Terminal Evaluation Report

UNDP-GEF Project: “Barrier Removal for Achieving the National Energy Road Map Targets of Vanuatu” (BRANTV)

UNDP-GEF PIMS ID number: 5926

GEF ID number: 9574

TE Timeline and Date of Report: April 2023 to June 2023/ July 2023

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GEF Focal Area: Climate Change- Mitigation

Executing Agency: Department of Energy, Ministry of Climate Change & Natural Disaster (DOE MCCND)

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Acronyms and Abbreviations

ABP Annual Budget Plan

AWP Annual Work Plan

APR Annual Progress Report

CDR Combined Delivery Report

CDT (Local) Country Delivery Team

Ctry/ies Country/Countries

DoA Description of the Action of the Contribution Agreement

DOE/DOE-MCCND Department of Energy, Ministry of Climate Change & Natural Disaster (DOE-MCCND)

DWA Department of Women Affairs

EC European Commission

EE Energy Efficiency

EF Environmental Fund

EIA Environmental Impact Assessment

EIB European Investment Bank

EQ Evaluation Question

EU European Union

FV/FVP Field Visit/Field Visit Programme

GEF Global Environment Facility

GHG Greenhouse Gases

IFP (EU) Investment Facility for the Pacific

MCCND Ministry of Climate Change and Natural Disaster

MRV Measurement, Reporting and Verification

NERM National Energy Road Map

NGEF National Green Energy Fund

PIR GEF Project Implementation Report

Prodoc Project Document

PMU Project Management Unit

RES Renewable Energy Sources

SES UNDP Social and Environmental Standards

SME Small and Medium Enterprise

SO Specific Outputs

TC Harold Tropical Cyclone Harold

ToR Terms of Reference

UNDP United Nations Development Programme

URA Utility Regulatory Authority

VANWODS Vanuatu Women Development Scheme

VREP Vanuatu Rural Electrification Programme

1. Executive Summary

The Barrier Removal for Achieving the National Energy Road Map Targets of Vanuatu (BRANTV) project was implemented to support the Government of Vanuatu (GoV) in achieving its energy access, sustainable energy, and green growth targets outlined in the National Energy Road Map (NERM) 2013, which laid out the country's path to achieving electricity access for all citizens through the utilization of decentralized or distributed renewable energy for power generation. Currently, a significant portion of Vanuatu's population lacks access to grid electricity, with many relying on open hearth fire for cooking. However, previous efforts to improve energy access through renewable energy (RE) and energy-efficient (EE) cook stoves have not met their goals due to lack of capacity, service providers to maintain and operate systems and limited dissemination of EE cook stoves in rural areas. The objective of BRANTV is to enable the achievement of the energy success, sustainable energy, and green growth targets of Vanuatu.

To address these challenges, the BRANTV project focused on implementing the Rural Off-Grid RE and EE Promotion Program, which includes demonstration of various sub-programs such as hydropower, village-scale photovoltaic (PV) systems, household-scale PV, EE cook stoves, and productive and livelihood enhancing uses of RE and EE. The success and replication of these initiatives rely on the establishment of a payment and management system to ensure funds for system repairs and a nationwide roadshow to raise awareness and promote EE cookstoves in rural communities.

The Vanuatu BRANTV project was designed with a goal to enable the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu through the project outcomes which includes enhancing capacity and awareness of sustainable energy and low carbon development across sectors, improving policy, planning, and regulatory frameworks for sustainable energy, establishing effective institutions for enforcement and implementation, increasing access to financing for RE and EE initiatives, attracting private sector investments in sustainable energy projects, adopting and implementing viable sustainable energy and low carbon practices, and instilling confidence in the economic and technical viability of such projects.

The project strategy considered Vanuatu's Off-Grid RE and EE Promotion Program as the main baseline effort towards achieving the country's NERM targets. The program implemented various RE initiatives with a focus on hydro and solar power generation and distribution systems. Additionally, non-power applications of RE, such as solar PV freezers for fisher folks and solar PV fridges for cooperatives, were also included. The project also involved the establishment of Vanuatu's National Green Energy Fund (NGEF), which aimed to attract and manage financial support from donors through loans or grants for RE and energy efficiency (EE) projects in the country. These activities formed the foundation of the program.

Undoubtedly, one of the key results the project has given is laying the foundation of the National Electrification Master Plan (NEMP). The NEMP has been established, but its successful implementation will require significant effort from all stakeholders. This will lead to access of electricity to the dwellers thus promoting economic progress in future.

The project design approach prioritized inclusivity and considered the specific needs of communities and remote populations, including disadvantaged families. It recognized the importance of energy for various social and economic activities such as education, communications, housing development, livelihood,

domestic household requirements, recreation, and basic human needs. The project aimed to ensure that women played a significant role in decision-making processes at the village and community levels. At least 50% of participants in relevant meetings and decision-making activities were required to be women. Similarly, women were also given priority for project funds allocated to productive use initiatives. The minimum of 50% of such funds was directed towards projects involving women. The project emphasized women's participation in training and capacity building programs, aiming for a target of 30% women among those who mastered the program materials. To achieve this, it was mandated that 30% of individuals receiving high-level technical and operator training were women, and 50% of those involved in the nationwide photovoltaic (PV) repair and installation program were women. This has paved the way for gender parity and enabled women to also play an important role in capacity building catering to both technical grounds as well as financial viability prospects.

More than 20 communities that have RE community scale PV solar systems installed are benefitting from the system against a nominal fee, which will be further streamlined once NEMP is fully in place. DOE also aims to financially empower the communities by transferring the managerial processes to the communities themselves.

National Green Energy Fund (NGEF) successfully installed more than 70 PV solar sites with BRANTV's support providing energy access to more than 20 villages, which identified suitable locations based on client and community requests. The Resource Mobilization Plan funded by BRANTV aided NGEF's progress. Now, they are collaborating to establish a lending scheme for solar systems, seeking grant funding to subsidize equipment costs for registered clients. Although demonstrations right now, the number of types of key off-grid RE power generation and mini-grid related equipment/ parts newly available or available at 25% or more less than cost at start of project currently stands at 24 while the target was much lower. A total of 23 sites of Community Scale PV solar systems have given benefits to the inhabitants from the VREP standards and Duty exemption applied to the Project.

The Vanuatu National Green Energy Fund offers soft loans to support the development of different renewable projects. It also offers a comprehensive range of solutions, making it easier for public institutions to adopt renewable energy. The availability of turnkey solutions and pre-qualified vendors ensures the reliability of the equipment used or implemented. The soft loans provided by the NGEF come with concessional interest rates, making them affordable for users, leading to financial inclusion.

However, to propel the achievements of the project, implementation, monitoring and continuity of the outcomes is crucial, and another leg of the project would be advantageous in the longer run.

Table 1: Project Information Table

Project Details		Project Milestones	
Project Title	Barrier Removal for Achieving the National Energy Road Map Targets of Vanuatu (BRANTV)	PIF Approval Date:	Oct 25, 2016
UNDP Project ID PIMS#)	5926	CEO Endorsement Date (FSP)/ Approval date (MSP):	June 12, 2018

GEF Project ID	9574	ProDoc Signature Date:	Nov 9, 2018
UNDP Project Business Unit, Award ID, Project ID:	00099978 / 00103158	Date Project Manager Hired:	Dec 11, 2018
Country/Countries:	Vanuatu	Inception Workshop Date:	Dec 13, 2018
Region:	Asia and Pacific	Mid-Term Review Completion Date:	December 2021
Focal Area:	Climate Change - Mitigation	Terminal Evaluation Completion Date:	30 June 2023
GEF Operational Programme or Strategic Priorities Objectives:	CCM-1 Program 1	Original Planned Operational Closure Date:	Nov 9, 2022
Trust Fund:	GEF Trust Fund	Revised Planned Operational Closure Date:	Jul 9, 2023
Implementing Partner (GEF Executing Entity):	Department of Energy, Ministry of Climate Change & Natural Disaster (DOE MCCND)		
Other Government entities	Fisheries Department, Cooperative Department, Environment Department, Trade Department, Agriculture Department, Forestry Department, Water Resources, Livestock Department, Customers and Inland Revenue, Utility Regulatory Authority, National Green Energy Fund.		
NGOs/CBOs involvement:	Communities of Project Sites: VANWODSs		
Private Sector Involvement:	Suppliers: Pacific Communications Solutions (PCS), Savvy Solar, Vanuatu Agriculture Supplies (VAS), Etech Ttd, Energy4All, National Bank of Vanuatu		
Geospatial coordinates of project sites:			

Island	Location	Project	Latitude_DMS	Longitude_DMS	Latitude_DD	Longitude_DD
Nambwaranguit	North Pentecost	micro hydro	15°35'4.63"S	168°7'58.16"E	-15.584619	168.132822
Aworo	Gaua	micro hydro	14°15'58.53"S	167°35'32.77"E	-14.266258	167.592436
Rangsuksuk / Hot wota	South Pentecost	micro hydro	15°53'7.09"S	168°10'58.06"E	-15.885303	168.182794
Labang Nuying	Middle Bush Tanna	micro hydro	19°27'39.21"S	169°18'58.42"E	-19.460892	169.316228
Falambil	Central Santo	micro hydro	15°22'11.83"S	167°0'46.52"E	-15.369953	167.012922
Larimaat	East Pentecost	micro hydro	15°43'19.64"S	168°13'5.63"E	-15.722122	168.218231
Loltong	North Pentecost	hybrid of micro hydro and PV solar system	15°32'45.65"S	168°9'12.23"	-15.546014	168.153397
Melsisi	Central Pentecost	micro hydro	15°44'8.39"S	168°9'5.09"E	-15.735664	168.151414
Naone	North Maewo	micro hydro	15°0'34.65"S	168°4'14.07"E	-15.009625	168.070575
Nemeng / Siriti	Gaua	micro hydro	14°15'37.48"S	167°35'48.11"E	-14.260411	167.596697
Pangi	South Pentecost	micro hydro	15°56'10.88"S	168°12'23.57"E	-15.936356	168.206547
Water Fall	South Pentecost	micro hydro	15°46'40.35"S	168°10'21.51"E	-15.777875	168.172642
Big - Bay, Pesena	South Santo	micro hydro	14°50'47.56"S	166°44'52.59"E	-14.846544	166.747942
Lawa	Malekula	micro hydro	16°26'16.27"S	167°25'59.25"E	-16.437853	167.433125
Epi	Sara	community-scale pv system	16°48'26.41"S	168°11'38.00"E	-16.807336	168.193889
Pentecost	Abwantuntora	community-scale pv system	15°29'42.10"S	168°8'25.52"E	-15.495028	168.140422
Pentecost	Ahivo / Angoro	community-scale pv system	15°27'47.45"S	168°9'2.17"E	-15.463181	168.150603
Pentecost	Amatbobo	community-scale pv system	15°30'58.01"S	168°9'59.11"E	-15.516114	168.166419
Ambrym	Olal / Nebul	community-scale pv system	16°6'1.60"S	168°9'43.46"E	-16.100444	168.162072
Emae	Nofo	community-scale pv system	17°3'43.55"S	168°23'37.62"E	-17.062097	168.393783
Tongoa	Pele	community-scale pv system	16°53'24.22"S	168°33'9.34"E	-16.890061	168.552594
Paamma	Liro	community-scale pv system	16°27'2.18"S	168°13'36.50"E	-16.450606	168.226806
Aniwa	Isahvani	community-scale pv system	19°15'11.35"S	169°35'58.31"E	-19.253153	169.599531
Aneityum	Port Patrick	community-scale pv system	20°8'18.43"S	169°49'42.85"E	-20.138453	169.828569
Mota lava	Telhei	community-scale pv system	13°42'32.30"S	167°37'30.68"E	-13.708972	167.625189
Tanna	Ipak	community-scale pv system	19°25'0.26"S	169°14'18.92"E	-19.416739	169.238589
Nguna	Utanlangi	community-scale pv system	17°25'45.70"S	168°19'40.34"E	-17.429361	168.327872
Malekula	Vinmafis	community-scale pv system	16°14'4.57"S	167°25'16.56"E	-16.234603	167.387933
Santo (East)	Lelek	community-scale pv system	15°9'24.20"S	167°8'33.77"E	-15.156722	167.142714
Santo (East)	Sara	community-scale pv system	15°11'14.90"S	167°3'30.65"E	-15.187472	167.058514
Santo (East)	Kole	community-scale pv system	15°13'48.53"S	167°9'27.89"E	-15.230147	167.157741
Maewo	Betarara	community-scale pv system	15°5'43.86"S	168°4'51.74"E	-15.095517	168.081039
Erromango	Dillons Bay	community-scale pv system	18°49'2.63"S	169°1'0.98"E	-18.817397	169.016939
Malo	Saufali Youth	family compound-scale solar pv nano	15°39'22.64"S	167°7'53.16"E	-15.656289	167.131433
Central Pentecost	Bwatnapi	family compound-scale solar pv nano	15°39'57.55"S	168°7'14.58"E	-15.665986	168.120717
Erromango	Port Narvin	family compound-scale solar pv nano	18°44'52.06"S	169°12'35.81"E	-18.747794	169.209947
Loh	Loh	family compound-scale solar pv nano	13°20'13.46"S	166°37'59.31"E	-13.337072	166.633142

Table 2: Financing Table

PDF/PPG	At approval (US$M)	at PDF/PPG completion (US$M)
GEF PDF/PPG grants for project preparation		
PPG Grant for project preparation (UNDP/GEF)	100,000	100,000
Project	**at CEO Endorsement (US$M)**	**at TE (US$M)**
[1] UNDP contribution:	100,000	100,000
[2] Government: Department of Energy, Ministry of Climate Change and Natural Disaster (DOE-MCCND), grant	16,348,000	341,224
[3] Government: Department of Energy, Ministry of Climate Change and Natural Disaster, in-kind	714,444	79,774.77
[4] Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business, grant	1,000,000	0
[3] Other multi-/bi-laterals: Government of Romania (US$ 60,736.20) PCREEE (US$ 2,462.31)	0	63,198.51
[4] Private Sector:	0	0
[5] NGOs:	0	0
[6] Total co-financing [1 + 2 + 3 + 4 + 5]:	18,162,444	584,197
[7] Total GEF funding:	2,639,726.00	2,639,726.00
[8] Total Project Funding [6 + 7]	**20,802,170**	**3,223,923**

Table 3: Terminal Evaluation Ratings and Achievement Summary Table [1]

1. Monitoring & Evaluation (M&E)	Rating
M&E design at entry	Moderately Satisfactory (4)

[1] As per the Rating Scale provided Outcomes, Effectiveness, Efficiency, M&E, Implementation/Oversight & Execution, Relevance are rated on a 6-point scale: 6=Highly Satisfactory (HS), 5=Satisfactory (S), 4=Moderately Satisfactory (MS), 3=Moderately Unsatisfactory (MU), 2=Unsatisfactory (U), 1=Highly Unsatisfactory (HU). Sustainability is rated on a 4-point scale: 4=Likely (L), 3=Moderately Likely (ML), 2=Moderately Unlikely (MU), 1=Unlikely (U)

M&E Plan implementation	Moderately Satisfactory (4)
Overall Quality of M&E	Moderately Satisfactory (4)
2. Implementing Agency (IA) Implementation & Executing Agency (EA) Execution	Rating
Quality of UNDP Implementation/Oversight	Satisfactory (5)
Quality of Implementing Partner Execution	Moderately Satisfactory (4)
Overall quality of Implementation/Execution	Moderately Satisfactory (4)
3. Assessment of Outcomes	Rating
Relevance	Satisfactory (5)
Effectiveness	Moderately Satisfactory (4)
Efficiency	Moderately Satisfactory (4)
Overall Project Outcome Rating	Moderately Satisfactory (4)
4. Sustainability	Rating
Financial sustainability	Moderately Likely (3)
Socio-political sustainability	Likely (4)
Institutional framework and governance sustainability	Moderately Likely (3)
Environmental sustainability	Likely (4)
Overall Likelihood of Sustainability	Likely (4)

Overall, the BRANTV project is rated as *Moderately Satisfactory* considering TE scope which covers the full project cycle and most current developments. A follow up project would be beneficial to achieve the targets that haven't been accomplished yet.

Recommendations

Table 4: Recommendation

S.N.	TE Recommendations	Entity Responsible	Time frame
A.	**Category 1: Role of Government**		
A.1	It is recommended that nano-grids/community scale PV solar and community scale solar are upgraded to micro-grids	Department of Energy	December 2024

A.2	It is recommended that there is strict adherence for implementation of National Electrification Master Plan	Department of Energy	December 2024
A.3	It is recommended to put a price band of biofuels alongside their incorporation in future projects	Department of Energy	December 2024
B.	**Category 2: Capacity Building**		
B.1	It is recommended that provisions are made for regular capacity building.	Department of Energy	December 2024
C.	**Category 3: Project Sustainability**		
C.1	All project demonstrations should be upgraded, such that they have an assigned tariff by URA	Department of Energy	January 2026
C.2	It is recommended that a follow-up project is planned.	Government of Vanuatu and multilateral institutions	December 2024
D.	**Category 4: Financial**		
D.1	It is recommended that private capital be crowded in through availability of upfront tariffs, provided by URA.	Department of Finance and Treasury	December 2024
E.	**Category 5: Gender**		
E.1	It is recommended to pay more consideration for Gender Parity especially financial empowerment and inclusion of women.	DWA	December 2024

Lessons Learnt

- The handover of managerial processes at various sites from DOE to the communities will financially empower them in future because the managerial processes will be decentralized.
- It was learnt that NEMP holds immense importance because mapping of villages according to their energy needs will eventually lead to a better policy framework.
- It has been learnt that introduction of soft loans for development of RE projects goes a long way.
- It was learnt that women show a lot of interest towards their financial independence and viability because they want to start their own work (access to sewing machines being one such example), and this can help in future for gender empowerment programs.
- It has been learnt that if the provisions for RE installation and maintenance capacity are already there, sustainability can be ensured for a longer time.

- The percentage of thirty percent involvement of women in training programs ensures gender parity because usually it is the men who receive technical training so a quota can be a good starting point for the future because it encourages women to play a role, which in future will continue to rise steadily.

2. Introduction

This report presents the findings of the Terminal Evaluation ("TE") of the UNDP-implemented and GEF financed Project: Barrier Removal for Achieving the National Energy Targets of Vanuatu ("BRANTV"). The report is thematically divided into 4 main sections. Section 1 provides executive summary of the TE. Section 2 introduces the BRANTV project and provides a contextual background in Vanuatu and description of the BRANTV project. Section 3 of the report details the overall evaluation framework for the TE including the evaluation approach, methodology, evaluation instruments and limitations. The main section of the report, Section 4, presents the analysis and findings of the evaluation. The analysis has been split up in 3 main sub-sections under section 4 – Project Design & Formulation, Project Implementation, and Project Results & Impact. Lastly, Section 5 provides the summary of main findings, recommendations and lessons learnt from the evaluation of the FASNETT project.

This report will be helpful for all those who have been involved in the project design and implementation of BRANTV. The findings can be used to improve the shortcomings of the programs under the project which can later aid in devising new strategies and similar projects in the future.

2.1 Purpose of the TE

The Terminal Evaluation (TE) report aims to assess BRANTV achievements, identify lessons for improving project sustainability and enhance UNDP programming. It emphasizes accountability, transparency, and evaluates project accomplishments. The evaluation targets project results, their alignment with national plans and policies, contribution to relevant outcomes, addressing cross-cutting and gender issues, fund utilization, COVID-19 impact, and draw valuable lessons for project improvement. The TE adheres to UNDP and GEF guidelines as outlined in the UNDP Evaluation Guidance for GEF Financed Projects.

2.2 Scope

As indicated in the TORs, the scope of this TE was to conduct an assessment of achievements of project results and the extent to which the project has successfully carried out adaptive management, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of future UNDP programming. The Evaluator framed the evaluation effort using the evaluation criteria of relevance, coherence, effectiveness, efficiency, sustainability, and impact, as defined, and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. Under each of these criteria, evaluation questions were identified and compiled in an evaluation matrix.

The scope of this evaluation is thematically divided into three parts in accordance with the Guidance for Conducting Terminal Reviews of UNDP-Supported, GEF-Financed Projects. A summary of the scope of this TE is presented below:

Project Design and Formulation:

1. National priorities and country drivenness
2. Theory of Change
3. Gender equality and women's empowerment
4. Social and Environmental Standards (Safeguards)
5. Analysis of Results Framework: project logic and strategy, indicators
6. Lessons from other relevant projects (e.g., same focal area) incorporated into project design

7. Planned stakeholder participation
8. Linkages between project and other interventions within the sector
9. Management arrangements

Project Implementation

1. Review how adaptive management was implemented during the implementation of the project
2. Review overall effectiveness of project management as outlined in the project document
3. Review the quality of execution of the Executing Agency/Implementing Partner(s)
4. Review any delays in project start-up and implementation
5. Review how Results-Based Management is being implemented
6. Examine the use of the project's results framework/ log frame as a management tool
7. Consider the financial management of the project, including cost-effectiveness.
8. Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
9. Review the decision-making processes to align financing priorities and annual work plans
10. Review the monitoring tools currently being used and the project progress reporting function as well as the feedback loop for adaptive management
11. Review project partnerships arrangements
12. Review stakeholder's participation and country-driven project implementation processes
13. Review project communications.

Project Results

1. Review the progress made against the log frame indicators and the end-of-project targets.
2. Assess the stakeholders' ownership of project achievements.
3. Compare and analyze the GEF Tracking Tool at Baseline with the one completed at the time of TE.
4. Highlight the extent of barrier removal to enable application of RE and EE for achieving the project objective.
5. Assess risks to sustainability in terms of financial risks, socio-economic risks, institutional framework and governance risks, and environmental risks.
6. Review and possibly identify ways in which the project can further expand its achievements.

2.3 Methodology

The methodology that was used to conduct this TE complies with international criteria and professional norms and standards; including the norms and standards adopted by the UN Evaluation Group (UNEG) and the Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. The TE report aims to provide evidence-based information that is credible, reliable, and useful to the project team and relevant stakeholders.

