



# VANUATU LOW EMISSIONS DEVELOPMENT STRATEGY



DECEMBER 2022



# Vanuatu



Map source: The Pacific Community, 2022

# EXECUTIVE SUMMARY

Vanuatu is unique among the Paris Agreement parties that have produced Low Emissions Development Strategies (LEDS) and Long-Term Strategies (LTS). Vanuatu is already net negative for greenhouse gas (GHG) emissions. Vanuatu's large forest area removes more than 10 times the GHG emissions generated from human activity.

Yet, Vanuatu's own pathway of reducing emissions demonstrates the commitment it seeks at a global level to address climate change. The guiding vision for the LEDS is the following: Reduce emissions across all sectors in a way that supports resilient, sustainable, and equitable growth for its people.

The Vanuatu LEDS provides sector by sector review of alignment with the vision for reduced emissions mitigation, resilience, and adaptation. It assists mainstreaming of emissions mitigation and adaptation in key sectors: energy, transport, waste management, livestock, forestry and agriculture, and water and health. It brings new insights, attention, and engagement with strategic policy challenges and in doing so, identifies new and complementary actions to those actions described in short- and medium-term strategies.

Vanuatu's energy sector has ambitious mitigation targets to 2030, as described in the National Energy Road Map (NERM) and Nationally Determined Contribution (NDC). For the most part, these strategies and targets align with the vision of the LEDS to reduce emissions through to 2050. Additional actions are needed to meet the LEDS vision, including enhancing existing programmes to meet the electricity demand outside of grid concession areas, promoting a clean cooking transition, scaling up coconut oil production and improving climate resilience and adaptation planning in the energy sector.

Vanuatu has efficiency targets for the transport sector which will reduce emissions. This is a step in the right direction towards the LEDS vision of reduced emissions, but further steps can be taken by developing a national transport policy and accompanying institutional arrangements which consider objectives for long-term emissions reduction and climate resilience. Additional steps include better coordinated Electric Vehicle (EV) pilots, implementing vehicle and fuel standards, and industry skills development for the future of EVs in the country.

The waste sector, including municipal solid waste and wastewater, is a driver of emissions as well as a source of vulnerability in natural disasters. The waste sector is a potential source of energy at household or industry scales. While the waste sector and emissions policy frameworks align with the LEDS vision, additional steps which would support waste sector transition include scaling up biogas production and consumption in urban and rural areas, as well as increasing waste management awareness and support cultural norms of safe waste management.

The livestock sector is the largest single contributor to Vanuatu's GHG emissions. The ambitions to grow this sector must consider other national ambitions to reduce emissions. There is alignment between sector strategy and climate strategy to raise productivity in the livestock sector. Higher productivity systems have lower emissions for the same herd size. Further engagement with the livestock sector is needed to understand and address climate hazards, vulnerability, resilience, and adaptation.

Land uses including forestry and agriculture are the key to Vanuatu's long-term emissions balance and a potential source of carbon credit revenue. But Vanuatu's forests are under pressure from expansion of agriculture, timber and fuel wood gathering, and settlements. Land use policy in both urban and agriculture sector settings offers opportunity to increase resilience and adaptation. Further actions can be taken by implementing a REDD+ forest strategy, submit the Forest Reference Level to UNFCCC, and develop a consolidated programme to access forest carbon markets. For agriculture, Vanuatu can mainstream climate smart agriculture (CSA), increase land use efficiency through integrated practices and develop a framework for land use planning and climate response in the context of Vanuatu custom land practices.

For both water and health sectors, Vanuatu recognises the great vulnerability due to negative impacts on secure access to safe water as well as an increased burden of disease. To meet the LEDSD vision, Vanuatu can enhance mitigation efforts in the water sector through inclusion of priorities and frameworks in sector strategies, as well as further develop adaptation plans for the water and health sectors through integration of updated climate change projections into sector plans and strategies.

The long-term actions identified in the LEDSD are summarised in Table 1 (below). Their scope and costs, as well as needs for international assistance, will be refined through further policy development. With further refinement and endorsement, the actions identified in this long-term strategy will feature in future iterations of short- and medium-term strategies. Existing institutional structures in the Government of Vanuatu will retain oversight of domestic policy development and implementation.

