

# **Update on Vanuatu's National Energy Roadmap Implementation Plan (NERM IP), Nationally Determined Contribution (NDC) and Mobilizing Investment Opportunities**

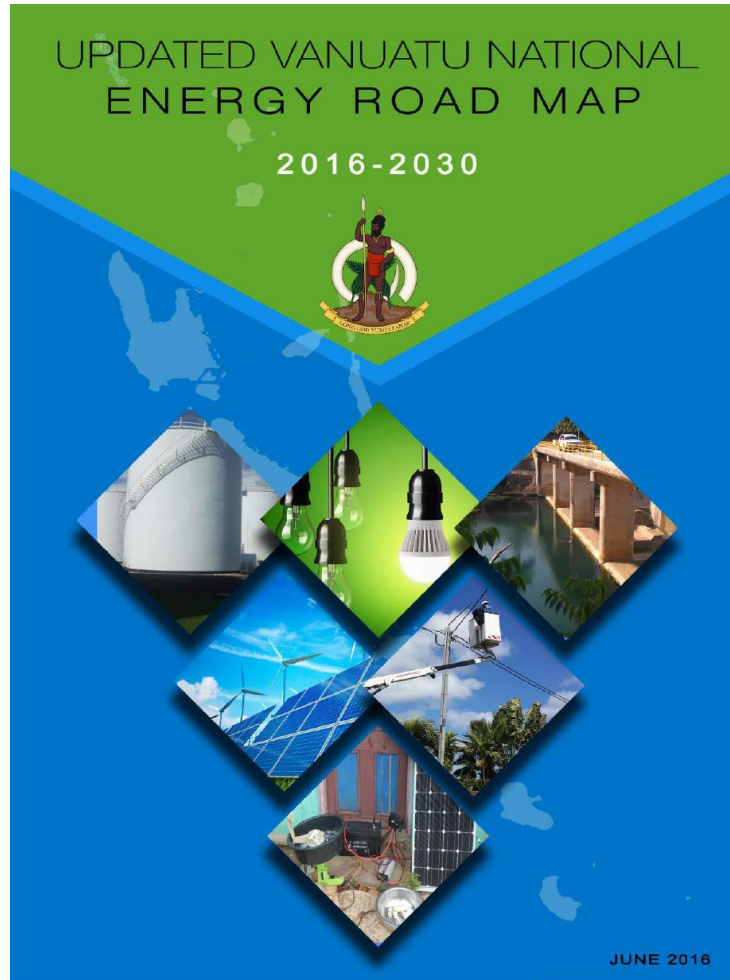
## **Investment Forum - Supporting COVID19 Recovering through Investments in Sustainable Energy**

**2<sup>nd</sup> September 2021**

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# Updated National Energy Road Map (NERM) 2016-2030

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- Updated NERM (2016-2030) June 2016 - reiterates the Government's commitment to achieving the original NERM's objectives.
- **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."*

Updated NERM has identified five strategic areas for policy intervention in the energy sector, which include:

- Accessible energy,
- Affordable energy,
- Secure and reliable energy,
- Sustainable energy and
- Green Growth.

# Priorities and Key Objectives of the Updated NERM

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## Accessible energy

1. Extend electricity access to all households and public institutions
2. Extend access to modern cooking fuels

## Affordable energy

1. Develop mechanisms to facilitate competitive, affordable prices for electricity, liquid fuels, and cooking fuels
2. Promote investment in least-cost electricity projects
3. Improve the supply-side energy efficiency of electricity generation

## Secure and reliable energy

1. Achieve a greater diversity of energy sources
2. Reduce the likelihood and impact on consumers of volatility in the prices of imported petroleum products
3. Facilitate the development of energy infrastructure that is resilient to natural disasters

## Sustainable energy

1. Increase the use of renewable energy as a way to reduce GHG emissions; provide affordable, reliable energy access; and facilitate green growth
2. Promote energy efficiency across the public and private sectors
3. Minimise the adverse environmental, social, and health and safety impacts of energy infrastructure and use