The evaluation involves the rigorous application of five principles for assessing evidence/information collected through primary and secondary data sources, given as follows:

1. **Voice and inclusion:** Consulting all relevant stakeholders with a positive discrimination towards women, vulnerable and disadvantaged groups, and any external parties that are indirectly impacted by project activities. The consultation plan is designed to ensure that opinions of

stakeholders are sufficiently and appropriately captured at each stage of the evaluation and reflected in the findings of the evaluation.

2. **Appropriateness of research methods:** Key evaluation criteria were selected in accordance with the requirements of UNDP, GEF-financed projects and also the discretion of the TE expert. The criteria aim to discern the relevance of the project, the effectiveness of implementation, the achieved impact of the project, and also capture and analyse the project's performance in terms of gender mainstreaming, environmental and social safeguarding, value for money and sustainability of project impacts. The TE employs a range of methods for accessing information and data collection best suited to the key informants and respondents. This will include in-depth Document Review (DR), Focused Group Discussions (FDGs) and Key Information Interviews (KIIs).

3. **Triangulation of information:** The secondary data is triangulated with the primary information gathered from the project implementers, financiers, and from direct and indirect stakeholders. This ensures that findings are corroborated and any weaknesses in the data can be compensated for by the strengths of other data, thereby increasing the validity and reliability of the results.

4. **Contribution:** Reasonable effort would be made to ascertain attribution of project outputs to outcomes. This will involve assessing the project's Theory of Change and assumptions to validate the outputs of each project component, and logically linking the outputs to the envisaged outcomes of the project.

5. **Transparency and confidentiality:** The TE team has remained transparent to UNDP and the stakeholders about our objectives of collecting information and ensured the confidentiality of information to protect the proprietary information about UNDP and stakeholders.

The TE methodology includes conducting in-depth document reviews of documents prepared during the preparation phase (i.e., PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening Procedure/SESP, the Project Document, project reports including annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, etc.), and all relevant evidentiary and M&E documents to confirm the reported results of the project's baseline/co-financed and incremental activities, delivery of agreed component outputs and levels of achievement of the end-of-project targets of the objectively verifiable indicators that are set out in the project results framework (log frame)

Furthermore, the evaluation adopts a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Country Office(s), the Regional Technical Advisor, direct beneficiaries, and other stakeholders. Stakeholders have been consulted through a series of FDGs and KIIs. Stakeholder involvement includes interviews with stakeholders who have project responsibilities, including but not limited to executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, Project Board, project beneficiaries, academia, local government and CSOs, etc.

Information collected has been triangulated and assessed against key criteria to evaluate project performance against the intended outcomes and provide explanations/justifications of the attribution of direct intended results and any indirect results of the project. The selected criteria for evaluation of the BRANTV project are provided as follows:

1. **Relevance:** The extent to which the intervention objectives and design respond to beneficiaries, global, country, and partner/institution needs, policies, and priorities, and continue to do so if circumstances change.

2. **Effectiveness:** The extent to which the intervention achieved, or is expected to achieve, its objectives, and its results, including any differential results across groups.

3. **Efficiency:** The extent to which the intervention delivers, or is likely to deliver, results in an economic and timely way.

4. **Impact:** The extent to which the intervention has generated or is expected to generate significant positive or negative, intended, or unintended, higher-level effects that contribute to the achievement of National Energy Road Map Targets of Vanuatu.

5. **Gender:** The extent to which gender mainstreaming has been considered in project design, implementation, and results measurement.

6. **Results Framework:** The extent to which the project results framework logically connects the project Theory of Change with the intended outcomes.

7. **Challenges and Adaptive Management:** Overall project progress in light of various circumstances (such as COVID-19), risks and other challenges during implementation. In addition, discerning the extent of the management's ability to adapt to circumstances based on the evaluation of the adaptive management actions that the PMU/IP has carried out during the project implementation.

8. **Financial Management:** How well was the financial planning and budgeting for the project. Furthermore, to what extent was the co-financing realized.

9. **Sustainability:** The extent to which the net benefits of the intervention continue or are likely to continue.

10. **M&E Design and Implementation:** The extent to which the project's M&E functions are suited capture the intended direct results and indirect results of the project.

11. **Stakeholder Engagement:** The extent to which all relevant stakeholders were engaged during the project inception and implementation phases.

12. **Social and Environmental Standards (Safeguards):** The extent to which the project has considered E&S safeguarding requirements during the design phase and how well have the safeguards be implemented during project implementation.

13. **UNDP & GEF Additionality:** The extent to which achievement of BRANTV objectives can directly be attributed to the involvement of UNDP and GEF.

2.4 Ethics

While conducting this evaluation, the evaluator was held to the highest ethical standards and signed a code of conduct upon acceptance of the assignment. The evaluation was conducted in accordance with the principles outlined in the United Nations Evaluation Group (UNEG) 'Ethical Guidelines for Evaluations'.[2] Confidentiality of all information was ensured including the identity of any participant as well as disclosure of sensitive information. Informed consent for all engagement related to evaluation and interviews was sought with an option given to opt out, if need be, and the evaluator remained unbiased and objective in all their proceedings making sure their opinions had no influence on the findings. Cultural sensitivities were also given immense importance and the well-being of all participants and stakeholders was ensured. The evaluator is aware that they would be responsible for any errors or inaccuracies. Transparency and accuracy have also been ensured during the completion of this report.

2.5 Limitations

The approach for this terminal evaluation is based on a planned level of effort of 35 days. It comprises an effort to collect evaluative evidence through documents and interviews of stakeholders, which was often in remote locations requiring far more time. Within the context of these resources, the Evaluator was able to conduct a detailed assessment of actual results against expected results and successfully ascertains whether the project has met its main objective - as laid down in the project document - and whether the project initiatives are, or are likely to be, sustainable after completion of the project. The Evaluator also made recommendations for any necessary corrections and adjustments to the overall project work plan and timetable for reinforcing the long-term sustainability of project achievements. It may be noted here that there were some project sites that are inaccessible due to unavailability of transportation options, and that can be deemed as a minor limitation in this particular case. Similarly, the paucity of data, particularly related to the sites was also an issue. However, the same was addressed through triangulation of information by extracting information from different sources, including interviews with community members, government officials, and through review of relevant documentation.

[2] Access at: http://www.unevaluation.org/document/detail/100

3. Project Description

3.1 Project start and duration, including milestones

The Barrier Removal for Achieving the National Energy Road Map Targets of Vanuatu (BRANTV) is a project funded by Global Environment Facility (GEF) implemented by UNDP with its implementing partner the department of Energy (DoE), Ministry of Climate Change (MoCC) through a signed agreement of National Implementation Modality (NIM). The project was started on November 9, 2018 and is and is ending on 09 July 2023.

BRANTV has the objective of enabling the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu, as represented in the country's National Energy Road Map (NERM).

The project duration was supposed to be 48 months while the PIF approval date was set as October 25, 2016, CEO Endorsement Date as June 12, 2018, ProDoc signature date marking the commencement of the project was November 9, 2018. Inception Workshop took place on December 13, 2018, followed by first disbursement on December 18, 2018. The expected date of Mid-term Review was June 30, 2021, while the report was finalized on December 1, 2021. The expected date of the TE report was also estimated as August 9, 2021, and the original closing date was estimated as November 9, 2022.

There is a lack of technical capacity in the country along with limited financial resources, which limit the adoption of efficient and sustainable renewable and energy-efficient technology. Furthermore, there is an awareness issue amongst policymakers, businesses, and the public about the benefits of renewable energy and energy efficiency, as well as the risks associated with continued reliance on non-renewable resources.

The aim of the project is the enabling of the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu. Moreover, BRANTV's global target is to mitigate climate change issues in the energy sector to reduce greenhouse gas emission through promoting the use of Renewable Energy (RE) and Energy Efficient (EE).

In order to achieve the NERM targets, BRANTV takes a multi-pronged approach to removing the barriers that are resulting in unsustainable, unviable, or weakly disseminated RE and EE systems. It does so in the interrelated areas of capacity, policy and planning, institutional framework, financing, and technical and economic viability. Central to the approach is BRANTV's implementation of Vanuatu's Rural Off-Grid RE and EE Promotion household and family compound-scale PV, EE cook stoves, and productive, livelihood-enhancing uses management system introduced to achieve savings for repairs of the RE systems and the nationwide roadshow to introduce EE stoves to the rural population. The BRANTV includes RE demonstrations of sub-programs in each hydropower, village scale PV household and family compound-scale PV and Efficient Energy (EE) cook stoves and crop dryer.

BRANTV's objective is the enabling of the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu. Inadequate financial resources is another major challenge plaguing the country, and the BRANTV aims to devise methods to sustain the programmes launched under it. Furthermore, alongside capacity building, the project also aims at raising awareness and understanding among policymakers, businesses, and the public about the benefits of renewable energy and energy efficiency, as well as the risks associated with continued reliance on non-renewable resources.

The BRANTV Project approach is barrier removal. It comprises barrier removal activities meant to remove/eliminate barriers to the achievement of the NERM targets. The RET technology application demonstrations include those on hydropower, village scale PV household and family compound-scale PV and Efficient Energy (EE) cook stoves and crop dryer.

It does so in the interrelated areas of capacity, policy and planning, institutional framework, financing, and technical and economic viability. Central to the approach is BRANTV's implementation of Vanuatu's Rural Off-Grid RE and EE Promotion household and family compound-scale PV, EE cook stoves, and productive, livelihood-enhancing uses management system introduced to achieve savings for repairs of the RE systems and the nationwide roadshow to introduce EE stoves to the rural population.

3.2 Development context:

Country Background

Vanuatu is an island nation located in the South Pacific Ocean, about 1,750 kilometers east of Australia. The developing country comprises 83 islands that are spread over an area of about 1,300 kilometers and cover a total land area of 12,189 square kilometers. The population of Vanuatu is approximately 319,137 people with 0.4% GDP growth in 2021 that had earlier plunged to -5.4% in 2020. The economy is based on agriculture, tourism, fishing, and agriculture and contributes to 21.2% of GDP.

The terrain is mountainous, with several active volcanoes. The climate in Vanuatu is tropical, with high temperatures and humidity throughout the year. Vanuatu is characterized by heavy rainfall, cyclones, and high humidity. The country has experienced several major natural disasters in recent years, including Cyclone Pam in 2015, Cyclone Harold in April 2020 and Cyclone Judy, which struck the region in March 2023. Tropical Cyclone Harold was a Category 5 cyclone, the strongest to hit Vanuatu since Cyclone Pam in 2015. The cyclone caused significant damage to infrastructure, including homes, schools, health centers, and roads, particularly in the northern islands of the country. Many communities were left without access to clean water, electricity, or communications. At least 27 people were reported killed in Vanuatu as a result of the cyclone, and thousands were displaced from their homes.

Owing to the pandemic, tourism declined in the region affecting the economy. After Cyclone Harold, the agriculture recovered slowly, and construction picked up after pandemic-related restrictions started to ease. The economy is expected to recover further in 2023 by 4%.

The energy sector in Vanuatu is currently transitioning from a reliance on imported fossil fuels to a greater use of renewable energy sources. The country aims to generate 100% of its electricity from renewable sources by 2030, and significant progress has been made towards achieving this goal. Currently, the primary source of electricity in Vanuatu is diesel generators, which are expensive to operate and maintain due to the country's remote location and high transportation costs. As a result, electricity prices in Vanuatu are among the highest in the world, and as of 2016, only one-thirds of households have access to electricity.

The Vanuatu government and international organizations are investing in renewable energy projects, such as solar, wind, and hydro power. Several remote communities have been provided with renewable energy systems. However, challenges remain, such as limited financing, a lack of technical expertise, and the need for improved infrastructure.

3.3 Problems that the project sought to address: threats and barriers targeted

The BRANTV aims to address the following identified barriers to adoption of RE and EE technologies in the country:

- **Lack of technical capacity in the country:** The ProDoc reveals that while Vanuatu has substantial baseline program efforts to install RE systems in off-grid areas the challenge experienced is lack of technical skills and capacity to install, operate and maintain RE systems in the communities.
- **Lack of policy initiative to support adoption and absence of public management systems in place to ensure sustainability of off-grid electrification projects:** As per Project document, BRANTV design work has identified important policy and planning gaps in the baseline program that it will fill, such as guidelines, standards, and incentive policies, as well as a rural off-grid RE electrification plan. During the inception review phase, it has been discovered that the rural off-grid RE electrification plan will not fulfil the gaps identified in the NERM IP and the RE Electrification Master Plan for Vanuatu.
- **Limited funds available for institutions and rural communities to adopt RE and EE technologies:** While NGEF is being established, if gaps are not addressed, the fund may not have the intended impact. Incremental work is needed in attracting donor financing and connecting the fund with specific, technically, and economically viable projects.
- **Imperfect information**: There are informational gaps and little transparency in the market about the best quality products and appropriate prices thereof renewable energy and energy efficient parts and equipment.

3.4 Immediate and development objectives of the project

The development objective of BRANTV is to enable the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu

The interrelated outcomes under the objectives to be achieved are as follows:

- Improved capacity and awareness on sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors.
- Improved policy, planning, and regulatory regimes in the application of sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors.
- Established institutional framework enables the effective enforcement of policies and regulations, and implementation of plans, programs, and projects, on the application of sustainable energy and low carbon technologies.
- Increased availability of, and access to, financing for sustainable energy, energy access, and low carbon (RE and EE) initiatives in the energy supply and demand sectors.
- Increased financing and investments from private sector on sustainable energy and low carbon projects in the energy supply and demand sectors
- Viable (technical and economic) sustainable energy and low carbon (RE and EE) techniques and practices adopted and implemented in the energy, public, private sector, and residential sectors of the country.
- Enhanced confidence in the economic and technical viability and long-term sustainability of sustainable energy and low carbon technology projects.

3.5 Theory of Change

The BRANTV project is premised on facilitating access to renewable and sustainable energy for promoting socio-economic development in the country, as well as contributing to the NERM targets of Vanuatu.

The project addressed the identified barriers that hinder the widespread application of RE and EE technologies that are intended to help achieve the NERM targets. These include:

- Lack of technical capacity in the country to install, operate and maintain rural off-grid technology.
- Lack of policy initiative to support adoption of RE and EE technologies.
- Absence of public management systems in place to ensure financial sustainability of off-grid electrification projects.
- Limited funds available for institutions and rural communities to access to promote RE and EE in the rural communities; and
- Information and transparency in the market about the best quality products and appropriate prices thereof renewable energy and energy efficient parts and equipment.

BRANTV takes a multi-pronged approach to removing the barriers that are resulting in unsustainable, unviable, and inefficient energy systems by paving way for improve EE and RE systems. It does so in the interrelated areas of capacity, policy and planning, institutional framework, financing, and technical and economic viability. The project components are explained, as follows:

Component 1: Capacity Building and Awareness

Training program consists of one-time off training conducted by Suppliers during installation of systems. For larger-scale systems, equipment sourcing and installation capacity is absent thus a national and or international expert is required on contract basis to carry out training programmes in RE systems. For EE cook stoves and dryers, there is an absence of personnel to fabricate such systems and no training program to develop such local capacity. To address these capacity gaps in the baseline program, BRANTV will implement an extensive training program covering various hydro, PV, and EE related systems.

Component 1 of the project focuses on enhancing capacity and awareness of sustainable energy and low carbon development. Outcome 1 aims to improve capacity and awareness in the energy, public, private, and residential sectors. Output 1.1 involves conducting technical capacity building programs in off-grid renewable energy (RE) technology and energy-efficient (EE) cook stove applications. Training programs will be designed and conducted for various purposes, including training local operators of mini-grids, designers and installers of mini-grids, operators of village community PV systems, and designers and installers of PV systems. Additionally, a training program will be implemented for the installation and repair of small solar home systems. Another activity focuses on training individuals in the making of energy-efficient cook stoves. Surveys will be conducted to assess the engagement of trained individuals in off-grid RE and EE work. Output 1.2 involves the design, publication, and dissemination of guidebooks and videos in the local language, Bislama, for off-grid RE and EE applications, accompanied by a mechanism for remote expert support. These activities aim to enhance knowledge and provide practical resources for the implementation of sustainable energy and low carbon practices.

Component 2: Improvement of Energy Policy and Planning Formulation and Implementation.

BRANTV will design a detailed National Electrification Master Plan for the country. The main objectives of developing a master plan is to ensure there is a tool available to guide the development of On-Grid and

Off-Grid electrification and expansion of network. Further to support the implementation of NERM interventions. Private sectors and operators will be guided by this plan for any potential future development or initiatives and technologies deployed in expanding electrification both in the urban and rural areas.

Outcome 2 of the project aims to improve policy, planning, and regulatory regimes in the application of sustainable energy, energy access, and low carbon development. Output 2.1 focuses on the adoption and implementation of a detailed rural electrification plan called the Vanuatu Off-Grid Rural Electrification Roadmap, which covers all 65 inhabited islands of Vanuatu. Activity 2.1.1 involves the preparation of this plan, including steps such as mapping off-grid electrification needs, determining appropriate system types for each location, prioritizing locales, and establishing installation and management methods. The roadmap considers project demos, institutional work on mini-grid management, potential pico-hydro and small micro-hydro sites, and village-scale community PV sites. Activity 2.1.2a identifies promising pico-hydro and small micro-hydro mini-grid village sites, while Activity 2.1.2b establishes national targets for these mini-grids. These activities contribute to the development of a comprehensive electrification plan to guide sustainable energy implementation in Vanuatu.

Component 3: Institutional Framework Enhancement for Sustainable Energy and Low Carbon Development

BRANTV thus aims to support NGEF in its fundraising and further aims to connect project proponents in the islands with the fund, providing technical assistance to proponents to make applications to the fund. Further, also in the financing realm, PPG work determined that commercial and private sector financing of RE and EE in Vanuatu, aside from some small business loans of National Bank of Vanuatu (NBV) for PV systems, is virtually non-existent. Thus, BRANTV via incremental activities will also work to fill this gap, educating the banks and working with the commercial private sector to set up a loan or equity financing mechanism for off-grid RE projects and productive uses in rural areas.

Component 3 focuses on enhancing the institutional framework for sustainable energy and low carbon development. Outcome 3 aims to establish an institutional framework that effectively enforces policies, regulations, and implementation of plans and projects related to sustainable energy and low carbon technologies. Output 3.1 involves promoting and implementing management models for off-grid mini-grids and PV systems. Output 3.2 focuses on institutional mechanisms for cooperation between the Department of Energy (DOE) and other national-level departments to promote off-grid renewable energy and energy-efficient cook stoves. Output 3.3 involves implementing institutional mechanisms to ensure adherence to guidelines and enforcement of standards and regulations for various technologies, including micro-hydro, PV systems, energy-efficient cook stoves, and single building solar home systems. The activities include analysis, design, outreach, identification of sites, and collaboration with relevant departments to achieve the desired outcomes.

Component 4: Sustainable Energy and Low Carbon Initiatives Financing

Output 4A.2 focuses on implementing a program to assist project proponents in applying for funding from the National Green Energy Fund (NGEF) to replicate BRANTV demos. Activity 4A.2.1 involves providing advisory services and technical assistance to local project proponents in developing project proposals and preparing applications for loan and grant funding, including financial modelling.

Output 4A.3 aims to implement a program to assist entrepreneurs applying for funding from NGEF or other sources to support productive use projects utilizing renewable energy. Activity 4A.3.1 involves

providing advisory services and technical assistance to local entrepreneurs in developing productive use projects and preparing applications for loan or grant funding for rural, small-scale businesses.

Outcome 4B focuses on increasing financing and investments from the private sector in sustainable energy and low carbon projects. Output 4B.1 involves capacity building for existing banks on financing low carbon development projects through a training program. Output 4B.2 aims to establish a commercial or private sector financing scheme for low carbon technology projects, providing advisory and design assistance services. Output 4B.3 involves facilitating the financing of sustainable energy and energy-efficient technology projects through the established financing scheme or private sector investments.

The project includes two components focused on financing for sustainable energy and low carbon initiatives in the energy supply and demand sectors. Component 4.1 aims to increase the availability and access to financing for such projects, while Component 4.2 aims to attract increased financing and investments from the private sector specifically for sustainable energy and low carbon projects. These components aim to enhance the financial resources and support necessary for the implementation of sustainable energy projects, promoting energy access and low carbon development in the sectors.

Component 5: RE and EE Technology Application

A key area of project incremental support that is also quite innovative for Vanuatu will be in sourcing, best price costing, and establishment of local supply of RE and EE parts and equipment. Vanuatu's baseline program is not addressing this area; and, because of that, system costs are excessive and opaque, thus inhibiting financial viability and replication. To provide proof of economic and financial viability, BRANTV adopts a demonstration approach.

Component 5 focuses on the adoption and implementation of viable sustainable energy and low carbon techniques and practices in Vanuatu's energy, public, private, and residential sectors.