**Table 1: Summary of long-term actions**

#	Sector	Action	Action type	Implementation period
1	Electricity and energy use	Enhancing existing programmes to meet the growing electricity demand outside of grid concession areas.	Scaling up programmes	2025–2050
2		Promoting a clean cooking transition to save money, the environment, and lives.	Technology change	2025–2040
3		Scaling up coconut oil production to achieve NERM and NDC targets of renewable energy supply.	Policy and institutional change	2025–2050
4		Bolstering climate resilient and adaptation planning in energy sector.	Study	2025–2030
5	Transport	Develop a national transport policy and accompanying institutional arrangements.	Policy and institutional change	2025–2030
6		Develop national vehicle and fuel standards.	Policy and institutional change	2025–2025
7		Coordinated electric mobility pilots.	Scaling up programmes	2025–2040
8		Green technology skills plan for Vanuatu.	Scaling up programmes	2025–2040
9	Waste	Scaling up biogas production and consumption.	Scaling up programmes	2025–2040
10		Increase waste management awareness and support cultural norms of safe waste management.	Public communication	2025–2040
11	Livestock	Introduce livestock sector emissions target and strategy.	Policy and institutional change	2030–2050
12		Livestock sector analysis of hazards, vulnerability, resilience, and adaptation options.	Study	2025–2050
13	Forestry, agriculture, and land use	Implement the REDD+ forest strategy and submit the Forest Reference Level to UNFCCC.	Policy and institutional change	2025–2050
14		Consolidated programme to access forest carbon markets.	Policy and institutional change	2025–2040
15		Mainstream climate smart agriculture (CSA) strategy to address changing climate and sustainable agriculture.	Scaling up programmes	2025–2040
16		Increasing land use efficiency through integrated practices.	Policy and institutional change	2025–2040
17		Framework for land use planning and climate response in the context of Vanuatu custom land practices.	Policy and institutional change	2025–2030
18	Water and public health	Enhance mitigation efforts in the water sector through inclusion of priorities and frameworks in sector strategies.	Policy and institutional change	2025–2030
19		Further develop adaptation plans in water and health sector plans and strategies.	Policy and institutional change	2025–2030





# INTRODUCTION

- 1.1. Purpose of Vanuatu's LEDS
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- 1.3 Definitions

# 01

## 1.1 Purpose of Vanuatu's LEDS

### 1.1.1 International purpose

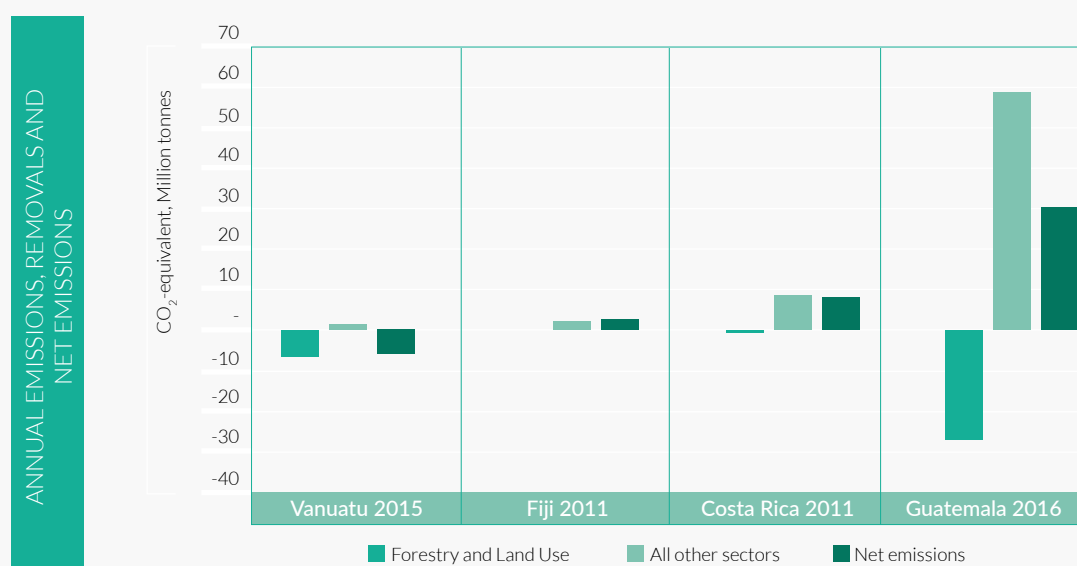
The Paris Agreement sets out a global commitment to limiting warming to well below 2° C while pursuing efforts to limited global temperature rise to 1.5° C. The Republic of Vanuatu signed the Paris Agreement on 22 April 2016 and deposited its instrument of ratification on 21 September 2016. The Government of the Republic of Vanuatu is fully committed to effective and transparent implementation of the Agreement.