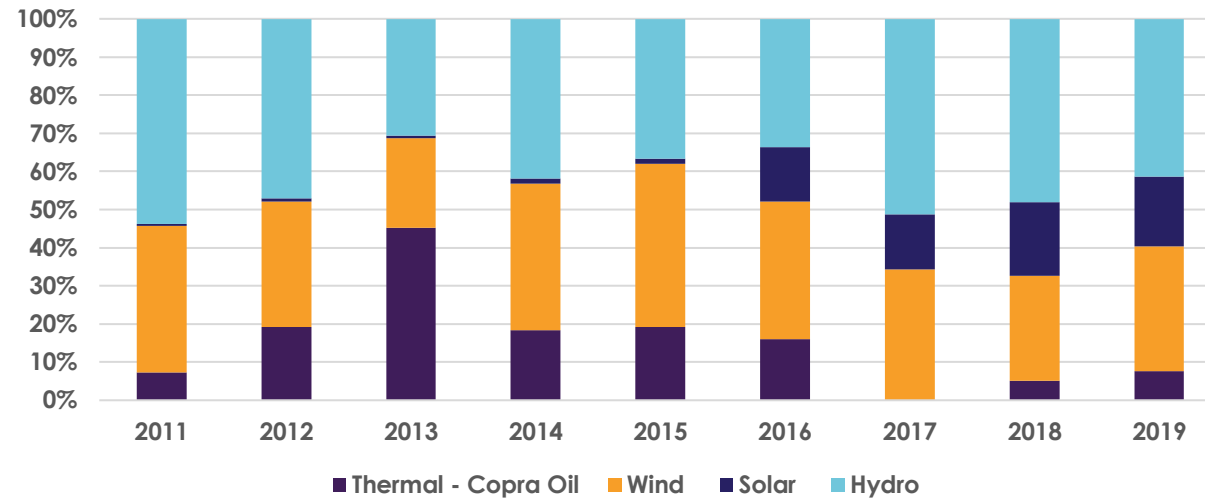
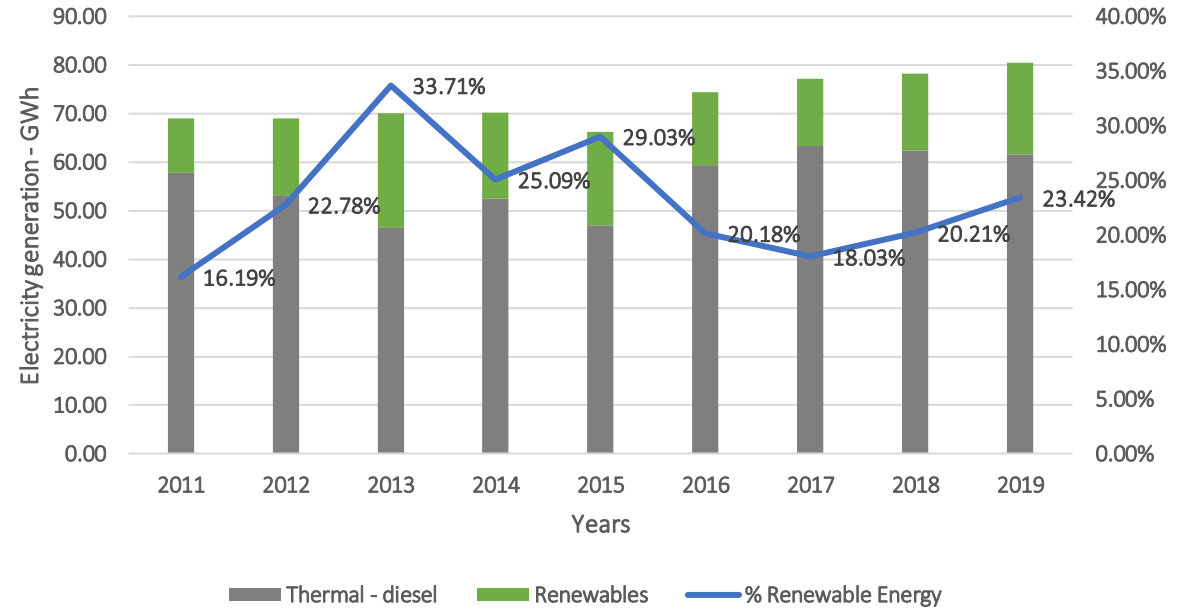
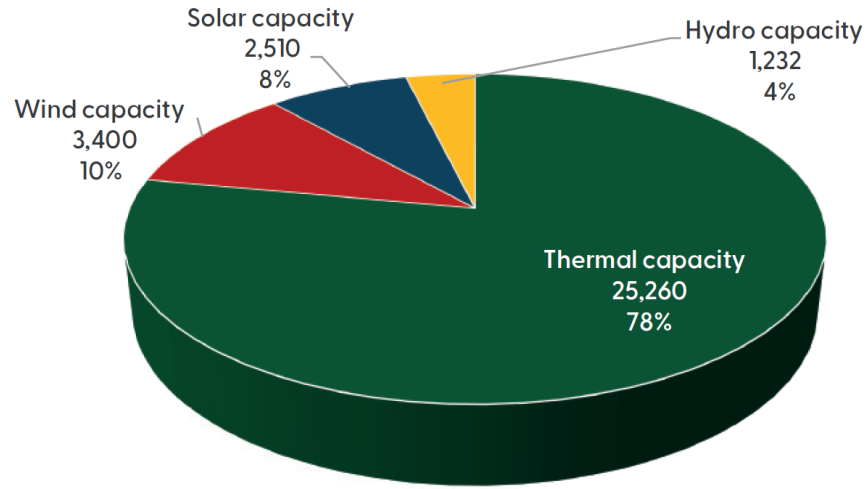
## Green growth