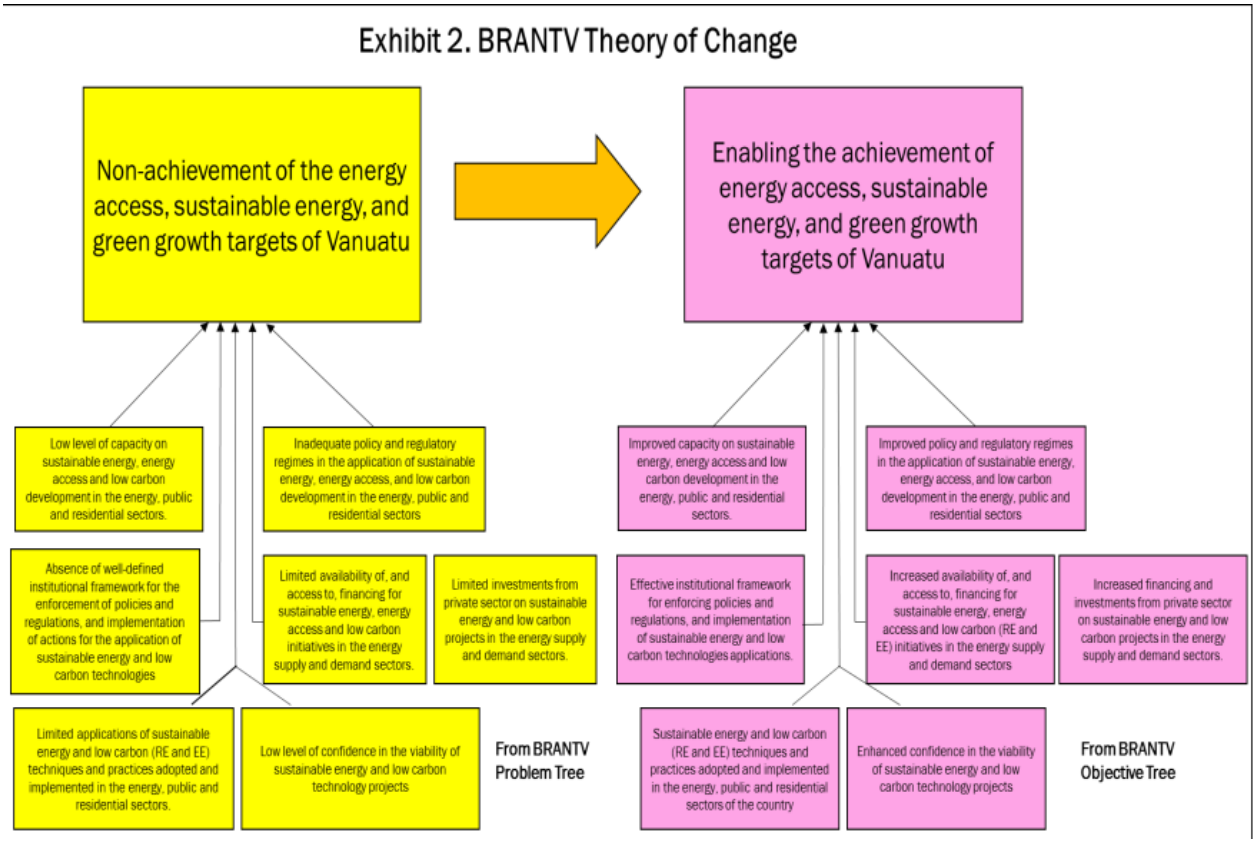
Output 5A.1 aims to establish operational sourcing channels and provide transparent cost breakdowns for renewable energy and energy efficiency systems. Activity 5A.1.1 involves researching and providing technical support to ensure availability of high-quality, low-cost sourcing for pico-/small micro-hydro mini grids, including transparent pricing information. It also focuses on facilitating local supply of parts for these systems.

Activity 5A.1.2 extends the sourcing and cost breakdown work to village community PV systems, family compound-scale PV nano-grids, and household-scale solar home systems (SHSs) and plug-and-play PV systems. Similar tasks are carried out to ensure high-quality sourcing and local parts supply.

Activity 5A.1.3 provides technical assistance to artisans in sourcing cost-effective parts for energy-efficient cook stove fabrication.

Overall, the goal is to establish reliable sourcing channels, transparent cost information, and local parts supply for various renewable energy and energy efficiency systems in Vanuatu.

The Theory of Change is mapped below:



3.6 Expected results

The project aims to improve capacity building and increase awareness on sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors. It also aims to achieve improved policies, establish institutional frameworks and implementation, and increase availability of financing for sustainable energy, energy access, and low carbon (RE and EE) initiatives in the energy supply and demand sectors. It also aims to give a greater representation to women among communities and empower them by giving them the possibility of generating income.

3.7 Total Resources

The project was endorsed by GEF in June 2018, with a funding support of US$ 2.63 million for five years till July 9, 2023 (as per the approved project extension). The expected project co-financing was US$ 16,348,000 grant from the Government of Vanuatu under the Department of Energy, Ministry of Climate Change and Natural Disaster (DOE-MCCND), US$ 714,444 in kind from Government of Vanuatu under the Department of Energy, Ministry of Climate Change and Natural Disaster (DOE-MCCND), US$ 1,000,000 form Government of Vanuatu through the Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business and US$ 63,198.51 grant form Government of Romania. The Project Management Unit (PMU) under the Department of Energy (DoE) is responsible for the overall implementation of the project. Reference Table 2: Financing Table

3.8 Main stakeholders: summary list

The principal stakeholders of BRANTV are:

Department of Energy (DOE), Ministry of Climate Change & Natural Disaster (MCCND): Most of DOE's work will be relevant to the project.

World Bank's VREP Project: Phase 2 of VREP will establish PV mini-grids, institutional PV systems, and household PV systems

ADB's Energy Access Project: Project will include 400 kW Brenwei Hydro Mini-Grid System

IUCN's Talise Hydro Project:

EU-GIZ ASCE Project: Component of project that provides solar DC freezers for fishermen

SPC Solar Fridge Project: This project provides solar DC fridges to cooperatives

National Green Energy Fund (NGEF) and GGGI: This fund, developed in cooperation with GGGI, is raising funds and developing financial mechanisms to support RE and EE projects in Vanuatu

Department of Water Resources (DWR), New Zealand High Commission, UNICEF: These organizations are cooperating on water supply projects across Vanuatu

National government departments in the productive sectors (including Departments of Agriculture, Livestock, Fisheries, Cooperatives, and Tourism): These organizations are carrying out rural development projects in various areas, such as fisheries, cattle breeding, etc

Department of Forestry: This organization carries out various projects to protect the nation's forests.

Department of Environment: This organization is carrying out various projects related to environmental protection in Vanuatu.

Beyond the above-mentioned stakeholders, other stakeholders include private sector technical and equipment companies, commercial banks, local businesspersons and village communities, local civil society organizations, engineers, technical persons, and rural electricians, artisans/ potential artisans, women, and other marginalized groups in the villages.

4. Findings

This section presents the findings of this TE adhering to the basic structure proposed in the TORs and as reflected in the UNDP project evaluation guidance.

4.1 Project Design/Formulation

This section discusses the assessment of the formulation of the project, its overall design and strategy in the context of Vanuatu in the Pacific.

4.1.1 Analysis of Results Framework: project logic and strategy, indicators

The logic model of the project is presented in the Strategic Results Framework as per standard UNDP-GEF format, with baselines, targets and data sources fully specified. The framework provides outcomes, under each project component, to be released for achieving the overarching objectives. Each project outcome is expected to be realized through the delivery of specific project outputs and the level achievement is tracked through outcome indicators and specified targets for each.

Overall, the project components were well linked to its objective, taking into account specific challenges and previous experiences in Vanuatu regarding the deployment of renewable energy installations. Furthermore, the project design was formulated with close involvement of DOE and calls for extensive liaison with communities and their involvement in implementation of demos in villages; ensuring that project elements reflect DOE priorities and garners acceptability amongst village communities.

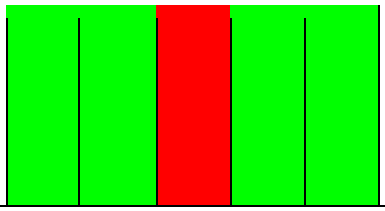
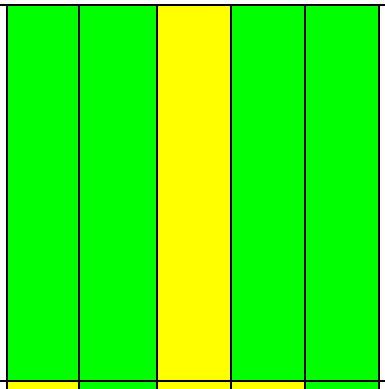
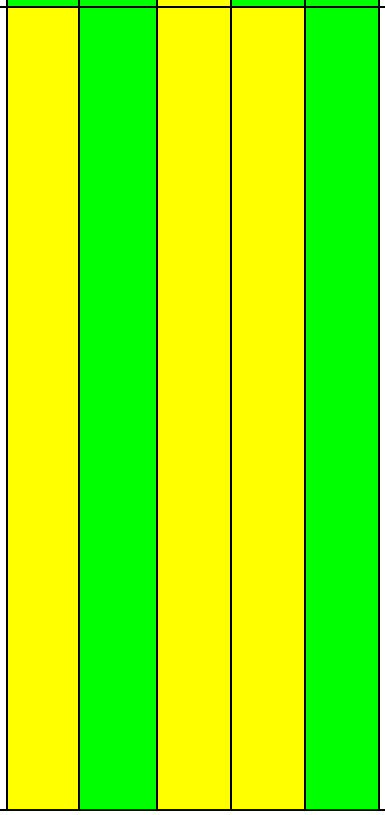
However, the likelihood of the project realizing its objective within its original time frame was overestimated, given the ambitious targets. The goals envisaged of reduction in emissions, etc. could not be achieved with the current design of the program. Furthermore, there were unforeseen events, particularly pandemic, and natural disasters. A key issue is that project activities are extensive and require significant capacity to be implemented. Furthermore, the impact of activities needs to be sustainable overtime. Although sustainability has been a core focus of the project strategy, the strategic framework does not appropriately track progress on impacts on income generation as a result of installed RE systems and EE adoption which makes it difficult to assess the long-term sustainability of such interventions. With regards to implementation of activities, there were significant internal delivery risks that were overlooked at the project design stage (elaborated upon in the following section). In addition, it would have been essential to also include urban areas, and grid electricity as well, while also having a sizeable project financing outlay.

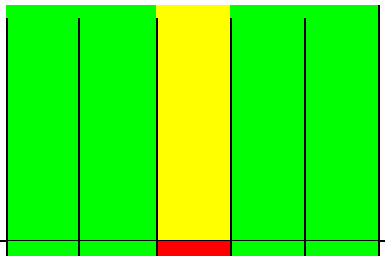
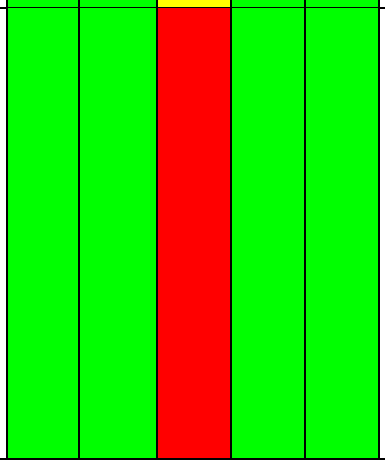
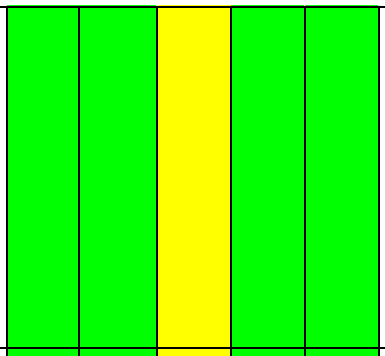
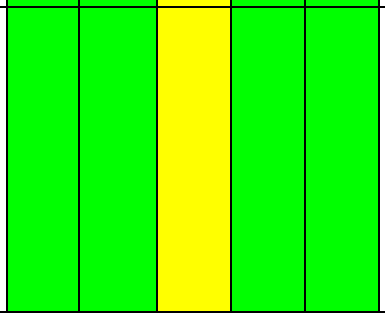
Furthermore, the strategic results framework is limited in its ability to inform implementational priorities as they change over time. Over the project's timeline, while initial impacts are generated through installation and validation of RE and EE systems, the end of project targets are more reliant on scaling-up and replication of the interventions. The results framework would have benefited by incorporating indicators that tracked the likelihood of impact achievement over the project's lifecycle, based on the progress of activities under each project outcome. This would be instrumental in allowing the PMU in managing its implementational priorities.

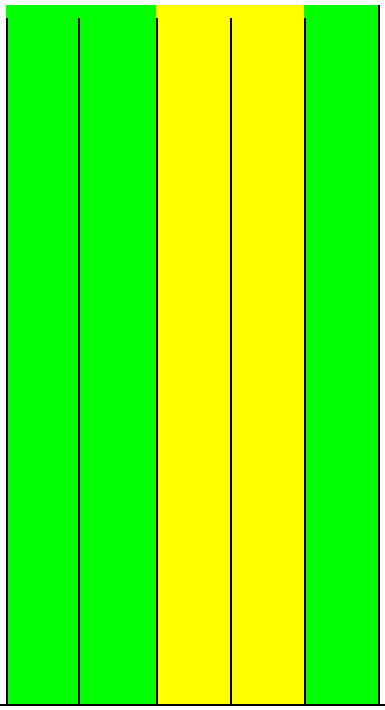
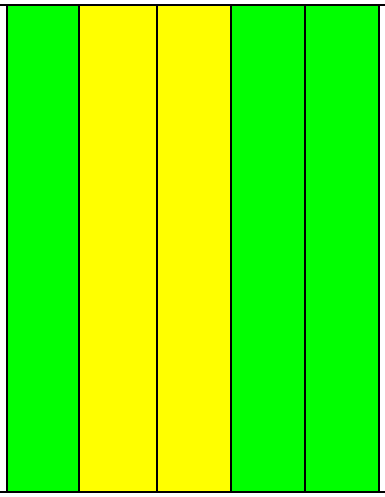
Another weakness of the results framework pertains to the limited focus on the income and livelihoods dimension of the energy installations. As per TE findings, the project was more focused on execution, rather than solely livelihoods dimension since that requires a longer time horizon to monitor and requires more interventions than just energy. The timeline of the project; post installation wasn't long enough to monitor the same. Following the MTR, there was more focus on project execution to demonstrate viability and given paucity of time tracking the income and livelihood dimension may not have been possible. Moreover, while gendered impacts have been considered, the dimensions could be enhanced by including indicators, which capture impacts in terms of increased income-generation capacity of women and reduced vulnerability to climate change and natural disasters. The issue remains that there is little transparency on the extent to which EE technologies benefit livelihoods of village communities, which makes it difficult to ascertain whether the adoption of such technologies will sustain over time, post-intervention.

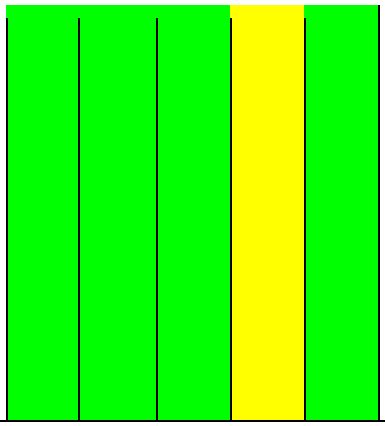
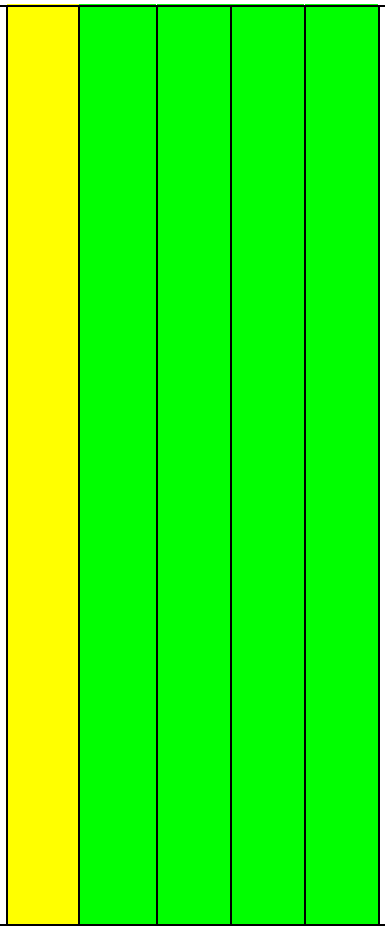
Analysis of the result indicators against the SMART - Specific, Measurable, Achievable, Relevant & Timebound - criteria is provided in the table 5 below:

Indicators	End of Project Targets	SMART Criteria					Comments
		S	M	A	R	T	
Objective: Enabling the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu							
Cumulative tons of incremental GHG emissions reduced from business as usual (tons CO2)	45,016.1						Unlikely to be achieved within the project time frame.
Incremental number of households (with at least 20% woman-headed) in rural areas whose level of energy access is increased via village-scale off-grid RE or that benefit from newly adopting EE cook stoves	14,000						Unlikely to be achieved within the project time frame.
Total new, incremental reductions in or newly avoided amounts of annual diesel consumption achieved (liters DFO)	272,212						Unlikely to be achieved within the project time frame.

Incremental fuel wood saved annually by use of energy efficient cook stoves, million kgs	15.6		Unlikely to be achieved within the project time frame.
Outcome 1: Improved capacity and awareness on sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors			
Number of individuals (with at least 30% being women) in Vanuatu that are newly (as of start of project) involved in operating, maintaining, repairing, designing, and/or installing off-grid rural RE power systems as one of their main sources of income.	300		Target is moderately achievable within the project timeframe.
Number of artisans in Vanuatu fabricating EE cook stoves as their main source of income	20		Target is moderately achievable within the project timeframe. The indicator is only moderately specific and relevant to the outcome as it does not take into account the capacities of consumers for repairing and maintaining EE cook stoves for reuse.
Outcome 2: Improved policy, planning, and regulatory regimes in the application of sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors			

Portion of nation's off-grid villages for which a comprehensive electrification plan has been determined , %	100		This indicator is moderately achievable within the project timeframe.
Number of regulations under the Off-Grid Rural Electrification Policy that are enforced	5		This indicator is unlikely to be achieved within the project timeframe as its delivery is highly contingent upon the political will of institutions, which was identified as a delivery risk.
Outcome 3: Established institutional framework enables the effective enforcement of policies and regulations, and implementation of plans, programs, and projects, on the application of sustainable energy and low carbon technologies.			
Number of pico-/ small micro-hydro, village community PV, and village sets of family compound-scale nano-grid sites at which management model enables fee collection, savings for repairs/ parts, and payment of operator	40		This indicator is moderately achievable within the project timeframe.
Number of villages at which DOE has cooperated with other national-level departments to implement rural electrification or EE cook stoves, as well as productive uses of RE/EE applications, if relevant	60		This indicator is moderately achievable within the project timeframe.
Outcome 4: Increased availability of, and access to, financing for sustainable energy, energy access, and low carbon initiatives in the energy supply and demand sectors			

Amount of new international funding confirmed with funding entities for infusion into NGEF because of BRANTV efforts, US$ million	10		This indicator is moderately achievable within the project timeframe. Relevance to the overarching objective of the component is also limited as grant funding from international sources do not enable sustainable access to funds for RE and EE projects.
Outcome 5: Increased financing and investments from private sector on sustainable energy and low carbon projects in the energy supply and demand sectors			
Amount of funding represented by financial closes reached for loans or direct equity investments to RE and EE projects under commercial or private sector financing scheme for low carbon projects, US$ million	4		This indicator is moderately achievable. Furthermore, there needs to be clarity on whether the volume of transactions or the value of transactions is used as a measurable target.
Outcome 6: Sustainable energy and low carbon (RE and EE) techniques and practices adopted and implemented with both cost and technical viability in the energy, public, private sector, and residential sectors			

Number of types of key off-grid RE power generation and mini-grid related equipment/ parts newly available or available at 25% or more less than cost at start of project	8		Under the particular project component, indicator measuring technical viability of RE and EE techniques is also highly relevant, however omitted.
Outcome 7: Enhanced confidence in the economic and technical viability and long-term sustainability of sustainable energy and low carbon technology projects			
No. of communities and private sector entities, and households in both on-grid and off-grid areas that are interested in replicating the RE-based power generation system, and EE cook stoves and RE-powered freezer demos: • Pico-/ small micro-hydro • Hybrid pico-hydro & PV • Village community PV (with or without mini-grid) Village-wide family compound-scale PV nano-grids • EE cook stoves • RE-powered freezers	• 38 • 2 • 20 • 20 • 12,000 • 60		The indicator is only moderately specific to the outcome level impact. Interest of individuals is subjective. The indicator can be made more specific by looking at expenditure towards RE and EE systems by households and private sector entities.

4.1.2 Assumptions and Risks

The Project Document provides a strategy that maps out a definite pathway of developmental theory of change for realizing the envisaged outcomes of the project. In doing so it sets out key assumptions and also identifies potential risks.

The project strategy considered Vanuatu's Off-Grid RE and EE Promotion Program as the main baseline effort towards achieving the country's NERM targets. The program included the installation of RE-based (mainly hydro and solar) power generation and distribution systems, as well as some non-power applications of RE such as solar PV freezers for fishermen and solar PV fridges for cooperatives. Furthermore, efforts such as the establishment of Vanuatu's National Green Energy Fund (NGEF) to attract and channel donor financing via loans or grants to RE and EE projects in Vanuatu, were also incorporated as baseline activities.

The project strategy builds upon the baseline efforts by incorporating enabling interventions that would facilitate the application of off-grid RE systems and adoption of EE technologies in a sustainable manner. For instance, it puts emphasis on management systems for off-grid systems, the need for a roadshow to familiarize villagers with EE cook stoves, the need for smaller off-grid RE power systems given small population clusters, and the need to address dispersed, family-compound style villages differently from villages with a more concentrated clustering of households. The key assumption here was that eliminating barriers which had limited adoption of RE and EE technologies would facilitate the achievement of the NERM targets. Overall, the BRANTV project has a sound strategy.

However, some contributing factors that would enable achievement of project outcomes and overall objective, were assumed with little cognizance of certain risks that would impact overall project effectiveness. While some of the risks identified were underestimated and/or inappropriately mitigated.

For one, BRANTV's incremental activities focused on mobilizing private sector funds towards RE and EE technology application and adoption through TA activities such as educating the banks and working with the commercial private sector to set up a loan or equity financing mechanism for off-grid RE projects and productive uses in rural areas. However, the effectiveness of such activities in terms of improving accessibility to financing remains limited due to higher interest rates as a result of macroeconomic shocks and the country's moderate risk of external and public indebtedness[3].

In terms of sustainability, a key risk identified was that without strong income generation from productive uses, the sustainability of RE power systems would not be ensured due to limited funds being set aside for maintenance and repairs. This risk is not appropriately tracked by the Risk Log. The risk log was also not regularly updated.