Vanuatu submits this LEDS to the UNFCCC and in doing so, fulfils one of the requests of the Paris Agreement. Article 4/para 19<sup>1</sup> invites countries to formulate and communicate long-term low GHG emissions development strategies in line with the global goals to limit the temperature to 1.5° C above pre-industrial levels.

To date, over 50 LEDS and LTS have been produced by a range of developed and developing countries. These strategies reflect a variety of national priorities and circumstances that must be navigated to achieve the global goals, and especially, a credible pathway to net zero by 2050. Other goals include increasing the ability to adapt to a changing climate, increasing finance flows, and pursuing sustainable development objectives.

Vanuatu submits this LEDS to the UNFCCC in the unique position of net negative emissions already. The relative weighting of Vanuatu's large forest sector carbon removals as against smaller human-activity associated emissions means that Vanuatu has net negative emissions. (Figure 1)

**Figure 1: Annual emissions, removals, and net emissions, noting the last GHG inventory in 2015 showed Vanuatu had a net negative emissions balance**



The existential threat of climate change is taken seriously by Vanuatu. In May 2022 the Parliament of the Republic of Vanuatu declared a climate emergency and responded with domestic and international climate actions. Through international engagement, Vanuatu's seeks increased ambition under the Paris Agreement. Vanuatu is seeking advice in emerging areas of international law on climate change. Furthermore, Vanuatu is currently leading a global movement for an Advisory Opinion from the International Court of Justice on the obligations of States under international law to protect the rights of present and future generations against the adverse effects of climate change.

<sup>1</sup> Article 4, Paragraph 19 of the Paris Agreement states, 'All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'.

Through publication of the LEDS, Vanuatu is advocating for greater climate ambition from other global parties and more credible pathways to net zero emissions. Vanuatu's own pathway of sustained net negative emissions in this LEDS demonstrates the commitment needed at a global level.

Vanuatu's most recently updated NDC, published in August 2022, reflects a broadening scope of ambition and commitment to assistance with adaptation and loss and damage. Through publication of the LEDS, Vanuatu is affirming its priorities, capabilities and needs most recently set out in its NDC.

### 1.1.2 Domestic purpose

As a whole of economy strategy, the Vanuatu LEDS supports and complements strategic policy such as the National Sustainable Development Plan (NSDP) 2016 to 2030. Vanuatu's NSDP serves as the country's highest-level policy framework, comprised of 'three pillars' of sustainable development, encompassing society, environment, and the economy. In line with the three pillars, the plan outlines 15 sustainable development goals. The third target of the environment pillar (ENV 3) addresses the climate links stating that they seek to build, 'A strong and resilient nation in the face of climate change and disaster risks posed by natural and man-made hazards.' The NSDP's accompanying monitoring and evaluation framework outlines how government measures progress towards reaching sustainable development goals, including goals such as mainstreaming climate change and disaster risk in public policies, budget, and legislation by 2030. Though focused on emissions and adaptation, there is an intention to support NSDP goals and implementation where applicable.

The Vanuatu LEDS complements domestic sector strategies. Many domestic sector strategies have five- or ten-year implementation periods. Through synthesis of strategies, identification of gaps, and long-term challenges, the LEDS provides an opportunity to add a low emissions and climate resilient direction to sector development. The refined scope and costs of implementation of the long-term actions, and the needs for international assistance, will be developed through further domestic policy development. With further refinement and endorsement of the LEDS, the actions identified in the long-term strategy will feature in future iterations of both short- and medium-term strategies.

The LEDS communication to the international climate finance institutions and networks offers an opportunity to direct climate funds towards sectors with higher emissions and adaptation impact. As a whole of economy strategy, the Vanuatu LEDS provides insight into transformative changes in energy use, emissions and adaptative capacity.

## 1.2 National government context

### 1.2.1 Form of government

Vanuatu is a constitutional democracy. The Prime Minister is the head of government and is elected by the Parliament, comprised of 52 members. At time of publication, the most recent election was held on 13 October 2022.

The Prime Minister appoints a Council of Ministers, which functions as the head of the executive branch of government. The President is the ceremonial Head of State and is elected by Parliament and the Presidents of the six local government councils (provinces). The Malvatumauri (National Council of Chiefs) is elected by District Councils of Chiefs and advises the government in a range of matters.

### 1.2.2 National development priorities

There are several strategic policies which inform, support, and are supported by a LEDS. The strategic policies include the following:

- Vanuatu National Sustainable Development Plan 2016–2030 The People's Plan: adopted the vision of a stable, sustainable and prosperous Vanuatu, which is to be implemented through

15 goals and measured by targets and indicators. The Plan is supported by a National Planning Framework and Monitoring and Evaluation Framework, which mandates the central role of the Department of Strategic Policy, Planning, and Aid Coordination.