1. Promote green energy as a catalyst for sustainable development
2. Consolidate and expand the use of locally produced bio-fuels
3. Promote the use of renewable energy sources in Vanuatu's main economic sectors
4. Promote the appropriate use of renewable energy and energy efficiency technologies in the water sector
5. Improve energy-related business and technical skills among rural island people

# Revised Targets in the Updated NERM



# Vanuatu's Total Installed Capacity (kW), Generation Mix and RE Contribution (2019)



# Access to Energy – Specific Challenges

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## High costs

- At the small scale of individual island communities, it is not commercially feasible to supply energy through stand-alone grids.

## Scalability restrictions

- The islands' geography and population dispersion make scale renewables impossible; therefore, electricity cost is higher on average here than in other geographies.
- There is limited capacity for complex maintenance and engineering to take place in Vanuatu.

## Reliability of technologies

- Small low-cost solar home systems often aren't powerful enough to charge larger appliances in the productive use environment, essential **for unlocking development opportunities**.
- The centralised nature of RE mini-grids means if one critical component fails, the whole grid is taken down, often for weeks. In a location that is regularly disrupted by extreme weather, this is far from reliable.
- Diesel generators cause pollution that is counterproductive to Vanuatu's development plans and commitments to the Paris Agreement.

# Updated NERM Implementation Plan (IP) -2019



Vanuatu National Energy Road Map  
(2016 - 2030)

## Implementation Plan



July 2019

- During 2019, the Department of Energy (DoE) also updated the NERM Implementation Plan (NERM-IP), which is a key component of the NERM 2016-2030.
- The IP updated and prioritised the energy projects that will strategically contribute to achievement of the Vanuatu National Sustainable Development Plan (NSDP), Peoples Plan (2016-2030) goals and the National Energy Road Map (NERM) 2016-2030 targets.
- A sustainable energy strategy and action plan for the local administrative bodies (Provincial Governments and Municipalities) has been developed under the NERM-IP
- A standalone MRV tool has also been developed to monitor and track the progress of NERM priorities, goals, and indicators.