In terms of delivery risk, this review highlights a limited focus on overall implementation strategy that would allow achievement of project outcomes. For instance, while implementational risks linked to limiting local capacities were highlighted in the project document, mitigation measures were not adequate. The reliance on external experts continued to hinder progress on some of the core activities of the project. For instance, the availability of required expertise on Pico-hydropower systems was also a challenge until early in 2021 when the BRANTV PMU was able to secure a consultant who was working for

[3] Vanuatu: Staff Report for the 2023 Article IV Consultation—Debt Sustainability Analysis

another energy project funded by the World Bank. All the while, the delivery of certain project components was dependent on the political will of institutional stakeholders. Moreover, the National Implementation Modality (NIM) positioned the government to drive implementation, which makes internal capacity gaps all the more significant as a delivery risk.

Furthermore, environmental risks and climate change vulnerabilities were also considered. However, the relevance of these risks was established for project demos but no other components which would be reasonably impacted. For instance, natural disasters would adversely affect the risk appetite of lending institutions. Hence, the project component which aims to promote access to funding for RE and EE technology adoption should have considered establishing disaster insurance programmes that would appropriately deal with this risk. With the TA efforts for the NGEF only focusing on expanding capital investment and funding access to private entities for RE and EE adoption; the environmental risks highly threaten the achievement of outcome level impact for this component.

4.1.3 Lessons from other relevant projects incorporated into project design

The project design benefits from good practices and past lessons from a strategic perspective in relation to achieving the targets of the NERM. Key lessons that were considered for the project design include:

- Sustainability of off-grid RE power systems require funding to establish alternative post installations services delivery models for repairs and maintenance, access to equipment parts and services to prevent frequent breakdown of installed systems and to ensure sustainable use in the long run.
- Building local capacities are critical for sustained operations of village-scale RE power systems.
- Energy efficiency interventions through energy efficient cook stoves and energy efficient crop drying in rural areas of Vanuatu are highly relevant. Large amounts of wood are used in open-hearth fires by almost all rural families in Vanuatu for cooking. Wood is also used in an inefficient process for drying crops in rural areas. Worldwide, indoor air pollution from open hearth fires in village huts is considered the air pollution problem negatively impacting the most people; and it disproportionately affects women and children. The situation in Vanuatu appears to correspond to these worldwide trends. Further, cutting of wood for fires is already leading to deforestation in certain areas of the nation, where fuel wood is becoming scarce. Vanuatu's NERM recognizes that EE cook stoves may reduce air emissions by 90% and energy consumption by 50%.

The project design effectively assimilates these learning. Project components, specifically component 1, 3 and 4, directly respond to these learnings. Moreover, the strategic results framework, to some extent, incorporates impact indicators that are directly linked to the main issues raised in the lessons learned through past experiences of implementing similar projects.

4.1.4 Planned stakeholder participation

The target groups (i.e., local villagers and indigenous people, women, and other marginalised groups in the villages) were consulted and engaged during the PPG phase of the project. Overall, the project design approach was inclusive with special emphasis on the needs of communities and remote populations (including the disadvantaged families, etc.) in the rural areas. Social and economic activities that require energy as a basic input were considered e.g., for education, communications, housing development, livelihood, domestic household requirements, recreation, and other basic human needs. To ensure

effective stakeholder participation, a comprehensive stakeholder and communications plan was developed and provided in Annex 14 of the project document. The various elements of the project's stakeholder engagement and communication plan were woven throughout the project's components and activities. The plan sets out a strategy through which various stakeholders will be engaged throughout the project implementation, as well as set targets associated with the stakeholder engagement plan for selected stakeholder groups.

4.1.5 Linkages between project and other interventions within the sector

The project has engaged relevant donor projects and programs and other donors (both multilateral and bi-lateral) via involving them in the inception workshop. The most relevant initiatives of donors make up the baseline of BRANTV, these include: the hydro, PV, and solar fridge/freezer initiatives. The BRANTV builds on the baseline projects through its incremental activities, with the aim to augment the impact, ensure sustainability and also inform future programming and support replication. A key example is the village off-grid RE power generation management model of the BRANTV which is anticipated to inform future donor projects pursuing village-scale RE power installations, where the model may also provide a solution to the sustainability problem that highly concerns all donors working in this area. Furthermore, the PV sourcing work of the project is important to VREP as work on ensuring PV system parts availability in the islands will contribute to the sustainability of VREP as will the work on a system for disposal of PV waste. In addition, the project assists NGEF in reaching out to other donors (including those not yet active in Vanuatu) about potential funding replication of BRANTV demos via NGEF.

Other donors involved in RE and EE in Vanuatu include the Asian Development Bank (ADB) and its 400 kW Brenwei hydro project, the World Bank and its VREP Phase 1 and 2 Project (which provides subsidies for plug-and-play PV, SHSs, institutional scale PV, and PV mini-grids), EU-GIZ (which has a solar freezer and biogas project), SPC (which has solar freezer and fridge project), GGGI (which has completed a solar fridge project and is assisting Vanuatu in setting up its NGEF), New Zealand High Commission (which is supporting VREP and also providing support with UNICEF in the area of water supply), IUCN and its 75 kW Talise micro-hydro project, JICA (which is likely to support 600 kW expansion of Sarakata hydro and which will be providing TA support in EE as well), and China Ministry of Commerce ("China Aid"), which provides training support in various areas related to RE.

4.1.6 Gender Responsiveness of Project Design

BRANTV recognizes the strong need to promote improvement of the situation of women in Vanuatu. This includes both the need for women's voices to be heard in decision-making and the need to ensure that women benefit from project activities. As such, a gender strategy has been designed for the project to ensure women have strong influence on decisions regarding BRANTV demonstration projects. Specific productive use activities benefiting women were identified during the PPG phase. Furthermore, the project, which includes several training/ capacity building efforts; with women making up at least 50% of the targeted beneficiaries. Moreover, other trainings that were part of the project also set a fixed quota for women trainees. Therefore, sufficient efforts towards gender mainstreaming during the project design phase.

Gender Strategy - Measures for mainstreaming of gender and associated enhancement of the situation of women:
1. BRANTV will ensure that women play a key role in village/ community decision-making associated with the project. It will be required that at least 50% of those involved in relevant meetings and relevant decision making will be women.
2. Women will be given priority for project funds provided for productive use initiatives. It will be required that at least 50% of such funds go to productive use initiatives mainly involving women.
3. A priority will be put on ensuring that women participate in the project's training and capacity building program with strong representation. A target of 30% women among those who master program materials has been set. This will be achieved by requiring that 30% of persons receiving high level technical training and operator training are women and that 50% of those involved in the nation-wide PV repair and installation program are women.
4. A priority will be put on ensuring that women benefit from contract opportunities associated with project implementation, such that 30% of total person-days in individual consulting contracts are carried out by women.

4.1.7 Social and Environmental Safeguards

Project design work included conduct of a Social Environmental Screening Procedure (SESP). The key risks identified as a part of the SESP involve the following key areas, with all risks being directly associated with the project demos rather than other aspects of the project:

Environmental:

- Potential adverse impacts on habitats and ecosystems
- Generation of waste that enters environment

Social

- Potential adverse impacts on the human rights and/or livelihoods of affected populations, particularly indigenous people, and marginalized groups
- Health and safety risks to local communities due to construction, operation, decommissioning, and disposal of wastes

The SESP rated with 'moderate risk rating'; the BRANTV project required Environment Social Management Plans (ESMPs) for all sites before undertaking any demonstration activity. To this end the PMU recruited a consultant for Environment Social Management Plan (ESMP) through a competitive tendering process, with the consultant engaged delivering a training workshop on Environment Social Impact Assessment (ESIA) to both the PMU and DoE staff in February 2019. This was then followed by a practical exercise at Utanlangi Village on Nguna Island - a proposed site for family-compound nano-PV solar system – which confirmed that Utanlangi Village was suitable to host a demonstration community-scale PV solar system due to its ongoing fishing project funded by Peace Corp and a well-established community centre.

Followed on from the training and practical by mid-March 2019, two teams from PMU and DOE left on a field trip to visit sites identified for BRANTV demonstrations on four islands, Pentecost, Maewo, Malo and Santo. The first team left on March 14th and both teams returned on 31st March. During these field trips,

the team carried out activities under Component 5.1 (Outcome 5A) that are intended to deliver Output 5A.2 (Detailed design and risk mitigation plans for project demos) to confirm and secure community support for each demo, with the village chiefs and landowners signing their consent on the project form to confirm their ownership and availability of land for pico-/micro hydro station (including expansion of one pico-hydro/PV hybrid), community PV sites and family compound scale PV nano-grid. The community members also signed their consent for volunteer work during construction of hydro systems and installations of PV solar systems.

ESIAs were planned for each of the project's 20 incremental demo sites. In addition to assessing environmental issues, the ESIAs also included assessment of impact on women, indigenous people, and other marginalized groups. These assessments were aggregated together and integrated to develop the project's Environmental and Social Management Plan (ESMP), which was prepared during project implementation. Implementation of specific demos did not begin until the management measures as detailed in the ESMP are approved and put in place (e.g., incorporated into demo implementation plans).

The project, working with DOE, was also required to establish a grievance redress mechanism for the reporting of environmental and social grievances associated with the implementation. DOE was responsible for taking the lead in addressing such grievances. Furthermore, as part of monitoring, Environmental and social grievances are reported to the GEF in the annual PIR.

4.1.8 Summary of Mid-Term Review Findings

The MTR report which was delivered in December 2021, through an extensive review and assessment of the overall project implementation and progress against the outcome level and objective level targets. Based on its findings, the MTR made the following recommendations:

1. The MTR made Action the site-specific recommendations for the BRANTV demonstration sites. Major recommendations were to ensure all installations are disaster-proofed to withstand extreme weather events; ensuring suitably qualified and trained local technicians; ensuring that local technicians are recruited and selected before installations, so that they can also get hands-on on-the-job training from the contracted PV supplier; ensuring there is a basic inventory of spare parts/supplies for lower-cost parts, to reduce the risk of long downtimes periods while waiting for parts; ensuring all contractors develop simple and brief manuals on each of the systems and develop a schedule of maintenance programme for the local technicians to follow; ensuring a full focus on tracking the range of benefits (direct and indirect, energy and non-energy, financial and non-financial etc.) that are or can flow from these installations, and ensuring local management committees and structures are well set-up to be effective.

2. Carry out a full review of all aspects to BRANTV installations to assess potential for models for replication and scaling. This should include all costs and financial aspects, including installation costs, maintenance costs, variable cost factors/influencers, as well as overall performance (technical, including installation performance, number of breakdowns, number of spare part replacements, quality of installation and equipment, amount of downtime, speed of repairs, quality of maintenance, etc.). It should also include income generation, as well as strengths and weaknesses and areas for improvement. This assessment work should also be informed by where

the demand / market demand for the various solutions come from, and/or the needs of different stakeholder groups in Vanuatu.

3. Review BRANTV Implementation Approach, Develop a Comprehensive BRANTV Forward Planning. While much effort has been invested by the project team up to this point, there is a sense that the project has over-focused on deployment of the energy installations, (partly due to the under-resourced project team). There is a risk that by project end while most of the installations have been completed but that the project will not be able to meet its targets, nor achieve significant progress.

4. BRANTV needs a much clearer sustainability strategy and planning at all levels, and it is recommended that this starts with a review and a sustainability discussion paper. Key areas to be addressed: sustainable financing ecosystem; the required policy, regulatory and legislative framework; sustainable capacity development; and BRANTV and Natural Disaster/Tropical Storm Recovery.

5. Develop a Strategic Financing Framework and Work Programme. It is recommended that the project consider how it can help develop and strengthen the government understanding of the financing landscape, and how the financing ecosystem can be strengthened and improved. As part of the above, UNDP's own Integrated National Financing Framework (INFF) could possibly inform some aspects of this work.

6. Find short-term and medium-term solutions to ensure insurance coverage of installations. A key concern regarding sustainability is financial risk protection, and more specifically, the lack of insurance cover for installations in the case of damage occasioned by natural disasters such as cyclones. It is important that a funding mechanism is designed and put in place as a matter of urgency, and the Project Board should consider allowing BRANTV to play a leading/coordinating role in finding a shorter-term solution and scoping out a longer-term solution.

7. Develop a Project Concept and Funding Proposal to Support the Department of Cooperatives in Delivering Renewable Energy Access to Cooperatives. Specifically, the project should explore with the Department of Cooperatives the development of a project concept and funding request to significantly increase the scale of deployment of renewable energy installations to support the development and re-invigoration of cooperatives.

8. Consolidate needs analysis of sectors to develop scaled-up models for deploying energy access. It is recommended that BRANTV places an increased focus on the development needs of various sectors, starting with the sectors where it has supported income-generating needs.

9. Strengthen BRANTV Monitoring around core KPIs. Project monitoring is in part constrained by challenges of distance/remoteness of sites, limited communication, and this needs to be addressed.

10. Modify project management and implementation to reflect BRANTV's multi-level and multi-pronged holistic approach, and to dynamize implementation. It is recommended that, in tandem with reviewing the project strategy and work plan, that the implementation resourcing is reviewed. The BRANTV team appears too small, and not having technical renewable energy

expertise reduces the potential speed of progress and deprives the project team of some flexibility, while increasing the workload and time on administrative matters such as procuring technical expertise. It is recommended that UNDP and the Government (DOE) Some of the following actions/options to address these issues and speed up the pace of implementation by increasing resources, technical expertise, and urgency.

4.2 Project Implementation

This section discusses the assessment of how the project has been implemented. It assessed how efficient the management of the project was and how conducive it was to contribute to a successful project.

4.2.1 Adaptive management

It took considerable time for the project management unit to be established and align activities, particularly amidst the pandemic. The project team was often understaffed and had to rely on resources provided by the Ministry of Energy to push things through. During lockdown, the BRANTV PMU had developed a Business Continuity Plan (BCP) as per instructions by the Government Public Service Commission and submitted it with the Department of Energy's BCP. Procurement of consultancies became priority action plans during lockdown. In line with the request for extension of the Barrier BRANTV project for implementation period (9th November 2022 – 9th July 2023), an action plan was proposed to address outstanding implementation issues and risks in this time of COVID-19 pandemic.

Furthermore, an action plan was developed to address all pertinent MTR recommendations. While the PO provided strategic guidance to the PMU in risk management and addressing the MTR management response, the PIR 2022 reporting does not provide any reporting on progress against the committed activities. However, most findings of the MTR were addressed to a certain extent and is expected to reach maturity towards end of the project.

4.2.2 Actual stakeholder participation and partnership arrangements

The BRANTV project team has devoted significant effort to involving local communities from the outset, in terms of engagement during the site assessment process and raising awareness about renewable energy installations and the potential benefits that they could bring. This has included consulting local village and community leaders and chiefs, and different beneficiary groups, to ensure local buy-in and ownership, as well as providing training on renewable energy installation management and maintenance.

Stakeholder consultations during the MTR stage highlighted that the local community was often participating in the project since it is directly impacting on their economy. In some sites, women and young people have participated to a greater or lesser extent. In the case of Lolbaego, for example, many fishermen were also youth. Women and other community members have also participated in the project, in that they have been carrying out tasks such as cleaning fish and helping with fish storage. In Angoro, women were engaged in the local committee while youth were also involved in the farmers' market and in fisheries, while in the case of Malo, women and the youth played a key role collecting coconuts and selling at the project site.

As of the TE stage, this review also finds that stakeholder participation as part of the project's implementation enabled broad-based ownership of various interventions that were a part of BRANTV.

This ensured that there was community involvement across the board, which facilitated smooth execution of various interventions.

Stakeholder participation enabled broad-based ownership of various interventions that were a part of BRANTV. This ensured that there was community involvement across the board, which facilitated smooth execution of various interventions. However, it is important to note here that smooth execution does not mean effective, or efficient implementation.

It is essential that going forward, in case a similar project is designed, the project team must constitute at least of a project manager, as well as a dedicated and qualified resource for managing finances, and a dedicated and qualified engineering resource. In the absence of dedicated resources, the risk of deviation from project objectives, and inability to meet timelines remains high.

Scaling up Vanuatu National Green Energy Fund

The Vanuatu National Green Energy Fund provides soft loans to catalyse various renewable projects, and also provides an extensive catalogue of solutions, thereby providing a turnkey solution to various public institutions that want to adopt renewable energy. Availability of turnkey solutions, and pre-qualified vendors provides the necessary assurance regarding the reliability of the equipment being utilized or rolled out.

The soft loans provided by the NGEF are at concessional interest rates, such that they are affordable for the users. However, scaling up the fund will always be restricted by availability of liquidity to NGEF, and its risk appetite. For the NGEF to scale up, it is imperative that its operations are not restricted by liquidity, and that it continues to provide turn-key solutions for scaling up renewable energy. NGEF can enter into partnerships with various financial institutions, such that the financial institutions can provide the liquidity. However, the financial institutions may not be able to provide a concessional interest rate. At that point, the NGEF can provide an interest rate subsidy to make the transaction economically feasible for the financial institution. Effectively, instead of committing the full amount required for capital investment as a soft loan, NGEF can preserve capital and only use a very small amount to provide an interest rate subsidy. The interest income that NGEF can earn on its available capital would be sufficient to cover for any such interest rate subsidy.

It is critical that private capital is crowded in and leveraged to achieve the goals as desired by 2030. However, the necessary framework to crowd in private capital needs to be in place. In addition to providing an interest rate subsidy, the NGEF can also consider creating a credit guarantee fund. Such a credit guarantee fund can essentially provide credit coverage for any loans that are extended by financial institutions for renewable projects. Availability of credit coverage can de-risk projects initially, and allow financial institutions to understand, and learn the dynamics of all such projects. Once the necessary skill set is developed, the credit guarantees can be gradually reduced.

Through a mix of interest rate subsidy, and credit guarantees, NGEF can potentially leverage its available capital at a considerably higher level, thereby generating accelerated impact, rather than through soft loans. The necessary capital is in place, and once a dedicated fund can be established, it can also raise other forms of donor, or multilateral capital that can be used to support renewable energy projects in Vanuatu. A transition from a soft loan led approach, to a more ambitious structured product driven approach is critical to meet the renewable energy goals by 2030.

Capacity Building

Deployment of renewable assets in remote communities necessitates development of a skill set in the community such that the community can partake actively in the operations & maintenance of the equipment and is also able to organically develop entrepreneurial ventures from the same. Through the implementation of various demonstration sites, training was only provided to a few individuals in each community. If any of those individuals, or all such individuals leave the community whether due to employment considerations, or otherwise, the community loses a skilled resource in the process. Even though demonstration sites were active for only a few months, absence of relevant skilled resources was apparent, which also resulted in either the equipment malfunctioning till a new resource was made available, or the equipment being underutilized, as existing community members do not understand how to operate the same efficiently.

In view of the above, it is critical that a sustained program of capacity building is in place, which trains a sizable number of people in a community, which can also be predominantly women. Training women for operations & maintenance of equipment will not only assist in enhancing gender equity but also enable better access to jobs, and better skill transfer. In a community, it is often the men that leave the community for employment related prospects; however, women can provide that necessary critical stability for skill retention, and skill transfer. Initially, only a few individuals in each community were trained, predominantly men. It is estimated that three members from each community were trained. The total number of people trained is estimated to be more than 50 spread over various communities, and sites. Capacity building should be further enhanced and impart skills particularly among women members of a community. As projects transition towards a micro-grid infrastructure, the tariff can also cover stipends, and wages for the same, while also enhancing skills of local community members.

In BRANTV, the component of capacity building largely focused on training a few individuals, without much regard for potential succession, or concentration risk. Going forward, capacity building must consider capacity development of the community at large, particularly women, rather than a few individuals only.

Gender equity

Through stakeholder interactions, as well as community interactions, it was observed that most decision making, capacity development, and other consultation was largely restricted to men. Only in very few instances were any women involved in decision making. In view of the same, it is critical that women have greater involvement in the decision-making process, and are part of all facets of a project, or implementation. Availability of entrepreneurial opportunities being generated by the program, and skill training being imparted must be equally available to women as well. In a future program, a more targeted gender ratio in terms of capacity development targets can assist in achieving the desired goal.

4.2.3 Project Finance and Co-finance

The table below summarizes the sources and types of co-financing for the project, which aims to increase access to renewable energy sources and energy efficiency services in rural areas of Vanuatu. The co-financiers include UNDP, the Government of Romania, the Government of Vanuatu and its multiple ministries. The total amount raised by this project is $18.2 million; with the largest co-financer being the

Government of Vanuatu – the recipient Government. The money is mainly used for investments in renewable energy systems and energy efficiency measures. The actual amount spent was only 2.2 percent of the amount that was planned, mainly due to inability of the government to contribute the necessary funds as planned. The government planned a contribution of US$ 17.34 million, while only US$ 0.250 million of the same materialized. Amount contributed by UNDP and partner agencies during the planning stage was actualized as per commitment.

Table 6: Co-Financing Table

Co-financing (type/source)	UNDP Financing (US$)		Government (US$)		Partner Agency (US$)		Total (US$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants	100,000	100,000	17,348,000	341,224	0	60,736.20	17,448,000	501,960.2
Loans/Concessions	0	0	0	0	0	0	0	0
In-kind Support	0	0	714,444	79,774.77	0	2,463.31	714,444	82,238
Other	0	0	0	0	0	0	0	0
Total	**100,000**	**100,000**	**18,062,444**	**420,998.7**	**0**	**63,199.51**	**18,162,444**	**584,198**

Table 7: Confirmed Sources of Co-Financing at TE Stage

Co-financing as of June 2023

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Co-financing amount confirmed at CEO Endorsement / Approval ($)	Investment Mobilized ($)	Materialized co-financing as of June, 2023
Recipient Country Government	DOE-MCCND	Grant	16,348,000	Investment Mobilized	341,224
Recipient Country Government	DOE-MCCND	In-Kind	714,444	Investment Mobilized	79,774.77
Recipient Country Government	Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business	Grant	1,000,000	*(not set or not applicable)*	0
GEF Agency	UNDP	Grant	100,000	Investment Mobilized	100,000
Others	Romanian Government	Grant	*(not set or not applicable)*	*(not set or not applicable)*	60,736.20
Others	PCREEE	Grants	*(not set or not applicable)*	Investment Mobilised	2,463.31
Total			**18,162,444**		**584,198**

4.2.4 Monitoring & Evaluation: design at entry, implementation, and overall assessment of M&E

Review of the project's Monitoring & Evaluation (M&E) function highlights that although it was reasonably ensured that the project activities were appropriately tracked and monitored, M&E efforts have had little focus on the overall outcome and objective level impact. The core issue being that the overall effectiveness of this function in steering project implementation, adaptive management, and efforts to ensure sustainability is limited.