- Updated the National Energy Road Map (NERM) 2016–2030 and the Implementation Road Map: adopted the vision to energise 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. The five energy sector priorities were access, petroleum supply, affordability, energy security, and climate change. There were 12 indicators included in the NERM and NERM-IP.
- Vanuatu's Climate Change and Disaster Risk Reduction Policy (CCDRR) 2016–2030: this Policy enunciated the vision Vanuatu is a resilient community, environment, and economy. The Policy developed six principles of accountability, sustainability, equity, community focus, collaboration, and innovation. The Policy's objective is to provide the framework for mainstreaming climate change and disaster risk reduction into sustainable development processes.

Relevant sector policies are described in the subsequent sections.

### 1.2.3 Climate action is a priority

Climate change action is a priority for the Government of Vanuatu. In May 2022, the National Parliament unanimously declared a climate emergency. Vanuatu is a leading global voice for an advisory opinion on climate change responsibilities from the International Court of Justice.

Though methodologies vary, Vanuatu is usually rated in the highest quartile for a country's exposure to climate risk. The Germanwatch 2021 paper using MunichRe data ranked Vanuatu 37 out of 180 countries for combined loss of life and economic damage (GDP) for the period 2000 to 2019. Several Category 5 cyclones have struck Vanuatu in recent years, including Cyclone Pam (2015) and Cyclone Harold (2020).

## 1.3 Definitions

This document focuses on climate change mitigation and adaptation. The definitions contained within Vanuatu's *Meteorology, Geological Hazards, and Climate Change Act 2016*<sup>2</sup> are the following:

**'Climate change adaptation'** is defined as a response to the impacts of climate change, including: (a) addressing adverse effects arising from climate change; or (b) the possibility of change on any part of the environment (such as the water resources and rainfall, coastal and foreshore areas, reefs and marine habitats); or (c) from harmful weather events and any other event or impact on the environment or human health.

**'Climate change mitigation'** means activities relating to the reduction of GHG emissions.

The definitions contained within Vanuatu's National Sustainable Development Plan<sup>3</sup> are the following:

**'Sustainable'** is defined as being able to be maintained at a certain rate or level, and not adversely impacting future generations or our environment. Refers principally to ensuring resilience and the effective long-term management of our natural, financial, and human resources.

The definitions contained within Vanuatu's Climate Change and Disaster Risk Reduction Policy<sup>4</sup> are the following:

**'Resilient development'** is defined to include activities that enable and strengthen capacities to absorb and quickly bounce back from climate and/or disaster shocks and stresses.

2 Republic of Vanuatu, *Meteorology, Geological Hazards, and Climate Change Act No. 25 of 2016*: <https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/105148/128518/F-500801273/VUT105148.pdf>

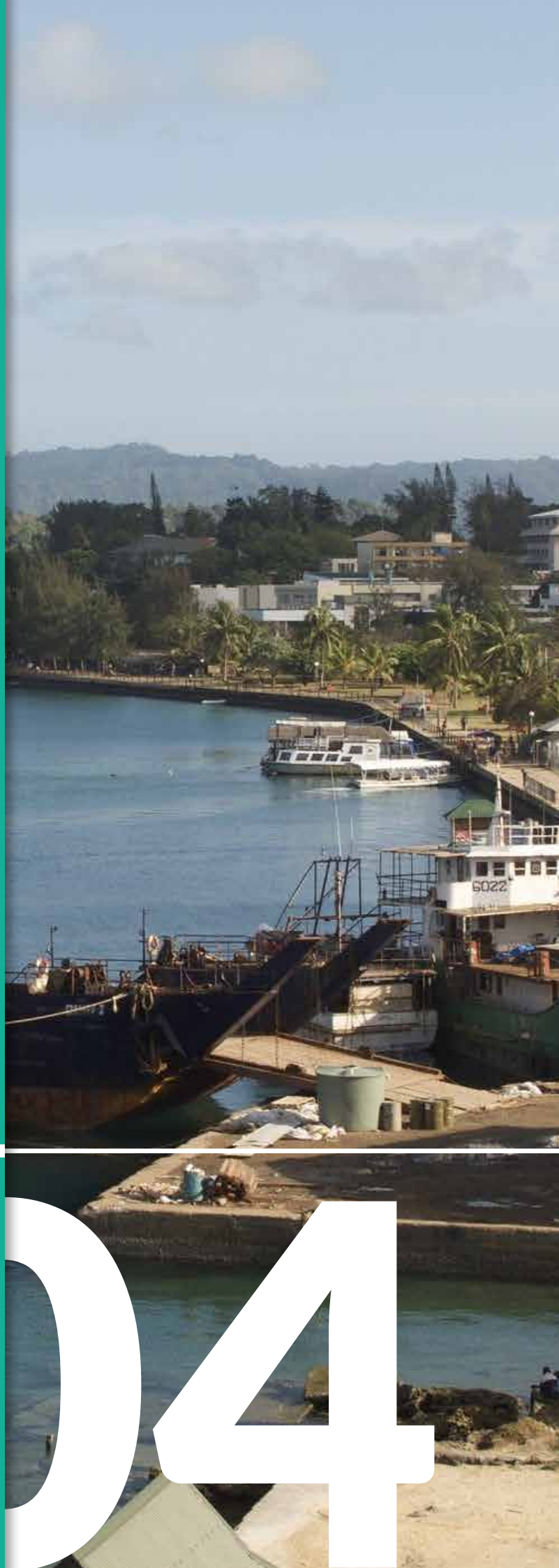
3 Government of Vanuatu, *Vanuatu 2030: People's Plan, National Sustainable Development Plan 2016–2030 (NSDP) (2016)*: <https://www.govvu/images/publications/Vanuatu2030-EN-FINAL-sf.pdf>