# Moving towards NERM Goal – Implemented Projects

Since launching of the NERM, the Government through the Department of Energy in association with stakeholders has implemented (a number of energy sector projects in the country which include:

- Solar PV mini-grid (73kW) for the Wintua and Lorlow communities, Malekula
- Phase 1 and 2 of the Vanuatu Rural Electrification program;
- the United Arab Emirates and European Union funded solar photovoltaic projects,
- Kawene solar farm (1 MW) and Undine bay Solar (500kW) - UNELCO
- bio-fuel projects in Saratamata, in Ambae and Sola in Vanuatu Lava;
- Talise hydro on Maewo;
- Institutional biogas systems at Onesua and agricultural college
- Solar refrigeration for rural tourist bungalows



# Moving towards NERM Goal - On-going/planned initiatives

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- Vanuatu Energy Access Project – Brenwe hydro (400 kW) on Santo; Grid extension on Santo and Malekula
- Swarm technology based RE electrification of Lelepa island, around 100 households (Powerblox, Switzerland)
- Solar/RE hybrid mini-grids under VREP phase 2
- Revision of Electricity Supply Act and Coconut for Fuel Strategy
- Expansion of solar PV on Efate by 7.6 MW to achieve the total installed capacity of 10 MW, in combination with storage capacity. (As per NDC roadmap)
- Exploration study on using the “Distributed Energy Generation” by installing micro/mini-grids in concession areas (Efate, Santo, Malekula & Tanna) in locations where grid extension is hard to reach or very expensive.
- Low emission land transport and waste to energy interventions – as per the updated NDC

# Awareness Raising & Capacity Building on Rural Electrification

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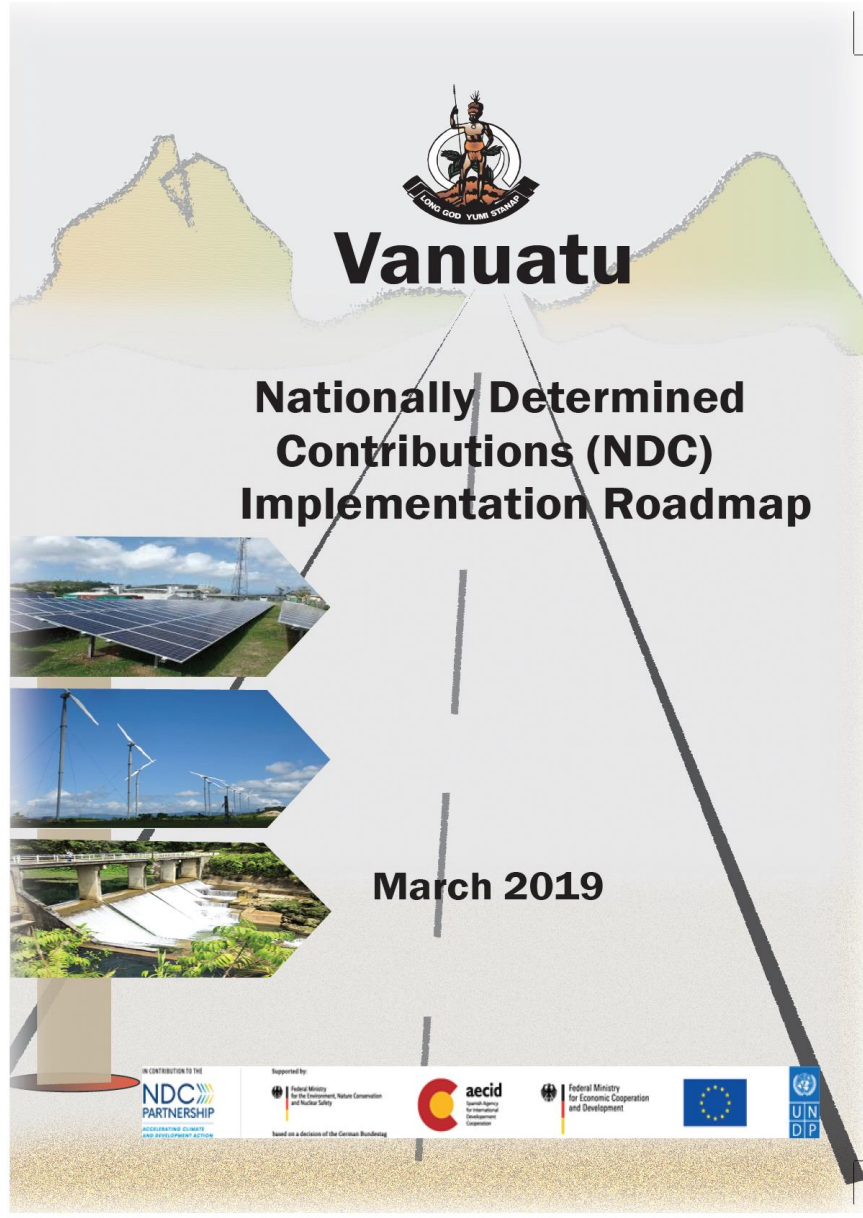
**Several awareness raising and capacity building initiatives has been implemented and planned on income generation, gender, community awareness under the below rural electrification initiatives (to be elaborated during presentation):**