For instance, M&E at design did not appropriately consider indicators to track overall income generation impacts as a result of the off-grid RE installations and also adoption of EE technologies. As discussed in the review of the Strategic Framework, this is a major weakness as sustainability is directly tied to income generation. As a result, opportunities to gear up project implementation towards the sustainability goal have been missed. Moreover, cross cutting impacts such as those on socio-economic development of communities and women empowerment cannot be adequately captured. While these areas receive focus during the MTR and TE stages, there are time and resource constraints. Hence, there should be effective

monitoring of such impacts through engagement with community stakeholders throughout project implementation.

In terms of budgeting and work planning, sufficient funds were allocated to deliver the M&E work plan. However, M&E implementation was not up to the mark. Regarding the documentation of the project results (both those that are directly supported by the project and those that are co-finance and carried out by project partners), the PMU was inefficient in monitoring and fully documenting the results of all project activities. Quantification of attributable energy savings and GHG emissions reductions, in particular, was not being carried out appropriately under the initial M&E system. It was recommended by the RTA to make relevant improvements to the M&E function for the project demos. A key issue highlighted was that while the monitoring of such results was budgeted, the budget was underutilized. Furthermore, M&E activities planned for the project extension period have not been delivered either. The output indicators remain outdated, and progress is untracked at the TE stage. Similarly, the GEF tracking tool is not updated either.

Monitoring and Evaluation (M&E)	Rating
M&E design at entry	Moderately Satisfactory (4)
M&E Plan implementation	Moderately Satisfactory (4)
Overall Quality of M&E	Moderately Satisfactory (4)

4.2.5 UNDP implementation/oversight and Implementing Partner execution, overall project implementation/execution

Initially the project had issues with establishment of a project management unit, which was facilitated by UNDP, following which progress got on track, however, the same was derailed due to the pandemic. The timelines that were distorted by the pandemic could not be fully sorted till the end of the project, resulting in inability to meet desired outcomes. Furthermore, ambitious targets, which in retrospect may not have been possible with the existing budget may also have contributed towards unsatisfactory outcomes relative to the targets.

Implementing Agency (IA) Implementation & Executing Agency (EA) Execution	Rating
Quality of UNDP Implementation/Oversight	Satisfactory (5)
Quality of Implementing Partner Execution	Moderately Satisfactory (4)
Overall quality of Implementation/Execution	Moderately Satisfactory (4)

4.2.6 Risk Management

The project faced significant headwinds, largely due to risks that were beyond its scope, and could not be controlled, such as the pandemic, and cyclones. Such force majeure events cannot be completely hedged against, given their systemic nature.

Delay in project implementation is a key risk that was apparent during the course of the project, and that can be linked to an understaffed project management unit, which was not equipped with the necessary skills to deal with the complex nature.

The project execution can be deemed to be hastily done towards the tail-end of the project, due to which many execution risks materialized, including logistics issues, and ill-planned execution that affected the intended outcome. Inability to manage operational timelines often led to funding issues, as the timelines lapsed resulting in funds being called back, the process of funds requisition being initiated again – resulting in more delays.

The risk of environmental and climate related events significantly impacted project implementation. But also, had wider systematic implications. For instance, impacting interest rates which directly influence the project's performance on component 4. To address such risks, it is crucial for the project to incorporate insurance for disaster risk management to ensure not only that the BRANTV achieves its intended impacts, but the interventions are also sustainable.

4.2.7 Social and Environmental Standards

During the project design phase, an environmental and social assessment was conducted, and potential social and environmental risks were identified and described. The project's use of safeguards are reflected in the UNDP Social and Environmental and Social and Environmental Screening Template (SESP), which was presented as an annex to the project document. Furthermore, the annual PIR reporting to GEF included tracking of any environmental and social grievances during the project implementation to ensure they are appropriately addressed.

During project implementation, no changes were made to the initial risk ratings and no new E&S risks associated with project activities were identified in the PIRs. Furthermore, no complaints relating to adverse E&S impacts of project activities were registered.

4.3 Project Results and Impacts

This section discusses the assessment of project results, what are the remaining barriers limiting the effectiveness of the project, how efficient was the project to deliver its expected results, and how sustainable and replicable these achievements will be over the long-term.

4.3.1 Progress towards objective and expected outcomes (*)

The following are the TE findings related to progress towards results by component, outcome, and outputs, as appropriate:

Red: Not on Target to be Achieved	**Yellow:** On Target to be Achieved	**Green:** Achieved
AR = Achievement rating - Progress towards results rating scale: Highly satisfactory (HS); Satisfactory (S); Moderately satisfactory (MS); Moderately unsatisfactory (MU) Unsatisfactory (U); Highly unsatisfactory (HU).		

Table 8:

Indicator	End of Project (EoP) Targets	Cumulative progress as of June 2023	TA		AR	xx	TE Comments
Objective: Enabling the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu							
Cumulative tons of incremental GHG emissions reduced from business as usual (tons CO2)	45,051.2	4,280 This is a cumulative result of GHG ER from 23 demo sites of Community Scale PV Solar systems and 1 installation of Pico-hydropower PV Solar hybrid mini-grid system. Installation updated to June 2023. The fabrication of energy efficient cook stoves will make up the target. The energy efficient cook stoves was delayed to later in Q3 & Q4 2022 for procuring the consultant and fabrication is planned for Q1 & Q2 in 2023.			MU		It will not be possible to achieve the target, as any reduction through cook stoves would not be sufficient to cover the anticipated significant change. Furthermore, most installations are in areas which were off-grid, so it won't be reduction in GHG emissions, but it will reduce the net addition to GHG emissions. Substantially more needs to be done into moving the existing grid users to renewables, including roof-top solar, net metering, and bio-fields before

						the potential targets can be achieved.
Incremental number of households (w/ at least 20% women-headed) in rural areas whose level of energy access is increased via village-scale off-grid RE or that benefit from newly adopting EE cook stoves	14,000	3,562 This progress is related to installation completed by June 2023. There are 23 demos of Community Scale PV Solar systems and 1 Pico-hydro PV solar hybrid mini-grid systems installed. There are 3454 RE and 108 EE.		MS		The target cannot be achieved with existing infrastructure mainly because of the sparse nature of communities, and households. Much more needs to be done in terms of rolling out hydro-solar hybrids, and scaling up of community solar to micro-grids before the same can be done. The target was very ambitious, and effectively covered one-fifth of the country's population. It can only be achieved if existing areas with electricity also move towards renewables
Total new, incremental reductions in or newly avoided amounts of annual diesel consumption achieved, liters DFO	272,212	75,249.9 This result is from demonstration of 23 RE Community scale PV solar systems and 1 pico-hydro PV solar hybrid mini-grid systems		MU		The target could not be achieved, as significant diesel usage is in areas with existing grid connections, and supply. There needs to be a national campaign to move existing connections to

						renewables through a mix of rooftop solar, bio-fuels, and net metering to achieve the goal
Incremental fuel wood saved annually by use of energy efficient cook stoves, million kgs	15.6	0 Note: To be calculated based on 108 EE cook stoves produced.		HU		The EE cookstove and copra dryer activities were rolled out at the tail-end of the BRANTV Project, due to which any savings would be marginal at best. The cook stoves component should have been planned for earlier part of the project such that it has sufficient time for implementation. At this stage, any savings would be marginal at best.
Component 1: Capacity and Awareness Enhancement on Sustainable Energy and Low Carbon Development **Outcome 1.** Improved capacity and awareness on sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors						
Number of individuals (with at least 30% being women) in Vanuatu that are newly (as of start of project) involved in operating, maintaining, repairing, designing, and/or installing off-grid rural RE power systems	300	129 number of individuals that attended the training in RE and EE. Out of this 14% are women. .		MS		The number of people being trained is abysmally low and continues to be plagued by problems mainly because of people leaving communities. The training should focus on more women such that the community can strengthen itself

as one of their main sources of income.							and enhance overall skill levels.
Number of artisans in Vanuatu fabricating EE cook stoves as their main source of income	20	27 participants attended the EE training. Only 24 continued to manufacture EE cook stoves.			S		
Component 2: Improvement of Energy Policy and Planning Formulation and Implementation **Outcome 2.** Improved policy, planning, and regulatory regimes in the application of sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors							
Portion of nation's off-grid villages for which a comprehensive electrification plan has been determined, %	100	100 The Rural Off Grid Electrification Master Plan had determined plan for the entire country of Vanuatu. .			S		A National Electrification Master Plan is now in place, however implementation of the same will require considerable effort from all stakeholders.
Number of regulations under the Off-Grid Rural Electrification Policy that are enforced	5	4 Regulations and policies developed: 1. Rural Off Grid Electrification Master Plan 2. Off Grid RE Standards and Guidelines 3. Technical Standards and Guidelines 4. The Waste Management Act was coordinated by the Department of Environment and was launched on 16th June 2023.			S		Regulations under Off-grid Rural Electrification Policy are yet to be implemented or enforced.

Component 3: Institutional Framework Enhancement for Sustainable Energy and Low Carbon Development **Outcome 3.** Established institutional framework enables the effective enforcement of policies and regulations, and implementation of plans, programs, and projects, on the application of sustainable energy and low carbon technologies							
Number of pico-/ small micro-hydro, village community PV, and village sets of family compound-scale nano-grid sites at which management model enables fee collection, savings for repairs/ parts, and payment of operator	40	35 Details: 33 – Community Scale PV solar systems 1 – Pico-Hydro PV Solar Hybrid Mini-Grid 1 – Family Compound PV Solar Nano Grid			S		The target can be achieved till the end of project.
Number of villages at which DOE has cooperated with other national-level departments to implement rural electrification or EE cook stoves, as well as productive uses of RE/EE applications, if relevant	60	Total: 59 RE- 35 and EE-24 Note: The PMU had worked closely with the BRANTV Technical working Group (TWG) to select all 59 demonstration sites that have been completed. The members of the TWG are the Directors of the Government departments. There are 12 members of the TWG.			S		
Component 4: Sustainable Energy and Low Carbon Initiatives Financing **Outcome 4A.** Increased availability of, and access to, financing for sustainable energy, energy access, and low carbon (RE and EE) initiatives in the energy supply and demand sectors **Outcome 4B.** Increased financing and investments from private sector on sustainable energy and low carbon projects in the energy supply and demand sectors							

Amount of new international funding confirmed with funding entities for infusion into NGEF because of BRANTV efforts, US$ million	10	0		U		
Amount of funding represented by financial closes reached for loans or direct equity investments to RE and EE projects under commercial or private sector financing scheme for low carbon projects, US$ million	4	0 The NGEF had made efforts to implement the recommendations of the Resource Mobilization and Institutional Sustainability Plan to engage private sectors and commercial banks to engage in the lending scheme for RE generations. However, the initiatives encountered challenges with interests' rates computed to be higher than the rate offered by NGEF. This had made it difficult for NGEF to pursue going forward with the recommendations.		U		No private capital could be sourced for the project. However, there exists potential to crowd source capital through effective restructuring of some of NGEF offerings, such as guarantee programs, and interest rate subsidies. Similarly, URA through an upfront tariff mechanism with adequate investor protection and returns can also crowd-in private capital for effective scale-up of renewable projects.
Component 5: Sustainable Energy and Low Carbon (RE and EE) Technology Applications **Outcome 5A.** Sustainable energy and low carbon (RE and EE) techniques and practices adopted and implemented with both cost and technical viability in the energy, public, private sector, and residential sectors of the country. **Outcome 5B.** Enhanced confidence in the economic and technical viability and long-term sustainability of sustainable energy and low carbon technology projects						
Number of types of key off-grid RE power generation and mini-grid related equipment/	8	35 installations updated to June 2023.		S		Most installations were community scale domo activities, which need to be upgraded to

parts newly available or available at 25% or more less than cost at start of project		So far, a total of 34 sites of Community Scale PV solar systems have benefited from the VREP standards and Duty exemption applied to the Project. 1 of Pico-Hydropower mini-grid systems have also benefited from the exemption on duty and VAT applied to the project and free labour provided by the community of Loltong. The community's free labour, supply of tools and materials to build the mini-grid had contributed to less cost to build the mini-grid. The support from the community had contributed to less costs in the following areas: • Free labor to digging trenches, haul cables, backfilled, • Free labor to clearing of penstock route, haul penstock, • Free labor and materials to construct 2 power houses • Supply of sand and coral for constructions Supply of food to feed community works and labour provided by the					micro or mini grids for these to be more scalable.

		DOE. The family compound nano-grid that was procured end of 2021 and installation done in Q3 of 2022 has also procured using VAT exemption certificate issued for the BRANTV project. The construction of power houses was built by the community labor including trenching of cable routes from power generations to households.					
No. of communities and private sector entities, and households in both on-grid and off-grid areas that are interested in replicating the RE-based power generation system demos: • Pico-/ small micro-hydro • Hybrid pico-hydro & PV • Village community PV (with or without mini-grid) • Village-wide family compound-scale PV nano-grids • EE cook stoves. • RE-powered freezers	• 38 • 2 • 20 • 20 • 12,000 • 60	Pico-Hydro - 0 However, feasibility reports were developed for 10 sites. Out of 10 sites, 1 site has its detailed report completed and ready for tender procurement. Another 3 sites will have their detailed report completed before end of June 2023. Hybrid pico-hydro & PV - 1 Village community PV solar - 33 Family compound Nano-grid PV solar - 1 EE cook Stoves - 108 RE-powered freezers - 28			MS		More private sector participation is required for effective scale-up, and to meet targets. Target pertaining to EE cook stoves could not be met due to roll-out being at the tail end of the project. RE powered freezers are also barely utilised at this point.

4.3.2 Relevance

The Relevance has been rated Satisfactory. The project is relevant to Vanuatu's national development goals, in particular its ambitions in energy access, as set out in the National Energy Roadmap (NERM). BRANTV is highly aligned with the Government of Vanuatu's own goals and strategy, where the Department of Energy's mission is to create a sustainable energy future for Vanuatu by increasing electricity access, reducing national dependence on petroleum through the use of renewable energy and promoting energy efficiency and conservation. It seeks to secure growth and development through the provision of secure, affordable, widely accessible, high quality, clean energy services, and rural and urban and peri-urban electrification.

The project seeks to address national needs in several respects. Firstly, it seeks to address the widespread lack of access to modern energy sources in Vanuatu, where more than 70% of the population do not have access to grid electricity, with most citizens cooking over open-hearth fires causing attendant pollution and having health implications. The lack of energy access is a significant constraint also on creating sustainable and resilient communities, that could not only be autonomous in terms of energy generation but allow empowerment in key areas such as pollution free heating and cooking, food, and medicines storage, supporting income-generating activities, lighting for reading and education, power for charging phone and other domestic appliances.

Given other on-going interventions focusing on RE and EE technology deployment, the BRANTV relevantly address key issues in the baseline projects, having an incremental impact on overall sustainability, replicability, and scalability of such interventions. For instance, it deals with the financial viability of RE and EE technology adoption while also focusing on capacity building of local communities and stakeholders involved in installations and maintenance of such technologies and systems. Moreover, the prioritization of rural energy access can be seen through the launch of the Vanuatu Rural Electrification Programme (VREP) in 2014, with support from the World Bank and the Government of New Zealand, and as part of the Government's strategy to achieve almost two-thirds (65 percent) of power generation from renewable energy by. VREP targeted providing some 17,000 households throughout Vanuatu with access to non-grid, renewable electricity through solar energy. BRANTV has considered VERP a baseline project as part of its strategy. One significant project is the off-grid master plan for Vanuatu, which focuses on off-grid energy supply. It appears that this project has made substantial progress, possibly exceeding 75% completion, or being almost finished. Furthermore, there have been 2-3 smaller interventions, possibly related to mini grid systems. It seems that there was no existing developed system to fix the tariff, which is influenced by factors such as the number of communities supplied with energy and the capacity requirements. BRANTV provided support which led to the definition of tariffs for specific areas, particularly for the small mini grid energy system.

Having said that, this review has highlighted some of the core issues with regards to BRANTV's project design and execution. Addressing these issues and assimilating the learnings in future programming will be key to ensure greater and continued relevance of the project in the country.

4.3.3 Effectiveness

This section elaborates on the project's effectiveness in achieving its intended objectives or likelihood of achievement based on the implementation of various project components as Moderately Satisfactory (4). The analysis on effectiveness is thematically split by each project component, as follows:

Community Solar

There are 20 sites where community solar PV power generation systems have been implemented, which basically involves deploying a solar panel of 3-5 kV, such that it powers up a few households around the community, or a community centre. However, as observed in many cases, the community solar was largely underutilized, and as the community utilizing the same lacked the technical expertise to understand the same, they did not know how to efficiently utilize the equipment. Similarly, in the case of solar panels affixed in a school on the island of Pame, the equipment was grossly underutilized – and the same could have been better utilised if it is scaled up further and can provide electricity to the adjoining communities. In another case, on the island of Malekula, solar panels were affixed to power up a community centre, such that the same can also provide electricity to deep freezers that can store fish that is caught on a daily basis. However, no effective sizing was done for the same, and thereby the community was not clear regarding the potential power that the solar panels can generate, and how much fresh produce they can store utilising solar energy, and battery back-up.

During stakeholder consultation sessions it was also clear that various communities are willing to pay anywhere between 500 to 1500 vatus per month per household for utilization of energy. Considering the willingness to pay and considering the fact that availability of energy would also improve overall commerce, and commercial activity, there exists a strong case to gradually scale up community solar.

Different communities have varying economic and demand dynamics. A fishing community would require centralized cold storage capacity that can be operated on solar, while a community that produces handicrafts will have different requirements, and so on. In view of the above, it is essential that all plans must be in place to upgrade all existing community solar installations to micro-grids. Creation of micro-grids will enable availability of electricity to a greater number of households, while also benefiting from scale, as the fixed cost of the equipment could then be spread over a larger number of households, thereby reducing the monthly cost per household.

Furthermore, upgrading of community solar PV power generation system would also enable installation of electricity metres for households, and commercial entities, which would allow more accountability, and facilitate sustainability of the project. The URA can assign a tariff for micro-grids, as it has done in the case of a solar-hydro project, and the tariff can then be reviewed on a regular basis, depending on potential changes in O&M costs. Upgrading to a micro-grid will also be more efficient as any surplus power can then be shared among many households rather than being wasted, as it is being done at this stage. The community solar projects supported by BRANTV provide the necessary demonstration effect, however, there exists substantial room for them to be more efficient, and effective, and the same can be done through upgradation to micro-grids.

Prioritizing development of micro-grids in dense areas

The National Electrification Master Plan (NEMP), and the maps of various islands provides a fair idea regarding density of various areas. For example, in the case of Malekula, the western part of the island is considerably denser than the eastern portion – due to which there exists a strong case that establishment of micro-grids can be prioritized in such areas. Considering the presence of schools in all communities, such micro-grids can be centered around schools as well, which acts as a hub, and the grid can then be spread out towards households, as in a hub-spoke model. Any future interventions must take into consideration the density of areas, and how microgrids can be rolled out in the same. Considering the high logistics cost associated with movement of equipment, it makes more sense to do larger projects, in relatively denser sites, rather than small experimental projects, that can have a much higher cost on a per household served basis

Replicating Hydro-Solar hybrid through private capital

Installation of a hydro-solar hybrid system has been able to energize more than 100 households and has largely been successful in electrifying a fairly large community, while also being financially sustainable, as a relevant tariff for the same is in place. Through stakeholder discussions it has been assessed that there are seven sites that are feasible for a run of the river hydro + solar hybrid system. Such a system would eventually provide the basis for development of a micro-grid, which can energize many communities in areas where the project is feasible. BRANTV enabled development of the first project – however, considering the significant capital outlay required for the same, it may be more feasible that necessary arrangements are made to crowd-in private sector capital for development of such hybrid electricity generating systems.

A key step in crowding in the private sector would be availability of an upfront tariff for a predetermined period, such that it covers any potential asset replacement costs, as well as any guaranteed return requirements for private sector capital. The URA can determine upfront tariffs for similar projects at different sites, such that investors can have more transparency, and clarity on potential economic benefits of the project. The tariff should also be structured in a manner such that it aligns the expected cash outflow that the households can afford and are willing to give. A financing structure wherein a private investor can provide equity, and a participating financial institution can provide debt component can reduce overall tariff as well, depending on the cost of capital. It may be difficult to attract private capital for the first project, and for the same, any potential credit guarantees to de-risk debt associated with the project can also be considered. To scale-up such projects, it is critical that private sector capital is crowded in, and the same can be done through creating an appropriate structure that aligns with the interests of both equity, and debt providers.

BRANTV provided the necessary seed funding to enable successful demonstration – however, replicating the same, and scaling up would require both public sector, and private sector participation.

Bio-Fuels

Reaching the goal of generating 100% energy through renewable sources by 2030 would require efforts that go beyond traditional renewable sources, such as solar, or hydro. Currently, power generation in Vanuatu is largely through utilization of diesel, as that also provides a base load for the more populous areas of the country. Completely phasing out diesel and substituting the same with solar may not be

possible in the given timeframe and would require substantial resources as well. Through discussions with stakeholders, it became clear that coconut oil can be produced indigenously and can be used as a biofuel while blending the same with diesel.

Coconut oil is an indigenous resource that can be extracted from existing coconut production – most of which is primarily exporter. Before it can be used as a biofuel, it is imperative that the necessary supply chain is developed for coconut oil, such that it can provide a steady supply of coconut oil for power generation. Development of such a supply chain would necessitate creating a pricing framework, such that the price of coconut oil makes economic sense vis-a-vis direct exports.