4 Government of Vanuatu, *National Climate Change and Disaster Risk Reduction (CCDRR) Policy 2022–2030, Second Edition*: <https://www.nab.vu/sites/default/files/documents/National%20CCDRR%20Policy%202022-2030.pdf>



# PUTTING SECTORS ON THE PATHWAY TO A LOW EMISSIONS RESILIENT FUTURE

- 4.1 Approach
- 4.2 Electricity generation and stationary energy use
- 4.3 Transport
- 4.4 Waste
- 4.5 Livestock
- 4.6 Forestry, agriculture, and land use
- 4.7 Water and public health



# 04

## 4.1 Approach

The LEDS vision is to *reduce emissions across all sectors in a way that supports resilient, sustainable, and equitable growth for Vanuatu's people.*

Charged with this vision, the LEDS consultation and analysis sought to assess progress towards this pathway, with focus on emissions and adaptation. Assessment followed the sector ambitions, policy framework, and progress needed to achieve the low emissions and resilient future. Noting the purpose of long-term strategies under the Paris Agreement, analysis was consolidated within sectors that reflect emissions sources and climate impacts relevant to the vision. Particular attention was given the vision to reduce emissions across all sectors, which was interpreted as absolute emissions reduction from baseline (2020). The sectors considered were:

1. Electricity generation and stationary energy use
2. Transport
3. Waste management
4. Livestock
5. Forestry and land use
6. Water and health

The selection of these sectors does not reflect the ambitions of wider engagement of Vanuatu in global governance. Dimensions of global climate justice and reparations for loss and damage are not explicitly considered in the domestic policy analysis that is undertaken through the LEDS.

As a long-term strategy to 2050, the LEDS actions are intended to be additional and complementary to existing sector strategies and NDC. The LEDS supports the implementation of NDC actions, though it may recognise gaps and needs beyond the 2030 horizon of the NDC. The scope and costs of implementation of the identified long-term actions, and the needs for international assistance, will be refined through further policy development. With further refinement and endorsement, the actions identified in this long-term strategy will feature in future iterations of both short- and medium-term strategies.

Note the 'summary assessment / traffic light' system utilised below provides a simple, high-level overview of a given sector's alignment to the low emissions (LEDS) pathway, looking at both: a) current policy (e.g. sector policy, strategies, or actions) and b) current emissions trajectory and adaptive capacity (e.g. increasing, decreasing, stabilising, or unclear). The timeline for the 'traffic light' assessment is to 2050, noting current NDC policy targets only extend to 2030, reflecting the need for an 'additional interventions' section to provide actions in addition to existing short- and medium-term policies.

## 4.2 Electricity generation and stationary energy use

### 4.2.1 Integrated context assessment and direction from current policy and national consultations

Vanuatu's electricity sector has been the focus of development and emissions reductions priorities. Targets for the electricity sector are the focus for the Updated National Energy Road Map (NERM) 2016-2030, the NERM Implementation Plan (NERM-IP), the Nationally Determined Contribution (initial 2016, enhanced in 2020, and further revised in 2022). The key NERM and NDC policy targets for electricity and stationary energy are shown in Table 8 below.