- Vanuatu Rural Electrification Project (VREP) phase 1 and 2
- The Barrier Removal for Achieving the National Energy Roadmap Targets of Vanuatu (BRANTV) – Solar PV and Pico & micro hydro trainings
- National Green Energy Fund
- Sustainable Energy Industry Association of the Pacific Islands (SEIAPI) Solar PV training for rural trainers

# Vanuatu's Nationally Determined Contribution (NDC) under the Paris Climate Change Agreement - (Submitted to UNFCCC in 2016)

Vanuatu's First NDC's Mitigation Sector Targets		
Time Frame	2020-2030	
Contribution	Sectoral commitment focussed on a transition to renewable energy in the electricity generation sub-sector under energy generation.	
Target Level	<b>To approach 100% renewable energy in the electricity sub-sector contingent upon appropriate financial and technical support made available.</b>	
GHG Reductions	100% below BAU emissions for electricity sub-sector and 30% for energy sector as a whole.	
Sectors/Sub-Sectors	Energy Sector: Mainly electricity generation sub-sector but with ancillary mitigation possible in forestry, agriculture, transport and energy efficiency sector wide. The proposed interventions would need substantial external funding of around US\$180 million to proceed at the time frame needed. In addition, substantial technology transfer would be required including institutional support and training.	
S.No.	Key Interventions	Target Year
1.1	Doubling of the wind installed capacity to 5.5 MW	2025
1.2	Installing 10 MW grid connected solar PV	2025
1.3	Adding 10 MW grid connected solar PV	2030
1.4	Substituting and/or replacement of fossil fuels with coconut oil based electricity generation	2025

# Vanuatu NDC Implementation Roadmap -2019



The NDC implementation roadmap identified and elaborates on various actions that need to be implemented in order to achieve the NDC target of close to 100% generation of electricity from renewable energies by 2030.

Option 1 includes the installation of 7.6 MW solar PV and 5.1 MW wind, which together can contribute around 30% to the target. The majority of the contribution towards the target (57%) will come from the use of coconut oil. Total costs of Option 1 are USD 73.3 million

# Vanuatu NDC Implementation Roadmap -2019

Contribution to target indicator **10%**

## Basic interventions

Interventions under implementation or preparation	<b>14%</b>
Revision of Electricity Supply Act and Coconut for Fuel Strategy	<b>0%</b>
Batteries (37 MWh)	<b>0%</b>

