Air Conditioners, Ministry of Power, India (2020), https://beeindia.gov.in/sites/default/files/press_releases/FAQ.pdf

Annexure 1: Unnat Jyoti by Affordable LEDs for All (UJALA)

India's launched Unnat Jyoti by Affordable LEDs for All (UJALA) Programme on 5th January 2015 to provide energy efficient LED bulbs to domestic consumers at an affordable price. UJALA is the world's largest lighting replacement programme and world's largest zero-subsidy domestic LED bulb programme. The programme is implemented by Energy Efficiency Services Limited (EESL), a super Energy Service Company (ESCO) under the Ministry of Power, Government of India. By, 2019, UJALA aims to replace 770 million old wasteful lamps with modern, efficient and longer lasting LED lamps.

The salient features of the UJALA programme are as follows:

01 Increase the demand of LED lights by aggregating requirements across the country and provide economies of scale to manufacturers through regular bulk procurement, which helped the manufacturers to reduce the cost of LED bulbs not only for UJALA program but for retail segment as well.

02 Promote the use of the most efficient lighting technology at affordable rates to domestic consumers which benefits them by way of reduced energy bill while at the same time improving their quality of life through better illumination.

03 Distribution of 368.66 million (as on 29.08.2022) LED bulbs resulted in energy saving of 47,878 million units of electricity per annum, peak demand reduction of 9,586 MW, Cost savings of INR 19,151 Cr and 38.78 million tCO_2 emission reduction annually.

04 The procurement price of LED bulb has dropped significantly due to aggregation of demand from INR 310 (Jan. 2014) to INR 39.90 (August 2019).

Under the UJALA scheme, the government offers two payment options to every grid-connected consumer having a metered connection from their respective Electricity Distribution Company purchase LED bulbs. In the first alternative, consumers can choose to pay the whole cost upfront, and in the second choice, consumers can opt for the 'pay as you wish/on-bill financing' programme, wherein the program offered customers with the choice to pay initial cost of US$ 0.15 (Rs. 10) per bulb and the remaining balance was recovered through a monthly electricity bill of US$ 0.15 (Rs. 10) per month. The programme allowed customers with an opportunity to buy up to eight LED bulbs on a single electricity bill. Moreover, the LED bulbs generally have 4-5 years of life. However, in case of any defect, EESL provides free of cost replacement for all LED bulbs for one year. Under the UJALA scheme, 20W LED tube lights and BEE 5-star rated energy efficient fans are also distributed to the consumers.

Distribution of Bulbs

The bulbs are distributed through special counters set up at designated places in the city. The location of counters is made available through the awareness drive (leaflets, posters, advertisements etc) to inform the consumers.

How the model works

01 EESL distributes LED bulbs to households at 40 % of market price

02 Total upfront investment and risk coverage borne by EESL

03 Electricity Distribution Companies (DISCOM) pays EESL from actual energy savings over 5 years

04 No subsidy required from government

05 No impact on electricity tariffs

Benefits from the Programme

01 Improving People's Quality of Life

02 Reducing bulb purchases

03 Affordable LED for everyone

04 Employment

05 UJALA is cheaper than electricity

06 Contributing to Climate Targets

07 Fastest Growing Led Market in The World

08 Domestic LED market on Rise

09 High Quality Manufacturing

Annexure 2: EESL- Energy Efficiency Services Limited

Founded in 2009, Energy Efficiency Services Limited (EESL) is a Super Energy Service Company (ESCO), which enables consumers, industries and governments to effectively manage their energy needs through energy efficient technologies. EESL is promoted by Ministry of Power, Government of India as a Joint Venture of four reputed public- sector undertakings NTPC Limited, Power Finance Corporation Limited, REC Limited and POWERGRID Corporation of India Limited.

EESL is implementing the world's largest energy efficiency portfolio across sectors like lighting, buildings, industry electric mobility, smart metering, agriculture, etc. at an enormous scale. EESL focusses on solution-driven innovation with no subsidy or capital expenditure (CAPEX). It is able to do so using its Pay-As-You-Save (PAYS) model, which obviates the need of any upfront capital investment by the consumer. The entire investment by EESL is recovered through monetised energy savings over a scheduled project period. EESL's energy efficiency solutions have saved India over 47 billion kWh energy annually while reducing 36.5 million tCO_2 emissions.

Business Model

EESL has designed an innovative business model that is transparent, scalable, flexible, and can seamlessly embrace different and emerging technologies in a manner that incentivises all stakeholders. The transparency and flexibility of the business model obviates the need for public funds as an enabler, while delivering outcomes in a time-bound manner. The business model has the power to unlock demand in sectors where none has existed before. By deploying this business model, EESL drives large scale initiatives, creating a market for transformative, future-ready solutions. EESL's business model's key pillars are Innovation, Transformation and Transparency.

More Innovation

01 Future-ready solutions with cutting-edge technology

02 Self-sustaining business model

03 Leaders in energy efficiency

More Transformation

01 Creating new markets

02 Affordability and accessibility of pioneering technology

More Transparency

01 IT-enabled accountability

02 Performance-based outcomes

It has pioneered innovative business approaches to successfully roll-out large-scale programs that allow for incentive alignment across the value chain and rapidly drive transformative impact. EESL aims to leverage this implementation experience and explore new opportunities in overseas market for diversification of its portfolio.

Global Presence

As on date, EESL operates in UK, Ireland, Asia-Pacific (Thailand, Malaysia, Vietnam, Bangladesh, Sri Lanka, Maldives, Cambodia, Myanmar, Nepal), Middle East (UAE and Saudi Arabia)

MINISTRY OF CLIMATE CHANGE
GOVERNMENT OF REPUBLIC OF VANUATU