**Table 8: Relevant NERM and NDC policy targets for electricity and stationary energy**

National Energy Road Map (NERM)		2030 target
<b>Indicator 1</b>	Increase electricity access by households in concession areas	100%
<b>Indicator 2</b>	Increase electricity access by households in off-grid areas	100%
<b>Indicator 3</b>	Increase electricity access by public institutions (on- and off-grid)	100%
<b>Indicator 4</b>	Improve the efficiency of diesel generation, % reduction in g/kWh fuel use from 2012	20%
<b>Indicator 5</b>	Reduce the cost of distributing petroleum costs in Vanuatu	-15%
<b>Indicator 6</b>	Increase the proportion of electricity generated from renewable energy sources	100%
<b>Indicator 7</b>	Improve electricity sector end-use efficiency, % saving on BAU projection	14%
<b>Indicator 9</b>	Improve biomass end use (cooking and drying) efficiency	14%
<b>Indicator 10</b>	Ensure all energy infrastructure projects comply with government and donor environmental and social safeguard requirements	100%
<b>Indicator 11</b>	Increase the proportion of electricity generated from biofuels	14%
<b>Indicator 12</b>	Increase renewable electricity use by rural tourism bungalows	65%
<b>Enhanced NDC 2020</b>		<b>Target</b>
<b>NDC Action 1 (existing measure)</b>	Renewable energy capacity addition. To approach 100% renewable energy in the electricity subsector contingent upon appropriate financial and technical support.	100%
<b>NDC Action 2 (existing measure)</b>	Substitute and/or replacement fossil fuels with coconut (copra) oil-based electricity generation	100%

These policy targets fall under the strategic areas of the NERM: accessible energy, affordable energy, secure and reliable energy, sustainable energy, and green growth. The targets are a mix of expanding energy access, increasing end use efficiency, as well as altering electricity supply and energy sources.

Supporting implementation of the NERM is the independently established National Green Energy Fund (NGEF). The NGEF directs concessional finance towards achieving NERM goals, particularly in off-grid (out of concession) areas.

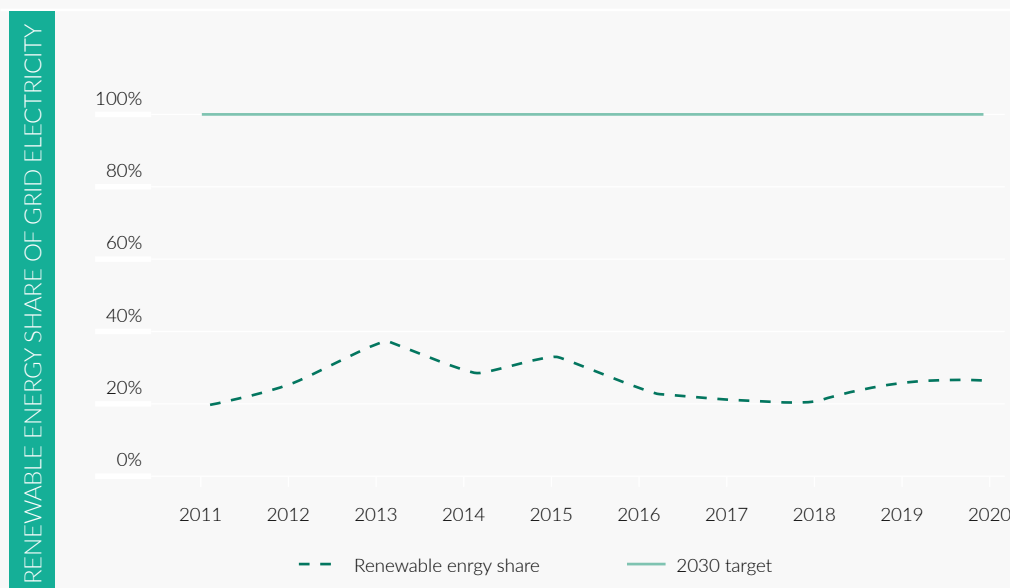
In addition to NERM and NDC targets, there are a range of donor and utility funded infrastructure options and plans that align with the LEDS vision for the energy sector. The World Bank-managed Vanuatu Rural Electrification Project (VREP) Phase I and II is deploying solar resources at the scale to generate about 0.5 to 1 GWh per year. Japan International Cooperation Agency is supporting the extension to Sarakata hydroelectric scheme<sup>29</sup>. UNELCO, the monopoly utility for Efate, produced the Efate Energy Road Map 2018–2030<sup>30</sup> as a complementary plan to reach NERM goals for 100% renewable electricity.