## Option 1

7.6 MWp solar PV	<b>15%</b>
5.1 MW wind	<b>14%</b>
Coconut oil (12.5 m l)	<b>57%</b>

## Option 2

7.6 MWp solar PV	<b>15%</b>
2.6 MW wind	<b>7%</b>
Geothermal (4 MW)	<b>36%</b>
Coconut oil (6 m l)	<b>28%</b>

Option 2 includes the installation of 7.6 MW solar PV, which is seen as the renewable energy source with lowest generation costs. The main contribution in Option 2 will come from geothermal (36%), which requires successful drilling and considerable investment for the implementation. The availability of geothermal allows reducing the input of wind energy and it suggested that only half of the additional capacity (2.6 MW) is installed. The remaining gap will be covered by coconut oil and a total of around 6 million litres will be required to achieve the target. Total costs of Option 2 are USD 66.5 million

# Vanuatu's Updated Nationally Determined Contribution (NDC) under the Paris Climate Change Agreement - (Submitted to UNFCCC in 2021)

- **Additional GHG Mitigation Measures –Energy Sub- sectors**

- **Land Transport**

  - *Additional NDC Measure 1 - Electric Vehicles (e-Mobility)*

    - **Additional NDC Measure 1.1 – Electric Vehicles (e-buses) for public transportation (10% of total Public Buses)**
    - **Additional NDC Measure 1.2 –Electric Cars (e-Cars) in Vanuatu (10% of government fleet)**
    - **Additional NDC Measure 1.3 – 1000 Electric Two (e-bikes) /Three Wheelers (e-rickshaw)**

  - *Additional NDC Measure 2 – 20 % Bio-diesel (bio-fuel) Blending in Diesel*

  - *Additional NDC Measure 3 – Milage and Emission Standards for Vehicles*

- **Other Sub-sectors**

  - *Additional NDC Measure 4 –Biogas Plants for Commercial and Residential Use (1000 numbers) using organic/biodegradable waste*

  - *Additional NDC Measure 5 – Energy Efficiency in Commercial and Residential Sector*

    - **Additional NDC Measure 5.1 – 5% Energy Efficiency in Commercial and Residential Sector**
    - **Additional NDC Measure 5.2 – 10 No of Energy Efficient Buildings (Green Buildings)**

# Vanuatu's Updated Nationally Determined Contribution (NDC) under the Paris Climate Change Agreement - (Submitted to UNFCCC in 2021)

- **Additional GHG Mitigation Measures – Waste Sector**

- **Municipal Solid Waste (MSW)**

- *Additional NDC Measure 7 – Waste to Energy Plants for Municipal Solid Waste (MSW)*