Creating the right incentive structure for development of the supply chain is critical before coconut oil blending can be scaled up, and it can be used for power generation. Bio-fuels need to be a bigger component of any project, or priority that pushes towards attaining the desired targets by 2030. Base capacity for power generation is critical, and cannot be completely substituted by solar and hydro – but what can be done is gradual introduction of bio-fuels in the system to move complete generation towards renewables

Net Metering & Rooftop Solar

Stakeholder consultations also highlighted the importance of having in place a net metering regime, such that rooftop solar can be implemented in areas that already have access to the grid. It is essential to note here that in order to meet the targets by 2030, it is essential that all effort is made to move towards renewable sources. A transition towards a decentralized grid, where essentially households and commercial entities can also become renewable energy generators can contribute towards acquisition of the goal while also crowding in private sector capital. Necessary policy framework needs to be institutionalized for net metering, such that households, and commercial entities both can be encouraged to move towards net metering. The capital deployment in this case would largely be driven by private sector capital, but the presence of a policy framework is essential for pushing the needle towards the targeted goals by 2030, particularly in urban areas with access to the grid.

Efficient stoves & Communication

A key component of BRANTV was roll-out of efficient stoves that use significantly less fuel than open fires, thereby making them more environmentally friendly, and also cost-effective. However, compared to other interventions of BRANTV, this intervention more heavily relies on behavioral change, and adoption of a new way of doing things, rather than execution of a project with a physical footprint. The efficient stoves being considered are 70% more efficient than open fires, and hence use less wood, thereby they have less emissions, and are also cost-effective in terms of operations. More importantly, the stoves can be made using existing material, and are modular in nature. These stoves can be assembled locally, and do not require any significant technical training for the same.

As the component requires behavioral adjustment, it was essential that it should have been prioritized at the start of the project, such that behavioral change could have been achieved over a span of a few years through effective communication. However, the component was rolled out right at the tail-end of BRANTV, and the accelerated roll-out entails that the impact of this component would be minimal at best, as most activity would be conducted to check boxes, rather than drive change.

An expanded project that may have similar objectives to BRANTV should have a more extensive component on efficient stoves, and how they can be rolled out across the country. The efficient stoves component must be rolled out early in the project and should be monitored throughout the life cycle of the project. Any such project must have a major component of communication in it, as roll-out of efficient stoves largely requires behavioral change, and the same can be achieved through constant, and subtle communication.

It is also imperative to note here that there exists a potential for these efficient stoves to also substitute, or phase-out LPG stoves, that rely on imported LPG. However, that would also require a behavioral change in the urban areas as well, which can also drive behavioral change in rural areas. A move towards a completely renewable future necessitates behavioral change, and the same change can also be efficient, as well as cost-effective, if the right communication strategy is adapted.

Scaling up Vanuatu National Green Energy Fund

The Vanuatu National Green Energy Fund provides soft loans to catalyze various renewable projects, and provides an extensive catalogue of solutions, thereby providing a turnkey solution to various public institutions that want to adopt renewable energy. Availability of turnkey solutions and pre-qualified vendors provides the necessary assurance regarding the reliability of the equipment being utilized or rolled out.

The soft loans provided by the NGEF are at concessional interest rates, such that they are affordable for the users. However, scaling up the fund will always be restricted by availability of liquidity to NGEF, and its risk appetite. For the NGEF to scale up, it is imperative that its operations are not restricted by liquidity, and that it continues to provide turn-key solutions for scaling up renewable energy. NGEF can enter into partnerships with various financial institutions, such that the financial institutions can provide the liquidity. However, the financial institutions may not be able to provide a concessional interest rate. At that point, the NGEF can provide an interest rate subsidy to make the transaction economically feasible for the financial institution. Effectively, instead of committing the full amount required for capital investment as a soft loan, NGEF can preserve capital and only use a very small amount to provide an interest rate subsidy. The interest income that NGEF can earn on its available capital would be sufficient to cover for any such interest rate subsidy.

It is critical that private capital is crowded in and leveraged to achieve the goals as desired by 2030. However, the necessary framework to crowd in private capital needs to be in place. In addition to providing an interest rate subsidy, the NGEF can also consider creating a credit guarantee fund. Such a credit guarantee fund can essentially provide credit coverage for any loans that are extended by financial institutions for renewable projects. Availability of credit coverage can de-risk projects initially, and allow financial institutions to understand, and learn the dynamics of all such projects. Once the necessary skill set is developed, the credit guarantees can be gradually reduced.

Through a mix of interest rate subsidy, and credit guarantees, NGEF can potentially leverage its available capital at a considerably higher level, thereby generating accelerated impact, rather than through soft loans. The necessary capital is in place, and once a dedicated fund can be established, it can also raise other forms of donor, or multilateral capital that can be used to support renewable energy projects in Vanuatu. A transition from a soft loan led approach, to a more ambitious structured product driven approach is critical to meet the renewable energy goals by 2030.

Capacity Building

Deployment of renewable assets in remote communities necessitates development of skillset in the community such that the community can partake actively in the operations & maintenance of the equipment and is also able to organically develop entrepreneurial ventures from the same. Through the implementation of various demonstration sites, training was only provided to a few individuals in each community. If any of those individuals, or all such individuals leave the community whether due to employment considerations, or otherwise, the community loses a skilled resource in the process. Even though demonstration sites were active for only a few months, absence of relevant skilled resources was apparent, which also resulted in either the equipment malfunctioning till a new resource was made available, or the equipment being underutilized, as existing community members do not understand how to operate the same efficiently.

In view of the above, it is critical that a sustained program of capacity building is in place, which trains a sizable number of people in a community, which can also be predominantly women. Training women for operations & maintenance of equipment will not only assist in enhancing gender equity but also enable better access to jobs, and better skill transfer. In a community, it is often the men that leave the community for employment related prospects. However, women can provide that necessary critical stability for skill retention, and skill transfer. Initially, only a few individuals in each community were trained, predominantly men. Capacity building should be further enhanced and impart skills particularly among women members of a community. As projects transition towards a micro-grid infrastructure, the tariff can also cover stipends, and wages for the same, while also enhancing skills of local community members.

In BRANTV, the component of capacity building largely focused on training a few individuals, without much regard for potential succession, or concentration risk. Going forward, capacity building must consider capacity development of the community at large, particularly women, rather than a few individuals only.

4.3.4 Efficiency

BRANTV's objectives were ambitious, but it wasn't able to achieve those ambitious outcomes s largely due to extraneous factors, such as a pandemic that led to multiple economic lockdowns locally, as well as internationally, and can be rated as Moderately Satisfactory. Similarly, once lockdowns were eased there was a severe supply crunch that led to significant increase in prices of equipment, and logistics cost, while also making availability and accessibility difficult for various types of equipment. Following the pandemic, a cyber-attack in the later part of 2022 further disrupted timelines for various projects, as necessary funding was either delayed, or could not be processed. Due to cyber-attack, it was difficult to access funding from the government, as most processes came to a standstill, resulting in a delayed access, and disbursement of funds, which led to delays in completion of various interventions. Cyclones also struck the country in early 2023, which also resulted in substantial losses, and disruption. In such a scenario, the project was struck by one unfortunate event after another, which disrupted the overall progress – which was further compounded by the high logistics cost associated with project delivery in the country.

It also took considerable time for the project management unit to be established and align activities, particularly amidst the pandemic. The project team was often understaffed and had to rely on resources provided by the Ministry of Energy to push things through. It is essential that going forward in case a similar project is designed, the project team must constitute at least of a project manager, as well as a dedicated and qualified resource for managing finances, and a dedicated and qualified engineering resource. In absence of dedicated resources, the risk of deviation from program objectives, and inability to meet timelines remains high. The current staff strength includes 2 individuals dedicated to the project. Considering the scale of the project, the 2 individuals are clearly not sufficient, and lack the necessary technical skillset to do justice to the project and implement it efficiently.

4.3.5 Overall Project Outcome

The project has high relevant to national objectives and is directly aligned with the 2030 goals of the government. However, the scope of the project needs to be broadened, and it required more aggressive pursuit of crowding in private sector capital to achieve the goals. Furthermore, the project components did not attempt to address existing generation capabilities, without substitution of which it would be difficult to achieve the desired goals. The project was marred by multiple force majeure events, including the pandemic, and cyclones, and to a certain extent the cyber-attack. The project has demonstrated that there exist projects that can be sustainable and scalable on their own merits and can certainly attract private sector capital for growth. However, the overall effectiveness of the project relative to its targets remains moderately unsatisfactory, as it barely met only a few targets. One of the reasons behind this can be highly ambitious targets, which could not have been achieved without enabling transition of existing generation capacity to renewables. Any further extension of the project must take into consideration a transition of existing generation capacity and focus more on scalable solutions such as micro-grids, as well as solutions that crowd-in private sector capital, rather than relying solely on donor capital.

Assessment of Outcomes	Rating
Relevance	Satisfactory 5
Effectiveness	Moderately Satisfactory (4)
Efficiency	Moderately Satisfactory (4)
Overall Project Outcome Rating	Moderately Satisfactory (4)

4.3.6 Sustainability

Financial, socio-economic, institutional framework and governance, environmental, and overall likelihood of sustainability

Some of the project components are financially sustainable. They provide a clear roadmap through which tariffs can be assigned to various projects, wherein households are also willing to pay for the same, thereby ensuring financial sustainability. As the project is directly relevant to long-term goals of 2030, the project is also aligned in terms of socio-political sustainability. Access to electricity to communities that

were previously off the grid, would provide access to commerce, and economic growth, thereby enhancing overall quality of life, and incomes for the communities.

Similarly, the electrification plan developed would greatly assist in mapping out and rolling out renewable generation infrastructure to enable access across the board. As the project is focused on renewable energy, its environmental sustainability remains high. Overall, the likelihood of sustainability of the project remains high, provided that necessary interventions are in place to ensure financial sustainability, and the institutional framework evolves to crowd in private capital to ensure sustainable growth.

Sustainability	Rating
Financial sustainability	Moderately Likely 3
Socio-political sustainability	Likely 4
Institutional framework and governance sustainability	Moderately Likely 3
Environmental sustainability	Likely 4
Overall Likelihood of Sustainability	Likely 4

4.3.7 Country ownership

Stakeholder consultations reveal that while there is ownership at a community level, it is limited amongst government institutions. Communities show more inclination towards project ownership by becoming interested and sharing duties while at the government level, similar enthusiasm is not seen by the state institutions. The government's commitment and leadership in the project were somewhat lacking. The changes in government ministries and the addition of various departments might have affected the focus on the project, even though it was not entirely disregarded. The attention given by the government to BRANTV was slightly less than what was ideally required for effective implementation. Moreover, there are concerns across numerous Government Departments regarding the ownership and maintenance after the BRANTV project ends, and there has been insufficient focus on assessing the energy pilots installed in terms of learning and in particular potential for refining with a view to replication or scaling. Furthermore, while the NEMP is now in place, there is no clear strategy from the government side to ensure implementation, which will require substantial political will.

4.3.8 Gender equality and women empowerment

On the gender equality and women empowerment front, the BRANTV project does contribute to empowerment, and livelihood and entrepreneurial opportunities for women. As the project inculcated the productive use aspect of RE and EE technologies. RE installations improved energy access for communities, which directly impacts educational attainment and healthcare delivery, along with productivity gains in livelihood and business activities. Women were among direct targeted beneficiaries. For instance, findings from the gender survey revealed that the project enabled community members, particularly women to access power to charge their devices like mobile phones; operate sewing machines

and weave at night; access to power at nakamals to sell 20vt and also conduct any fundraising activities, church activities or social gatherings at night.

Furthermore, a total of four demo sites received sewing machines as productive uses from the BRANTV project. These sewing machines were supplied to women's clubs or women's associations who are responsible for the operations and maintenance of the energy systems and also the sewing machines. The members of the women's club/association represent the number of households in the community. In four communities a total of 223 women have benefited from the sewing machines for household needs and for small business income.

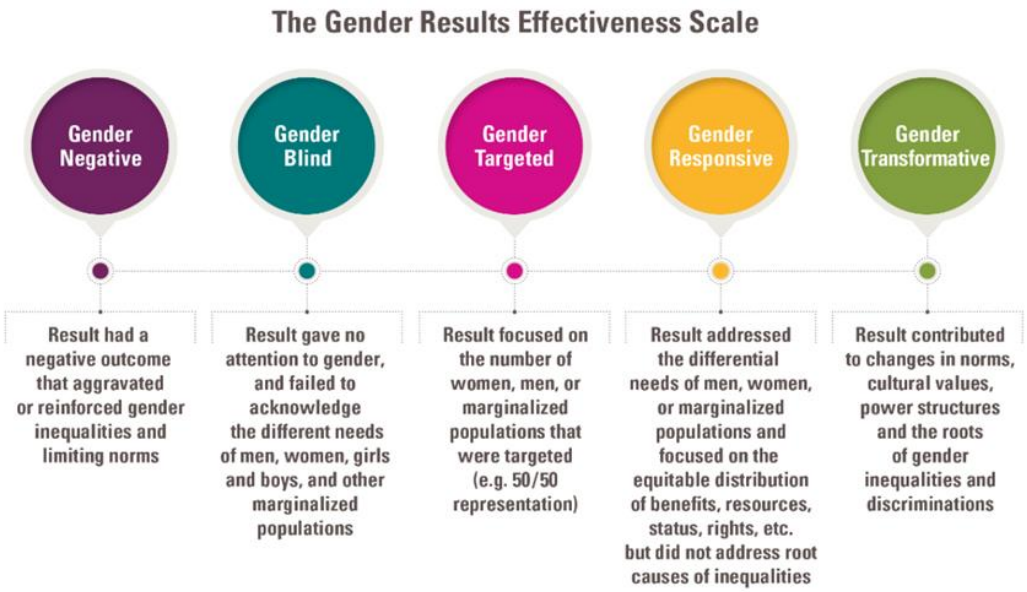
Similarly, the deep freezers supplied to the communities of the demo sites had contributed towards food security and small businesses. The deep freezers are managed by the Community associations or energy committee. Thus, about 1,894 women representing households from 24 demo sites benefit directly and indirectly from the deep freezers. Family households would store their meat and fish catch in the deep freezers and pay rental to the energy committee. Women would prepare food with meat and fish and resell to the public to earn income. A total of 28 deep freezers were supplied to the communities.

However, stakeholder interactions, as well as community interactions, revealed that most decision making, capacity development, and other consultation was largely restricted to men. Only in very few instances were any women involved in decision making. Furthermore, the demonstration sites have other compounding challenges like limited access to water in the community. When men and youth spend the majority of time on their phone, women and girls are left to do water collections often at night or long distances which are not safe for them. The current system needs to be expanded with power supply to other buildings or individual households. In fact, while there is a central location where people can have access to the power supply, it is not sufficient to support all community members.

Another challenge includes lack of community support from the communities to support the project followed with high fee charges to access the power from the project management committee. Training programs should cover not only household and community access to electricity but also address workload, decision-making, communication, conflict resolution, and business development. In addition, BRANTV should strive for a balanced role for women and men in productive, reproductive, and socioeconomic activities by encouraging their participation in decision-making processes, challenging gender-biassed norms and practices and transforming stereotypes.

In view of the same, it is critical that women have greater involvement in the decision-making process, and are part of all facets of a project, or implementation. Availability of entrepreneurial opportunities being generated by the project, and skill training being imparted must be equally available to women as well. In a future project, a more targeted gender ratio in terms of capacity development targets can assist in achieving the desired goal.

The project’s performance against the GRES is provided below:



Source: Adapted from the Evaluation of UNDP Contribution to Gender Equality and Women's Empowerment, IEO, UNDP, 2015

Table 9: GRES Rating Table

Incremental number of households in rural areas whose level of energy access is increased via village-scale off-grid RE or that benefit from newly adopting EE cook stoves	At least 20% of households being women-led	Gender Responsive	Fair share of participation at home between both genders and division of labour due to improved
Number of individuals in Vanuatu that are newly (as of start of project) involved in operating, maintaining, repairing, designing, and/or installing off-grid rural RE power systems as one of their main sources of income.	At least 30% of individuals targeted being women	Gender targeted	Representation of women in capacity building in the technical domain.
Number of artisans in Vanuatu fabricating EE cook stoves as their	At least 30% of individuals targeted being women	Gender targeted	Representation of women in capacity building in the technical

main source of income			domain.
Amount of funding represented by financial closes reached for loans or direct equity investments to RE and EE projects under commercial or private sector financing scheme for low carbon projects, US$ million	None	Gender Blind	No consideration has been given to gender parity in the financial inclusion.
No. of communities and private sector entities, and households in both on-grid and off-grid areas that are interested in replicating the RE-based power generation system, and EE cook stoves and RE-powered freezer demo	Women given priority for project funds provided for productive use initiatives. It will be required that at least 50% of such funds go to productive use initiatives mainly involving women.	Gender responsive	Women tobe direct beneficiaries of the project replication.

4.3.9 Cross-cutting Issues

While BRANTV's focus is on the ambit of Climate Change – Mitigation, the project addresses various cross-cutting issues that are woven into its objectives. The project aims to empower communities by introducing them to different opportunities through access to energy. According to the Energy Road map, Vanuatu should have access to energy by 2030. Despite the hurdles, this national government policy needs to be rolled out to all communities in Vanuatu. These measures will also benefit communities in becoming self-sufficient by extracting oil from coconuts. The installation has provided power to process the coconuts (as well as speeding up coconut grinding) and ready to be used for making virgin oil, where it has also led to increased production volumes and increased local income, as well as providing increased opportunities for women and youth. In another site the project has provided light power and services to the regional office which has helped women in generating additional income from sewing clothes. Similarly, the transition to EE as opposed to reliance on fuelwood for heavier usage would also be advantageous for the environment. Since the establishment of the solar system, the usage of fuel has become nominal which has immensely reduced the GHG.

The project also targets the youth as they can now use the system in an exchange for a small amount to community fund to charge their devices including mobile phones, laptops, torches which in turn has helped them use these devices for different purposes. Gender parity has also been catered to because access to light at night means that women can now carry out a few tasks after dark and socialise. Women have also been given sewing machines, which can be further used to generate income and thus alleviate poverty. Women's representation has also increased because the project wishes to make all community

members of all genders an important part of the community and let them have their say as well. The new possibilities depend on leveraging the system to be used later in schools so children and youth can benefit from it. However, monitoring the sum charged from the community members by the church to use deep freezers is important because it is used to store the fish and other items which leads to income generation.

4.3.10 GEF Additionality

This review finds that there were several areas in which the BRANTV project had an incremental impact, although it was of differential nature and of varying extents in the various areas it intended to have additionality in.

While Vanuatu has substantial baseline program efforts to install RE systems in off-grid areas, training is very limited and generally consists of one-time training upon installation of systems. For larger-scale systems, equipment sourcing and installation capacity is absent; and international experts must be contracted for these functions. For EE cook stoves and dryers, there is an absence of personnel to fabricate such systems and no training program to develop such human capacity. To address these capacity gaps in the baseline program, BRANTV implemented an extensive training program covering various hydro, PV, and EE related systems. The training programmes focused on developing local capacities to operate and maintain RE systems and also fabricating EE technologies. However, a key issue remains that local capacities are insufficient to install or replicate the Off-grid RE systems. Furthermore, there is dependence on external technical assistance for the design of such interventions.

On the policy side, the BRANTV design work identified important policy and planning gaps in the baseline program that it to a certain extent addressed through providing technical assistance for establishing guidelines, standards, and incentive policies, as well as a rural off-grid RE electrification plan. Furthermore, BRANTV also addresses the issue of managing off-grid RE power systems in Vanuatu, a key gap in the baseline program. There are institutional areas that BRANTV focuses on that will be a critical feature in the sustainability of rural RE systems and their replication and thus an instrumental contribution towards meeting NERM targets.

On the financing side, BRANTV has supported NGEF in its fundraising and further aims to connect project proponents in the islands with the fund, providing technical assistance to proponents to make applications to the fund. Further, also in the financing realm, PPG work determined that commercial and private sector financing of RE and EE in Vanuatu, aside from some small business loans of National Bank of Vanuatu (NBV) for PV systems, is virtually non-existent. Thus, BRANTV via incremental activities also worked to fill this gap, educating the banks, and working with the commercial private sector to set up a loan or equity financing mechanism for off-grid RE projects and productive uses in rural areas. However, the incremental impact on this side is limited as discussed there are systemic risks which need to be factored.

A key area of project incremental support is demonstration of procuring , best price costing, and establishment of local supply of RE and EE parts and equipment. Vanuatu's baseline program did not address this area; and, because of that, system costs are excessive and opaque, thus inhibiting financial viability and replication. To provide proof of economic and financial viability, the BRANTV project featured demonstrations. Overall, this plays into developing local capacities, while the major incremental impact is the development of a RE and EE value chain in the country.

4.3.11 Catalytic Role / Replication Effect

The GEF defines the catalytic role of projects as one of the ten operational principles for the development and implementation of the GEF work program. The GEF funds projects in such a way that they attract additional resources, pursue strategies that have a greater result than the project itself, and/or accelerate a process of development or change. It recognizes that its support is catalytic in nature: "it does not achieve impact on its own but rather in collaboration with its partners, especially through follow-up actions by governments and other agents at different scales."

Within this context, the review of the catalytic role of this project is to consider the extent to which the project has demonstrated: a) the production of a "public good," b) demonstration(s), c) replication, and d) scaling up of the project achievements.

The BRANTV project has demonstrated off-grid RE systems, a public good, and also worked on establishing systems to ensure effective and efficient management and maintenance of these systems. A key component of the project has been demonstrations which not only focused on deployment of the systems but also focusing on demonstrating the productive uses and financial viability. In addition, the project has a major focus on sustainability which is addressed through capacity building efforts and improving access to financing for adoption and maintenance of RE and EE technologies. Overall, the project is replicable in other similar contexts and also can be scaled up; however contingent on addressing key gaps that were identified in this review. Local capacities need to be built in areas of design and deployment. Furthermore, on the financing side, insurance mechanisms need to be introduced to mitigate risks of disasters that can destroy such systems and infrastructure. In addition, a key to scale adoption of EE technologies is through more elaborate demonstrations of economic gains and livelihood generation which can be attributed to adoption of such technologies.