When reviewed by stakeholders, the near-term policy targets set out in the NERM and NDC were considered to align with the LEDS vision. Some stakeholders raised the challenges of implementation of the policy targets. Particularly for renewable energy sourcing of electricity (NERM indicator 6 and NDC Action 1), stakeholders noted the lagging rates of renewable energy integration into grid electricity (Figure 20).

29 JICA: [https://www.jica.go.jp/english/news/press/2021/20220208\\_30.html](https://www.jica.go.jp/english/news/press/2021/20220208_30.html)

30 UNELCO, Roadmap 2030 for Vanuatu: <https://www.unelco.engie.com/en/commitments/roadmap2030eng>

**Figure 20: RE share of electricity generation for Efate, Luganville, Lakatoro, and Lenakal grids (URA, 2017 and 2021)**



Further consultation with stakeholders through development of the LEDS recognised evolving technology options and costs since the NERM was published, including advances in affordable small-scale biogas, the growing uptake of integrated solar-appliance systems (such as solar-powered freezers) and new developments in pico- and micro-hydroelectric systems. Consultation with the private solar industry indicated that private purchases of solar and solar battery systems through off-the-shelf retail or installation by an electrical contractor were bringing in a similar scale of capacity to the World Bank-funded VREP initiative (between 500 kW and 1 MW capacity of photovoltaic cells).

Resilience and climate adaptation requirements of the energy sector could be more meaningfully explored in future studies. Stakeholders identified the need to integrate resilience and adaptation needs into infrastructure investment, design, and construction. Better design and construction will lower costs and risks of subsequent disaster events. Vanuatu's Revised and Enhanced NDC (2022) identifies the need for climate proofing of infrastructure through design and construction (adaptation action A67). The increased intensity of cyclones, even if less frequent, would increase the need to buttress the energy infrastructure and access to ensure climate proofing. Consideration of the energy sector's resilience has recently been brought to the fore in Tonga following the Hunga Ha'apai eruption in May 2022.

Future studies could include assessment of the vulnerability of the tourism sector accommodation and services, inclusive of energy usage and emissions from tourism-related assets and the goods and services provided. The ongoing GCF Van-KIRAP<sup>31</sup> project includes tourism as a priority sector, including development of climate information services (CIS) tools for sector end-users and stakeholders. Consultations with government stakeholders suggest near-term plans to begin new, annual primary data collection of tourism sector businesses and their goods and services (potentially including emissions intensity and energy usage of assets).

It was identified during stakeholder consultations that different projects and donors use a variety of different data and risk methodologies to assess vulnerability. A notable example of this project-specific approach is the recently approved GCF Vanuatu Community-Based Climate Resilience Project (VCCRP)<sup>32</sup>, the design of which included development of a national vulnerability assessment at the

31 Green Climate Fund Project FP035 – *Climate Information Services for Resilient Development Planning in Vanuatu (Van-CIS-RDP)*. Information about the project can be found here: <https://www.greenclimate.fund/project/fp035>

32 Green Climate Fund Project FP184 – *Vanuatu Community-Based Climate Resilience Project (VCCRP)*. Information about the project can be found here: <https://www.greenclimate.fund/project/fp184>



sub-national level (Area Councils) which will only be applicable for this one investment, reflecting the significant resources involved in individual approaches to vulnerability assessments and the need for greater alignment and standardisation with all stakeholders. This should be resolved in part following operationalisation of the National Vulnerability Assessment Framework (NVAF) and development of a National Adaptation Plan (NAP), such as consistent risk mapping for the country and harmonisation of language and metrics to assess impact and aid in investment prioritisation, as well as reduce overall transaction costs for project developers.

#### 4.2.2 Summary assessment

The emissions policy and targets for the electricity generation sector and stationary energy are in line with the 2050 LEDS vision for Vanuatu. The 2030 targets of renewable energy and the actions underway support equitable energy access, sustainability, and low emissions. There is recognised tasking and clear strategies from the Department of Energy and National Green Energy Fund, as well as external energy projects and programmes.

Implementation of the emissions policy and targets remains an area of further attention. There are currently low rates of renewable energy penetration in grid electricity. The low base serves to increase the scale of systems change needed to reach the 2030 targets of 100% renewable energy (even 'approaching 100% renewable').

The current policy and targets for resilience and adaptation in the electricity generation sector and stationary energy are less clear and forward looking to the impacts of climate change. The need to appraise climate proofing in infrastructure is a recognised priority for the Government of Vanuatu in the Revised and Enhanced NDC (2022) as well as the Vanuatu Infrastructure Strategic Investment Plan 2015–2024<sup>33</sup>, but this could be further mainstreamed into energy sector planning, policy, and regulations.