- **Additional NDC Measure 6.1 – Waste to Energy Plant for MSW in Port Villa**

- **Additional NDC Measure 6.2 – Waste to Energy Plant for MSW in Luganville**

- **Additional NDC Measure 6.3 – Waste to Energy Plant for MSW in Lenakel**

- **Waste Water (Sewage)**

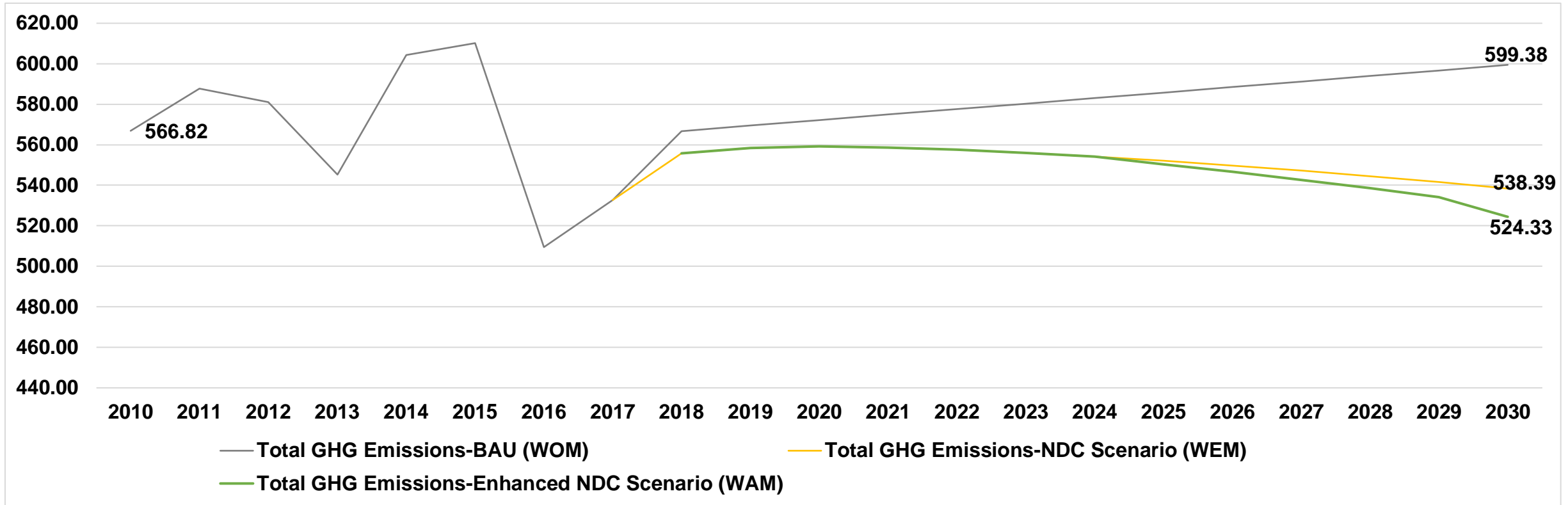
- *Additional NDC Measure 7 – Waste Water Management System in Vanuatu*

- **Additional NDC Measure 7.1-Centralised Waste water collection and treatment system in municipal area including awareness and capacity building**

- **Additional NDC Measure 7.2- Improvements to Public and Communal Toilet Facilities including Bio- Toilets**

# Vanuatu's Updated Nationally Determined Contribution (NDC) under the Paris Climate Change Agreement - (Submitted to UNFCCC in 2021)

- **Estimated Emission Reduction (Giga gram CO<sub>2</sub>e) by 2030 based on NDC targets**



BAU (WOM) – Business as Usual (Without mitigation measures)

NDC Scenario (WEM) – Based on the 2016 NDC target 100% RE by 2030 (With Existing Measures)

Enhanced Scenario (WAM) – Based on additional mitigation measures 2021 updated NDC (With Additional Measures)

**Updated NDC Implementation Roadmap is currently under development and expected to be completed Q3 2021**



# Mobilizing Investment Opportunities

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- No country has been spared of the COVID-19 and its socioeconomic implications including Vanuatu
- In March 2020, the coronavirus disease (COVID-19) pandemic forced the Government of Vanuatu to close the country's borders, leading to a collapse in tourism revenues and high socioeconomic costs.
- As discussed, Vanuatu through NERM and NDC has already prioritized the key actions in order to achieve the national energy sector vision and goals
- One of the key barriers in achieving this goal is mobilizing investment (financing) through participation of private sector/development partners/international financing agencies
- The constrained financial resources of the country and limited absorptive capacity in and coordination between government agencies and with the private sectors create additional challenges to successfully achieving the energy sector goals.

# Way Forward on Mobilizing Investment

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- Securing significant leverage of private and international public funding against the government commitments is an imperative for and the focus of DoE's Strategy in achieving NERM/NDC goals.
- As noted, the identified energy sector actions cover a diverse range of activities and use of funds—from large project and infrastructure investments, to supporting private sector and communities to fund energy access, to capacity-building and market development programmes.
- Instruments that can be leveraged to attract and de-risk private investment include: guarantee funds, blended finance, grants, public-private partnership (PPP) arrangements and risk sharing mechanisms, including innovative insurance products.
- The key priority is to provide and maintain an encouraging macroeconomic and business enabling environment, including ongoing and increased awareness and focus on energy sector plans and activities.
- A focused consultation and assessment of private sector investment potential in the prioritized sectors (energy, transport, waste) needs to be done inline with the current business environment.

**Thank You**