4.3.12 Progress to Impact

The project has provided the necessary groundwork on the basis of which new interventions can be launched that can catalyse additionality based on the interventions executed by the project. There is a possibility to effectively leverage available NGEF funds for generation of better renewable energy outcomes, while demonstration of effectiveness of solar power in various off-grid communities would catalyse adoption of solar power through private sector initiatives. Similarly, involvement of the URA in assignment of tariffs would provide the necessary formal cover required for scaling up of such interventions, which was only possible through the project. Overall, long-term impact as outlined in the theory of change of the project would be achieved triggered by the interventions supported by the project. However, it remains essential that the government continues to provide necessary support to incentivize uptake of solar and renewables to achieve long-term goals.

5. Main Findings, Conclusions, Recommendations & Lessons

5.1 Main Findings

- The project suffered considerable delays mainly due to absence of an empowered project management team in its initial years, followed by economic lockdowns and supply chain distortions during the pandemic, and more recently by cyclones that led to significant losses for

the country. Inability to consistently implement projects due to regular force majeure breaks led to the project not being able to meet the desired outcomes

- Replications of certain demos is possible through private sector participation, thereby leveraging the donor capital that was provided for the project.
- The quantifiable targets for the project were fairly ambitious, and given considerable delays due to unforeseen events, the project was not able to achieve many of its goals – largely due to the long lead time required to achieve those goals
- There exists a strong case to upgrade community solar to micro-grids by crowding in private capital. The URA can establish an upfront tariff, and provide necessary incentives required for crowding in private capital – thereby facilitating a transition from community solar to micro-grids. Availability of micro-grids will enable creation of a more sustainable model, as a tariff would be in place, and households will be charged for their consumption, minimizing any ad-hoc activity. This will provide the necessary incentives for the community to target efficiency and maximize utility of available generation capacity. The Master Electrification Plan that has been developed under BRANTV can be utilised for identifying relatively dense areas where microgrids can be prioritized
- The NGEF is currently giving out soft loans at concessional interest rates to facilitate growth in renewable energy. The same is not effective utilization of its capital, as it can leverage its capital further through providing targeted interest rate subsidies, and credit guarantees – while utilizing liquidity of various financial institutions. This will also facilitate development of a market for renewable equipment, and have a much higher impact for the capital available with NGEF
- The efficient stoves component of the project was considerably delayed, due to which it is being rolled out during the tail-end of the project timeline. It should have ideally been rolled out much earlier given the behavioral change that is necessitated by the component. The stoves are 70% more efficient than open fire, and hence can result in lower emissions, while also being more cost effective. Any future project must consider having in place a strong communications strategy for this component as this requires behavioral change, rather than roll-out of any specialized equipment
- BRANTV covered the renewable aspects of micro-grid, but in order to truly generate all electricity from renewables by 2030, it is critical to phase out diesel from the generation mix. The same can be done through utilization of a coconut oil as a biofuel, that can gradually be blended with diesel and phase out the imported fossil fuel. A market-oriented methodology needs to be developed to create the right incentive structure for bio-fuels as the same would be competing with export market
- BRANTV did cover the renewable aspect of off-grid areas, but there is also a dire need to roll-out renewable solutions in core urban areas that are connected to the grid. Availability of net metering, and facilitation of rooftop solar can catalyze private sector capital in creating micro-generation capacities that can supplement the overall generation capacity that exists in the core urban areas. A policy framework that encourages net metering is critical, in order to achieve targets for 2030
- Capacity building exercise was largely restricted to men, and a few individuals in a community which led to succession related issues, as any individuals that leave a community also took skills with them. It is critical that capacity building also takes into consideration a gender lens and develops capacity of women across all communities, thereby also creating jobs, and entrepreneurial opportunities in the process

5.2 Conclusion

The implementation of BRANTV along with the establishment of the National Green Energy Fund (NGEF), has laid a solid foundation for achieving the country's renewable energy targets and promoting energy efficiency. Despite the challenges and delays BRANTV project faced, it provided valuable insights and has been rated as *Moderately Satisfactory* in light of its most current developments. Also, sufficient projects have been demonstrated that can assist in removal of barriers for achieving targets of 2030. The project has successfully implemented various renewable energy initiatives, with a focus on hydro and solar power generation and distribution systems. Non-power applications of renewable energy, such as solar PV freezers and fridges, have also been incorporated, benefiting local communities and cooperatives. Women's involvement and empowerment have been emphasized, ensuring their participation in decision-making processes and providing opportunities for their training and capacity building. This approach promotes gender equality and strengthens the role of women in the renewable energy sector. The National Electrification Master Plan (NEMP) is a significant outcome of the project, providing a strategic roadmap for achieving widespread electrification in Vanuatu. NGEF's commitment to uplift RE projects through soft loans at concessional interest rates facilitates the adoption of renewable energy solutions by public institutions and promotes financial inclusion. Efficient stove component of the project was delayed, impacting its effectiveness; future projects should prioritize early implementation, accompanied by a strong communications strategy to drive behavioral change.

The project's impact is evident through the installation of community-scale PV solar systems in over 20 communities. Furthermore, the project has contributed to the availability and affordability of off-grid renewable energy solutions, with a significant reduction in equipment costs. Overall, the project has made significant strides towards achieving Vanuatu's renewable energy goals, promoting sustainable development, and empowering local communities. With the continued support and collaboration of stakeholders, the country is well-positioned to further expand its renewable energy sector and realize a more sustainable and inclusive energy future.

5.3 Recommendations

Table 11: Recommendations

S.N.	TE Recommendations	Entity Responsible	Time frame
A.	**Category 1: Role of Government**		
A.1	It is recommended that nano-grids/community scale PV solar and community scale solar are upgraded to micro-grids to benefit from economies of scale, as existing systems may be underutilized and can be scaled up at a lower cost per household served	Department of Energy	December 2024
A.2	It is recommended that the National Electrification Master Plan needs to be followed to develop micro-grids in high-impact areas, rather than multiple nano-grids that are underutilized.	Department of Energy	December 2024

A.3	It is recommended to put a price band of biofuels alongside their incorporation in future projects. Bio-fuels are also indigenous, and hence will also assist in reducing overall import bills, while also being cleaner.	Department of Energy	December 2024
B.	**Category 2: Capacity Building**		
B.1	It is recommended that provisions are made for regular capacity building. Trainings needs to be conducted for community members in various locations, such that the community develops the necessary skills for operations & maintenance of the equipment. The training needs to consider multiple members of a community to avoid problems that may arise in case a member of the community leaves.	Department of Energy	December 2024
C.	**Category 3: Project Sustainability**		
C.1	All project demonstrations should be upgraded, such that they have an assigned tariff by URA	Department of Energy	January 2026
C.2	It is recommended that a follow-up project is planned on the basis of the findings of BRANTV.	Government of Vanuatu and multilateral institutions	December 2024
D.	**Category 4: Financial**		
D.1	All project demonstrations should be upgraded, such that they have an assigned tariff by URA. Availability and collection of tariffs can instill discipline that can ensure sustainability of assets, and lay groundwork for potential upgradation	Department of Finance and Treasury	December 2024
E.	**Category 5: Gender**		
E.1	It is recommended to pay more consideration for Gender Parity especially financial empowerment and inclusion of women. Financial Schemes to empower women to support them in launching small businesses through sewing machines should be encouraged.	DWA	December 2024

5.4 Lessons Learned

- The transfer of managerial responsibilities from the Department of Energy (DOE) to the communities will empower them financially in the future, allowing them to take ownership of the sites.
- The National Electrification Master Plan (NEMP) has the potential to bring about significant change, as the mapping of villages and their energy needs can inform future policymaking and ensure targeted interventions.
- The National Green Energy Fund's (NGEF) provision of soft loans has effectively stimulated the development of various renewable energy projects.
- The positive response from women regarding the allocation of sewing machinery indicates the potential to support small businesses alongside their daily household responsibilities, creating additional income-generating opportunities.

- The mandatory 30% participation of women in training programs ensures gender parity and equal representation, promoting inclusivity and empowering women in the renewable energy sector.

Annexes

Annex A: TE ToR (excluding ToR annexes)

Terminal Evaluation Terms of Reference (ToR) Template
for UNDP-supported GEF-financed projects

Title: Vanuatu BRANTV
Type of Contract: International Consultant
Start and End date: 25 March – April 30, 2023
Location: Field mission to Vanuatu
Duration of the Contract: 30 working days over 2 months

1. INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full- and medium-sized UNDP-supported GEF-financed projects are required to undergo a Terminal Evaluation (TE) at the end of the project. This Terms of Reference (ToR) sets out the expectations for the TE of the *full-sized* project titled Vanuatu BRANTV) *(PIMS 5926)* implemented through the Department of Energy -

Ministry of Climate Change Adaptation, Meteorology, Geo-Hazards, Environment, Energy and Disaster Management (DOE/MCCAMGEED)

The project started on 9 November 2018 and is in its *5th h* year of implementation. The TE process must follow the guidance outlined in the document 'Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects' (http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf).

2. PROJECT BACKGROUND AND CONTEXT

BRANTV has the objective of enabling the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu, as represented in the country's National Energy Road Map (NERM). Without incremental support, Vanuatu is unlikely to meet its NERMs' 2020 and 2030 targets. As of 2017, about 71% of the nation's over 270,000 people lacked access to grid electricity. Over 80% of the population cooks over open hearth fire. Of the off-grid population, over half have no other access to power aside from a solar lantern. While donor efforts to improve energy access in rural areas via renewable energy (RE) have been substantial and some more limited efforts to promote energy efficient (EE) cook stoves have been initiated, results have far underperformed targets. Particularly, it is widely agreed that sustainability of off-grid RE power systems is poor. Even when systems are installed for free, lack of funds for repairs and lack of local access to parts and services repeatedly result in broken down systems for the long-run. For village-scale RE power systems, in-country capabilities are extremely limited, so that the few systems set up require costly international contractors and take protracted periods to complete. Dissemination of EE cook stoves in rural areas is virtually imperceptible. Central to the approach is BRANTV's implementation of Vanuatu's Rural Off-Grid RE and EE Promotion Program, which includes demonstration sub-programs in each of hydropower, village-scale PV, household and family compound-scale PV, EE cook stoves, and productive, livelihood-enhancing uses of RE and EE. Critical to success of these demonstrations and their replication will be the payment and management system introduced to achieve savings for repairs of the RE systems and the nationwide road show to introduce EE cook stoves to the rural population. Training programs, design and adoption of policy and plans, institutional coordination mechanisms, financing mechanisms, and work in sourcing, best price costing, and in-

country parts supply will be carried out to influence the widespread application of low carbon technologies to achieve the energy access, sustainable energy, and green growth targets of the country.

The Vanuatu BRANTV project was designed with a goal to enable the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu. The project is working to achieve the following outcomes to realize the goal.
Outcome 1: Improved capacity and awareness on sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors
Outcome 2: Improved policy, planning, and regulatory regimes in the application of sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors.
Outcome 3: Established institutional framework enables the effective enforcement of policies and regulations, and implementation of plans, programs, and projects, on the application of sustainable energy and low carbon technologies.
Outcome 4A: Increased availability of, and access to, financing for sustainable energy, energy access, and low carbon (RE and EE) initiatives in the energy supply and demand sectors.
Outcome 4B: Increased financing and investments from private sector on sustainable energy and low carbon projects in the energy supply and demand sectors
Outcome 5A: Viable (technical and economic) sustainable energy and low carbon (RE and EE) techniques and practices adopted and implemented in the energy, public, private sector, and residential sectors of the country.
Outcome 5B: Enhanced confidence in the economic and technical viability and long-term sustainability of sustainable energy and low carbon technology projects.

3. TE PURPOSE

The TE report will assess the achievement of project results against what was expected to be achieved and draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The TE report promotes accountability and transparency and assesses the extent of project accomplishments.

Further to this, the objectives of the evaluation will be to:

- assess the achievement of project results supported by evidence (i.e., progress of project's outcome targets),
- assess the contribution and alignment of the project to relevant national development plans or environmental policies.
- assess the contribution of the project results towards the relevant outcome and output of the Sub Regional Programme Document (SRPD) & United Nation Pacific Strategy (UNPS/UNDAF)
- assess any cross cutting and gender issues using the gender scale effective scale (GRES)
- examination on the use of funds and value for money
- assess the impact of COVID19 on project's implementation
- and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects

5. TE APPROACH & METHODOLOGY

The TE report must provide evidence-based information that is credible, reliable, and useful. All relevant evidentiary documents must be presented/provided to the TE evaluators to confirm the reported results of the project's baseline/co-financed and incremental activities, delivery of agreed component outputs and levels of achievement of the end-of-project targets of the objectively verifiable indicators that are set out in the project results framework (log frame). It is important to also provide explanations/justifications of the attribution of any indirect results (e.g.,

energy savings, GHG emission reductions, etc.) of parallel/associated activities of the project. In this regard, the TE Team must state in the TE report if the team has checked, evaluated, verified, and confirmed all the evidentiary documents during the terminal evaluation and provide comments regarding, and where necessary, pertinent recommendations to improve, the credibility, reliability, and usefulness of such documents.

The Project Management Unit (PMU) and the UNDP Pacific Office must provide the TE team all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening Procedure/SESP, the Project Document, project reports including annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based evaluation. The TE team will review these sources of information documents, as well as the baseline and midterm GEF focal area Core Indicators/Tracking Tools submitted to the GEF at the CEO endorsement and midterm stages and the terminal Core Indicators/Tracking Tools that must be completed before the TE field mission begins.

The TE team is expected to follow a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Country Office(s), the Regional Technical Advisor, direct beneficiaries, and other stakeholders.

Engagement of stakeholders is vital to a successful TE. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to *(list)*, executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, Project Board, project beneficiaries, academia, local government and CSOs, etc. Additionally, the TE team is expected to conduct field missions to *(locations)*, including the following project sites *(list)*.

Stakeholders:
1. Department of Energy – Director: Antony Garae
2. Electrification Division, Department of Energy - Matthew Tasale, Manager, Electrification
3. Energy Efficiency Division, Department of Energy - Joseph Temakon,
4. Finance Division
5. Rural Electrification, Electrification Division, Department of Energy
6. Utility Regulatory Authority - Dr. Hasso Bhatia, Director, Davidson, and one other colleague
8. Department of Strategy, Policy, Planning and Aid Coordination (DSPPAC)
9. Community Chair, Loltong Community
10. Community Chair, Waterfall Community
.11. UNELCO General Manager
12. PCS - General Manager
13. QBE Insurance - General Manager
14. Bank of South Pacific - Stuart Beren, General Manager
15. GreenTech - Manager
16. Savvy Solar - Charlie Davies, Co-owner
17. National Bank of Vanuatu

Additionally, the TE team is expected to conduct field missions to *(locations)*, including the following project sites:

1. Pico Hydro Loltong, Pentecost
2. Pico Hydro Waterfall, Pentecost
3. Community Scale Solar PV System -Letui, Toga
4. Community Scale Solar PV System,-Sara, Epi
5. Family Compound PV Solar nano grid-Liro, Pama
6. Cookstove beneficiaries-Santo

7. Copra dryer beneficiaries

The specific design and methodology for the TE should emerge from consultations between the TE team and the above-mentioned parties regarding what is appropriate and feasible for meeting the TE purpose and objectives and answering the evaluation questions, given limitations of budget, time and data. The TE team must use gender-responsive methodologies and tools and ensure that gender equality and women's empowerment, as well as other cross-cutting issues and SDGs are incorporated into the TE report.

The final methodological approach including interview schedule, field visits and data to be used in the evaluation must be clearly outlined in the TE Inception Report and be fully discussed and agreed between UNDP, stakeholders, and the TE team.

The final report must describe the full TE approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the evaluation.

6. DETAILED SCOPE OF THE TE

The TE will assess project performance against expectations set out in the project's Logical Framework/Results Framework (see ToR Annex A). The TE will assess results according to the criteria outlined in the Guidance for TEs of UNDP-supported GEF-financed Projects (http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf).

The Findings section of the TE report will cover the topics listed below. A full outline of the TE report's content is provided in ToR Annex C.

The asterisk "(*)" indicates criteria for which a rating is required.

Findings

.Project Design/Formulation

- National priorities and country drivenness
- Theory of Change
- Gender equality and women's empowerment
- Social and Environmental Standards (Safeguards)
- Analysis of Results Framework: project logic and strategy, indicators
- Assumptions and Risks
- Lessons from other relevant projects (e.g., same focal area) incorporated into project design
- Planned stakeholder participation
- Linkages between project and other interventions within the sector
- Management arrangements

Evaluate whether the project design (e.g., approach, activities, and outputs) was adequate/sufficient and appropriate to achieve the project objective and outcomes that were set out in the project results framework.

ii. Project Implementation

- Adaptive management (approved changes to the project design and project outputs during implementation, whether such changes were adequately and properly implemented, and impacts/results of the implemented changes)
- Actual stakeholder participation and partnership arrangements (in addition, also cite issues/challenges encountered, impacts of such issues/challenges on project implementation and results; and the resolution of these)

- Project Finance and Co-finance (evaluate actual project financing, actual realization of committed co-financing, and any leveraged financing – provide evidentiary documents to support the evaluation)
- Monitoring & Evaluation: design at entry (*), implementation (*), and overall assessment of M&E (*)
- Implementing Agency (UNDP) (*) and Executing Agency (*), overall project oversight/implementation and execution (*)
- Risk Management, including Social and Environmental Standards (Safeguards)

Evaluate whether the actual project implementation did or did not facilitate the provision of the necessary resource inputs for the implementation of project activities and the delivery of all the required project outputs.

iii. Project Results

- Assess the achievement of outcomes against indicators by reporting on the level of progress for each objective and outcome indicator at the time of the TE and noting final achievements. Evaluate the following: (a) whether all the approved project outputs were delivered. These include outputs in the original project design and other approved outputs that were included based on adaptive management; (b) how these outputs contributed to the achievement of the end-of-project targets of the project; and (c) actual resource inputs that were utilized to deliver each output.
- Evaluate the results of the project activities (i.e., GEF-funded and baseline/co-financed activities that were carried out by project partners) that are contributing towards the end-of-project target of the objective indicator and each outcome indicator. This may also include monitored results from indirect activities that were facilitated, enabled, or influenced by the BRANTV Project's activities. The relevant evidentiary documents on these activities must be evaluated to verify and confirm potential attribution of the results to the BRANTV Project.
- Relevance (*), Effectiveness (*), Efficiency (*) and overall project outcome (*) - For "effectiveness," evaluate to what extent the barriers that the project is designed to remove were actually removed.
- Sustainability: financial (*), socio-political (*), institutional framework and governance (*), environmental (*), overall likelihood of sustainability (*) (*) – For overall likelihood of sustainability, evaluate whether the removed barriers will recur or not, and suggest ways of ensuring that the removed barriers will not recur.
- Country ownership
- Gender equality and women's empowerment
- Cross-cutting issues (poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, etc., as relevant)
- GEF Additionality
- Catalytic Role / Replication Effect
- Progress to impact

One important issue that must be considered in the reported results that are contributing to the achievement of the project targets is their attribution to the BRANTV Project. Make sure that all declared results are attributable to the Project. Where necessary, explain the attribution or non-attribution.

Main Findings, Conclusions, Recommendations and Lessons Learned

- The TE team will include a summary of the main findings of the TE report. Findings should be presented as statements of fact that are based on analysis of the data, and evidentiary documents. One important issue that must be considered in the reported results that are contributing to the achievement of the project targets is their attribution to the BRANTV Project. Make sure that all declared results are attributable to the Project. Where necessary, explain the attribution or non-attribution.
- The section on conclusions will be written in light of the findings. Conclusions should be comprehensive and balanced statements that are well substantiated by evidence and logically connected to the TE findings. They should highlight the strengths, weaknesses, and results of the project, respond to key evaluation questions, and provide insights into the identification of and/or solutions to important problems or issues pertinent to project beneficiaries, UNDP and the GEF, including issues in relation to gender equality and women's empowerment.

- Since the BRANTV Project strategy is barrier removal, one of the main conclusions of the TE must be on the extent of barrier removal that the Project has achieved. Explain in detail (based on the project results) for each project component of the barrier(s) is/are removed, and to what extent the barrier removal was achieved.
- Recommendations should provide concrete, practical, feasible and targeted recommendations directed to the intended users of the evaluation about what actions to take and decisions to make. The recommendations should be specifically supported by the evidence and linked to the findings and conclusions around key questions addressed by the evaluation.
- The TE report should also include lessons that can be taken from the evaluation, including best practices in addressing issues relating to relevance, performance and success that can provide knowledge gained from the particular circumstance (programmatic and evaluation methods used, partnerships, financial leveraging, etc.) that are applicable to other GEF and UNDP interventions. When possible, the TE team should include examples of good practices in project design and implementation.
- It is important for the conclusions, recommendations and lessons learned of the TE report to incorporate gender equality and empowerment of women.

The TE report will include an Evaluation Ratings Table, as shown below:

ToR Table 2: Evaluation Ratings Table for Facilitation of the Achievement of Sustainable National Energy Targets of Vanuatu (BRANTV)

Monitoring & Evaluation (M&E)	Rating
M&E design at entry	
M&E Plan Implementation	
Overall Quality of M&E	
Implementation & Execution	Rating
Quality of UNDP Implementation/Oversight	
Quality of Implementing Partner Execution	
verall quality of Implementation/Execution	
Assessment of Outcomes	Rating
Relevance	
Effectiveness	
Efficiency	
Overall Project Outcome Rating	
Sustainability	Rating
Financial resources	
Socio-political/economic	
Institutional framework and governance	
Environmental	
Overall Likelihood of Sustainability	

7. **TIMEFRAME**

The total duration of the TE will be approximately *(average 25-35 working days)* over a time period of *(8 weeks)* starting on *(date)*. The tentative TE timeframe is as follows:

Timeframe	Activity
Mar 15	Application closes – GPN Roster
Mar 18	Selection of TE team
Mar 20	Preparation period for TE team (handover of documentation)
(25 March) 3 days (recommended 2-4)	Document review and preparation of TE Inception Report
(9 March) 4 days	Finalization and Validation of TE Inception Report; latest start of TE mission

(6-16 March) 12 days (recommended 7-15)	TE mission: virtual stakeholder meetings, interviews.
17 March	Mission wrap-up meeting & presentation of initial findings; earliest end of TE mission
(22 March)	Preparation of draft TE report
25 March	Circulation of draft TE report for comments
5 April	Incorporation of comments on draft TE report into Audit Trail & finalization of TE report
20 April	Preparation and Issuance of Management Response
25 April	Concluding Stakeholder Workshop (optional)
26 April	Expected date of full TE completion

Options for site visits should be provided in the TE Inception Report.