The actual energy infrastructure resilience to climate change is uncertain at this time. Energy infrastructure sustained some damaged in recent category 5 tropical cyclones (TC Pam in 2015 and TC Harold in 2020) but the impact on generation assets (wind farms, solar farms, hydroelectric schemes, and diesel generators) have not been catastrophic. An industry-supported vulnerability assessment would assist to clarify whether resilience gaps and adaptation needs for the energy sector have been affected.

**Table 9: Assessment summary for the energy sector**

	Policy, strategy and actions alignment to the LEDS vision	Current emissions trajectory and adaptive capacity
<b>Emissions reductions</b>	●	●
<b>Resilience and adaptation planning</b>	●	●
<b>Key</b>	<ul style="list-style-type: none"> <li>● Green = Clear alignment for emissions reductions or adaptation and resilience</li> <li>● Yellow = Unclear alignment</li> <li>● Red = No relevant policy or strategies</li> </ul>	<ul style="list-style-type: none"> <li>● Green = decreasing emissions level or increasing adaptive capacity</li> <li>● Yellow = uncertain or stable emissions level or adaptive capacity</li> <li>● Red = increasing emissions or decreasing adaptive capacity</li> </ul>

33 Vanuatu Infrastructure Strategic Investment Plan (VISIP) 2015–2024: [https://www.nab.vu/sites/default/files/documents/119-visip\\_2015-2024\\_report\\_web.pdf](https://www.nab.vu/sites/default/files/documents/119-visip_2015-2024_report_web.pdf)

### 4.2.3 Additional interventions towards a low emissions climate resilient future

Vanuatu has ambitious energy sector targets to 2030 as described in the NERM and NDC. For the most part, they align with the vision of the LEDS to reduce emissions through to 2050. Some additional actions are needed to meet the LEDS vision to 2050:

1. Enhancing existing programmes to meet the growing electricity demand outside of grid concession areas. Existing programmes provide a strong basis to extend low emissions and climate resilient energy supply. Under the LEDS pathway, renewable energy electricity sources of wind, solar, and hydro are deployed to supply electricity in off-grid areas. In the BAU and current NDC pathways, these are supplied by an equal mix of solar and thermal (diesel generators).
2. Promoting a clean cooking transition to save money, the environment, and lives. Cooking on open fires in the majority of rural and urban areas is consuming ever increasing amounts of forest timber, which is costly at household, society, and environment levels. Under the LEDS pathway, household cooking practices evolve over the period 2020 to 2050 with the initial deployment of fuel-efficient woodstoves to 2030 and then gradual transition towards greater use of cleaner fuel sources of biogas, electricity, and LPG.
3. Scaling up coconut oil production to achieve NERM and NDC targets of renewable energy supply. Coconut oil is a locally available, secure and clean renewable energy source. Under the LEDS pathway to 2050, the coconut oil industry undergoes substantial ramp up in production to substitute coconut oil for diesel in electricity generation.
4. Bolstering climate resilient and adaptation planning in the energy sector. There are benefits from deeper analysis of climate impacts and vulnerabilities as finer scale resolution climate models. Recent advances in climate modelling and regional initiatives offer opportunities for the energy sector to review its resilience and adaptation needs of existing and future infrastructure.

## 4.3 Transport

### 4.3.1 Integrated context assessment and direction from current policy and national consultations

Vanuatu's transport sector has come into increasing focus as a target for emissions reduction. Initially with the NERM and subsequently with Vanuatu's Enhanced NDC (2020), a growing list of actions are sought to reduce emissions (Table 10).

**Table 10: Relevant NERM and NDC policy targets for the transport sector**

National Energy Road Map (NERM)		2030 target
<b>Indicator 8:</b>	Improve transport (land and marine) energy efficiency, % saving on the BAU projection	10%
<b>NDC Action 3 (existing measure)</b>	Improve transport (land and marine) energy efficiency, % saving on the BAU projection	10%
<b>Additional NDC measure 1</b>	Electric vehicles (e-mobility)	
<b>1.1</b>	Electric vehicles (e-buses) for public transportation (10% of total public buses)	10%
<b>1.2</b>	Electric cars (e-cars) in Vanuatu (10% of government fleet)	10%
<b>1.3</b>	1,000 electric two-wheel (e-bikes)/three-wheelers (e-rickshaws)	1,000
<b>Additional NDC measure 2</b>	20% biodiesel (biofuel) blending in diesel	20%
<b>Additional NDC measure 3</b>	Mileage and vehicle emissions standards	



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