8. TE DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	TE Inception Report	TE team clarifies objectives, methodology and timing of the TE	No later than 2 weeks before the TE mission: *(by 25 March*	TE team submits Inception Report to Commissioning Unit and project management
2	Presentation	Initial Findings	End of TE mission: *(30 March)*	TE team presents to Commissioning Unit and project management
3	Draft TE Report	Full draft report *(using guidelines on report content in ToR Annex C)* with annexes	Within 3 weeks of end of TE mission: *(10 April)*	TE team submits to Commissioning Unit; reviewed by RTA, Project Coordinating Unit, GEF OFP
5	Final TE Report* + Audit Trail	Revised final report and TE Audit trail in which the TE details how all received comments have (and have not) been addressed in the final TE report *(See template in ToR Annex H)*	Within 1 week of receiving comments on draft report: *(by 25 April)*	TE team submits both documents to the Commissioning Unit

*All final TE reports will be quality assessed by the UNDP Independent Evaluation Office (IEO). Details of the IEO's quality assessment of decentralized evaluations can be found in Section 6 of the UNDP Evaluation Guidelines.

9. TE ARRANGEMENTS

The principal responsibility for managing the TE resides with the Commissioning Unit. The Commissioning Unit for this project's TE is *the UNDP Country Office's Integrated Results and Management Unit (IRMU). Liaison will be conducted directly with the Country Office's Monitoring and Evaluation Officer. This is in collaboration with the Regional Technical Advisory for clearance and approval of the deliverables.*

The Commissioning Unit will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the TE team. The Project Team will be responsible for liaising with the TE team to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

10 TE TEAM COMPOSITION

A team of *two independent evaluators* will conduct the TE – *one team leader (with experience and exposure to projects and evaluations in other regions) and national consultant expert, from Vanuatu*. The team leader will leader will be responsible for the overall assessment of the project results and improve sustainability of project gains including design and writing of the TE Inception Report, lead the TE mission, supervise the national consultant, and write the final TE report. The team expert will report to the Team Leader and support the TE team leader to assess the extent to which the project is achieving project results and improve sustainability of project gains. The team expert will also work with the Project Team in developing the TE itinerary of the mission including meeting appointments and schedules

The evaluator(s) cannot have participated in the project preparation, formulation and/or implementation (including the writing of the project document), must not have conducted this project's Mid-Term Review and should not have a conflict of interest with the project's related activities.

The selection of evaluators will be aimed at maximizing the overall "team" qualities in the following areas:

Education

- Master's degree in Engineering, preferably in Energy, Electrical, Mechanical or other closely related field; Additional training in Renewable Energy and Energy Efficiency including Climate Change related fields is an advantage.

Experience

- Relevant experience with results-based management evaluation methodologies.
- Experience applying SMART indicators and reconstructing or validating baseline scenarios.
- Competence in adaptive management, as applied to *energy efficiency*
- Experience in evaluating projects.
- Experience working in *the Pacific*
- Experience in relevant technical areas for at least *10 years.*
- Demonstrated understanding of issues related to gender with experience in gender responsive evaluation and analysis.
- Excellent communication skills.
- Demonstrable analytical skills.
- Project evaluation/review experience within the United Nations system will be considered an asset.

Language

- Fluency in written and spoken English.

11. EVALUATOR ETHICS

The TE team will be held to the highest ethical standards and is required to sign a code of conduct upon acceptance of the assignment. This evaluation will be conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluation.' The evaluator must safeguard the rights and confidentiality of information providers, interviewees, and stakeholders through measures to ensure compliance with legal and other relevant codes governing collection of data and reporting on data. The evaluator must also ensure security of collected information before and after the evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the evaluation process must also be solely used for the evaluation and not for other uses without the express authorization of UNDP and partners.

12. PAYMENT SCHEDULE

- 20% payment upon satisfactory delivery of the final TE Inception Report and approval by the Commissioning Unit
- 40% payment upon satisfactory delivery of the draft TE report to the Commissioning Unit
- 40% payment upon satisfactory delivery of the final TE report and approval by the Commissioning Unit and RTA (via signatures on the TE Report Clearance Form) and delivery of completed TE Audit Trail

Criteria for issuing the final payment of 40%:

- The final TE report includes all requirements outlined in the TE TOR and is in accordance with the TE guidance.
- The final TE report is clearly written, logically organized, and is specific for this project (i.e., text has not been cut & pasted from other TE reports).
- The Audit Trail includes responses to and justification for each comment listed.

APPLICATION PROCESS

(Adjust this section if a vetted roster will be used)

Recommended Presentation of Proposal:

. **Letter of Confirmation of Interest and Availability** using the template provided by UNDP;
a. **CV** and a **Personal History Form** (P11 form);
b. Brief description **of approach to work/technical proposal** of why the individual considers him/herself as the most suitable for the assignment, and a proposed methodology on how they will approach and complete the assignment; (max 1 page)
c. **Financial Proposal** that indicates the all-inclusive fixed total contract price and all other travel related costs (such as flight ticket, per diem, etc.), supported by a breakdown of costs, as per template attached to the Letter of Confirmation of Interest template. If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

Annex B: TE Mission itinerary

Visiting Plan:
1. Port Villa – Interviewed all key government, and project personnel, accumulating to more than ten distinct interviews with various stakeholders
2. Pama – Visited the school site on which a solar facility has been installed. Conducted detailed inspection of the facility, including a review of technical details. Conducted a detailed interview with the principal of the school, understanding how the facility can potentially enable the school to generate better educational outcomes for the community
3. Norsup – Visited the island to visit three community solar installation, interviewing more than ten different members of community who were benefiting from the facility, while also being involved in its maintenance.
4. Malekula – Visited the island to visit a community solar installation and conducted a focus group with more than six participants belonging to the community. The participants greatly appreciated the facility, and provided valuable feedback regarding how scaling up the facility can provide more economic opportunities

Annex C: List of persons interviewed

S. No	Name	Position	Organisation
1	Mr. Michel Sisi	Manager, Energy Security	MoE, GoV
2	Mr. Georgewin Garae	Fund Manager, National Green Energy Fund	NGEF
3	Mr. Anthony Garae	Director, Department of Energy	MoE, GoV
4	Mr. Gary	Principal Scientific Officer, Rural Electrification	MoE, GoV
5	Mr. Matthew	Manager, Electrification	MoE, GoV
6	Ms. Doreen Leona	Manager, Project Management Unit	UNDP
7	Mr. Paul Kaun	Chief Executive Officer	Utilities Regulatory Authority
9	Community Members	Pama Island	GoV
10	Community Members	Norsup	GoV
11	Consultants on Efficient cook stoves		

Annex D: List of documents reviewed

PROJECT EXTENSION REQUEST FORM _BRANTV_final
12 07 2022 BRANTV Demonstration Datasheet
2020 Board Meeting Minutes - BRANTV, LECB-II _ TNC
2021 Gender Baseline Survey
2022-GEF-PIR-PIMS5926-GEFID9574
22 03 14 - Ltr from URA to DoE Director- URA Tariff Determination - Data Information Request for Loltong Mini-Grid System_response-ge
CO request for extension letter_BRANTV_final 131022.docx
Proposed Action Plan Risk Mgt_final
5926_Atlas 2022-2023 AWP
APPROVED Board Minutes of Meeting 8th July 2022 Endorsed by DG 2022728
BRANTV Demo Sites with Management Model
CLEAN_Terms of Reference_ NEMP_27-05-22
DETAILED DESIGN REPORT OF PICO HYDRO PV SOLAR HYBRID ON LOLTONG PENTECOST
FINAL 07 12 2020_Project Inception Report
FINAL_Multi-Year Workplan for 2022-2023__BRANTV_31 August 22 (1)
LPAC Meeting Minutes- BRANTV
PIMS 5926_Co-Financing Template for MTR
signed_LOA VU BRANTV
signed_PRODOC Vanuatu BRANTV
Tariff and Feasibility Study Report V1.0_FINAL
ToR National Energy Master Plan
TWG Stakeholders Minutes of Meeting 2 Luganville Santo 13 09 2019
UNDP_BRANTV_FinalMTRReport
UNDPGEF TE TOR Van BRANTV FINAL
Vanuatu BRANTV GHG ER for Demo Sites Updated July 12 2022
Vanuatu BRANTV Records of Training Programme Updated July 2022

Annex E: Evaluation Question Matrix (evaluation criteria with key questions, indicators, sources of data, and methodology)

Question	Measure(s), Indicator(s), or sub-question(s)	Data Sources	Methodology
Relevance			
Is the project aligned with national priorities?	Are the project's objectives in line with the national development priorities?	National Policy Documents	Document Review and KIIs
	Was the project design appropriately responsive to the political and socio-economic conditions of the country?	M&E Documents	Document Review and KIIs
	Did the project formulation adequately consider national strategies to increase share of RE in the energy mix, Lower GHG emissions and gender mainstreaming?	National Policy Documents	Document Review and KIIs
Was the project aligned with UNDP and GEF strategic priorities?	To what extent was the project in line with the UNDP Strategic Plan, CPD, UNDAF, United Nations Sustainable Development Cooperation Framework (UNSDCF), SDGs and GEF strategic programming?	Relevant UN/GEF Documents, and National Policy Documents	Document Review and KIIs
	Does the project contribute to the Theory of Change for the relevant country programme outcomes?	Relevant UN/GEF Documents	Document Review and KIIs
Was there adequate stakeholder engagement during the project inception phase?	Did relevant stakeholders participate during the project formulation?	M&E Documents	Document Review and KIIs
	Was the project formulated according to the needs and interests of the relevant and targeted stakeholders?	M&E Documents, National Policy Documents	Document Review and KIIs
	Were the needs and interests of diverse groups of stakeholders adequately captured during the project inception phase?	M&E Documents	Document Review and KIIs
Is the project coherent and complementary to other similar interventions in the country? Were the lessons learned from other relevant interventions incorporated in the project design?		M&E Documents	Document Review and KIIs
Effectiveness			
Extent to which the project's actual outcomes/outputs were commensurate with what was planned.	Log-frame targets for each project outcome achieved/unachieved.	M&E documents	Document Review
	Log-frame targets for each project output achieved/unachieved.	M&E documents	Document Review
Extent to which the project contributed to the national development priorities; and factors that contributed to the achieving or not achieving intended outcomes and outputs		Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs

How has the project addressed barriers and challenges related to policies and regulations that hinder the sustainable promotion and application of low carbon development initiatives that will contribute to the achievement of Vanuatu's EE and RE targets, as well as barriers related to the weak institutional framework in the cross-cutting areas of energy, utilities, and infrastructures in Vanuatu?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
What were the project's greatest and fewest achievements?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
Could any alternate strategy be more effective in achieving the project objectives?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
To what extent has the project contributed to gender mainstreaming?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
What is the status of Project Demo as of the TE, and the prospect of completion and successful operationalization by end-of-project (EOP)?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
Efficiency		
Cost Efficiency and Value for Money		
Were the procured project inputs the right quality and at the appropriate price?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
How efficiently were the project inputs converted into project outputs, i.e., how efficient the project was able to make use of the available project funds (GEF funding and non-GEF co-financing) to deliver the required specific project outputs?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
How well are the outputs of the project contributing to the project outcomes?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
How well have the project inputs delivered the intended objectives of the project?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
Are the project benefits inclusive?	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
Efficient Management and Timeliness		
Extent to which monitoring systems ensured effective and efficient project management	Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs

Were the project deliverables and outputs achieved in a timely manner?		Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
To what extent could the project delays (if any) have been avoided?		Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
Was the project management structure appropriate and efficient in delivering the intended project outputs?		Stakeholder Consultations, Project Documents & M&E Documents	Document Review and KIIs
Impact			
Objective Level Impact			
Enabling the achievement of the energy access, sustainable energy, and green growth targets of Vanuatu	Cumulative tons of incremental GHG emissions reduced from business as usual (tons CO2)	National Statistics	Document Review
	Incremental number of households (with at least 20% woman-headed) in rural areas whose level of energy access is increased via village-scale off-grid RE or that benefit from newly adopting EE cook stoves	National Statistics, Project Documents and M&E Documents	Document Review
	Total new, incremental reductions in or newly avoided amounts of annual diesel consumption achieved (liters DFO)	National Statistics, Project Documents and M&E Documents	Document Review
	Incremental fuel wood saved annually by use of energy efficient cook stoves, million kgs	National Statistics, Project Documents and M&E Documents	Document Review
Outcome Level Impacts			
Improved capacity and awareness on sustainable energy, energy access, and low carbon development in the energy, public, private, and residential sectors	Number of individuals (with at least 30% being women) in Vanuatu that are newly (as of start of project) involved in operating, maintaining, repairing, designing, and/or installing off-grid rural RE power systems as one of their main sources of income.	M&E documents	Document Review
	Number of artisans in Vanuatu fabricating EE cook stoves as their main source of income	M&E documents	Document Review
Improved policy, planning, and regulatory regimes in the application of sustainable energy, energy access, and low carbon development in the energy, public, private,	Portion of nation's off-grid villages for which a comprehensive electrification plan has been determined , %	M&E documents	Document Review
	Number of regulations under the Off-Grid Rural Electrification Policy that are enforced	M&E documents	Document Review
Established institutional framework enables the	Number of pico-/ small micro-hydro, village community PV, and village sets of	M&E documents	Document Review

effective enforcement of policies and regulations, and implementation of plans, programs, and projects, on the application of sustainable energy and low carbon technologies	family compound-scale nano-grid sites at which management model enables fee collection, savings for repairs/ parts, and payment of operator		
	Number of villages at which DOE has cooperated with other national-level departments to implement rural electrification or EE cook stoves, as well as productive uses of RE/EE applications, if relevant	M&E documents	Document Review
Increased availability of, and access to, financing for sustainable energy, energy access, and low carbon initiatives in the energy supply and demand sectors	Amount of new international funding confirmed with funding entities for infusion into NGEF because of BRANTV efforts, US$ million	M&E documents	Document Review
Increased financing and investments from private sector on sustainable energy and low carbon projects in the energy supply and demand sectors	Amount of funding represented by financial closes reached for loans or direct equity investments to RE and EE projects under commercial or private sector financing scheme for low carbon projects, US$ million	M&E documents	Document Review
Sustainable energy and low carbon (RE and EE) techniques and practices adopted and implemented with both cost and technical viability in the energy, public, private sector, and residential sectors	Number of types of key off-grid RE power generation and mini-grid related equipment/ parts newly available or available at 25% or more less than cost at start of project	M&E documents	Document Review
Enhanced confidence in the economic and technical viability and long-term sustainability of sustainable energy and low carbon technology projects	No. of communities and private sector entities, and households in both on-grid and off-grid areas that are interested in replicating the RE-based power generation system, and EE cook stoves and RE-powered freezer demos: •Pico-/ small micro-hydro •Hybrid pico-hydro & PV •Village community PV (with or without mini-grid) •Village-wide family compound-scale PV nano-grids •EE cook stoves •RE-powered freezers	M&E documents	Document Review
Project performance against GEF- core indicators.	Carbon sequestered, or emissions avoided in the sector of Agriculture, Forestry and Other Land Use	Project Documents	Document Review

	Emissions avoided outside Agriculture, Forestry and Other Land Use (AFOLU) sector	Project Documents	Document Review
	Energy saved	Project Documents	Document Review
	Increase in installed renewable energy capacity per technology	Project Documents	Document Review
	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	Project Documents	Document Review
Gender			
How does the project contribute to gender mainstreaming and advance women-empowerment?	Project performance on the Gender Results Effectiveness Scale (GRES)	M&E Documents, National Policy Document	Document Review and KIIs
Are gender impacts of the project long-term or short-term?	Were project outputs relating to gender mainstream designed appropriately to deliver long term impacts?	M&E Documents	Document Review and KIIs
Results Framework			
Were the project outputs consistent with the project's Theory of Change?	Was there a clearly defined and robust Theory of Change? Did the Theory of Change include: a clear definition of the problem to be addressed and its root causes, desired outcomes, an analysis of barriers to and enablers for achieving outcomes, consideration of how to address barriers, a plan for a phased withdrawal of the project, and responses for the project to focus on?	M&E Documents	Document Review and KIIs
What was the process of developing the results framework?		M&E Documents	Document Review and KIIs
Does the results framework capture broader development impacts?		M&E Documents	Document Review and KIIs
Are the indicators in the results framework SMART?		M&E Documents	Document Review and KIIs
Risks and Adaptive Management			
Were new risks or changes to existing risks reported on in the annual PIRs and/or MTR?	How did those risks affect project implementation?	M&E Documents	Document Review and KIIs
	What systems and tools were used to identify, prioritize, monitor, and manage those risks? Were action plans developed and followed? Was escalation necessary?	M&E Documents, Project Documents	Document Review and KIIs

Were any risks overlooked and what were the consequences of that?		M&E Documents, Project Documents	Document Review and KIIs
Was the project's risk register properly maintained during implementation?		Risk Register, M&E Documents	Document Review and KIIs
Did the Project Team keep the Project Board informed of new risks, changes to existing risks and the escalation of risks?		Risk Register	Document Review and KIIs
What significant changes did the project undergo as a result of recommendations from the Mid-Term Review, or as a result of other review procedures?		M&E Documents, Risk Register	Document Review and KIIs
If the changes were extensive, how did they materially change the expected project outcomes?		M&E Documents, Risk Register	Document Review and KIIs
Were the project changes articulated in writing and then considered and approved by the Project Board?		M&E Documents	Document Review and KIIs
Financial Management			
Were there variances between planned and actual expenditures? And what were the reasons for those variances?		Financial Statements, Bank Statements	Document Review and KIIs
Were strong financial controls established to allow the project management to make informed decisions regarding the budget at any time, and allow for the timely flow of funds and for the payment of satisfactory project deliverables?		Financial Statements, Bank Statements, Audit Reports	Document Review and KIIs
Was there due diligence in the management of funds, including periodic audits?		Bank Statements, GL, Audit Reports	Document Review and KIIs
Were there any changes made to fund allocations as a result of budget revisions and the appropriateness and relevance of such revisions?		Bank Statements, GL, Audit Reports	Document Review and KIIs
Did the materialization of co-financing effect project outcomes and/or sustainability?		M&E Reports, Financing Documents	Document Review and KIIs
Sustainability			
Is the project financially sustainable?	Given the current project activities, what is the likelihood that financial resources will be available once the GEF assistance ends to support the continuation of benefits	Financial Statements, GL, Financing Documents	Document Review and KIIs
	What opportunities for financial sustainability exist?	Financial Statements	Document Review and KIIs
	Has there been the establishment of financial and economic instruments and mechanisms to ensure the ongoing flow of benefits once the GEF assistance ends?	Financing Documents, M&E Documents	Document Review and KIIs
Does socio-political stability of the country impact the project?	Will the level of stakeholder ownership (including ownership by governments and other key	M&E Documents	Document Review and KIIs

	stakeholders) be sufficient to allow for the project outcomes/benefits to be sustained?		
	Are there any social or political risks that can undermine the longevity of project outcomes?	M&E Documents	Document Review and KIIs
Is the project environmentally sustainable? Are there environmental factors that could undermine the project's outcomes and benefits?		M&E Documents, Environmental Reports	Document Review and KIIs
Is there evidence to support that project outcomes and benefits are likely to be sustained long-term, beyond the project end? Were project outputs designed appropriately to deliver long term impacts?		M&E Documents	Document Review and KIIs
M&E Design and Implementation			
Did the M&E plan include a baseline, SMART indicators and data analysis systems, and evaluation studies at specific times to assess results? Was the progress against GEF-core indicators (6.1, 6.2, 6.3, 6.4 and 11) periodically and appropriately tracked as part of the M&E function?		M&E Documents	Document Review and KIIs
Were baseline conditions, methodology, logistics, time frames, and roles and responsibilities well-articulated?		M&E Documents	Document Review and KIIs
Was the M&E budget in the project document sufficient?		M&E Documents	Document Review and KIIs
Were the activities (i.e., co-financed and subsumed baseline) implemented by the project partners monitored by the PMU?		M&E Documents	Document Review and KIIs
Were the results of the activities (i.e., co-financed and subsumed baseline) implemented by the project partners regularly reported to the PMU?		M&E Documents	Document Review and KIIs
Stakeholder Engagement			
How did local and national government stakeholders support the objectives of the project? How did they have an active role in project decision-making that supported efficient and effective project implementation?		M&E Documents	Document Review and KIIs, Stakeholder Interviews
How did stakeholder involvement and public awareness contribute to the progress towards achievement of the project objective? Were there any limitations to stakeholder awareness of project outcomes or to stakeholder participation in project activities?		M&E Documents	Document Review and KIIs, Stakeholder Interviews
How did actual stakeholder interaction compare to what was planned in the project document and Stakeholder Engagement Plan? Include challenges and outcomes on stakeholder engagement, as evolved from the time of the MTR.		M&E Documents	Document Review and KIIs, Stakeholder Interviews
Were stakeholder engagement exercises gender responsive?	How were women's groups, NGOs, civil society orgs and women's ministries adequately consulted and involved in project design?	M&E Documents, Gender Documents	Document Review and KIIs

	How were stakeholder engagement exercises gender responsive?	M&E Documents, Gender Documents	Document Review and KIIs
During implementation what systematic and appropriate efforts were made to include diverse groups of stakeholders		M&E Documents, Gender/Inclusivity Documents	Document Review and KIIs
Environmental and Social Safeguarding			
Were environmental and social safeguards adequately and appropriately implemented?	Were the E&S risks of the project properly assessed?	E&S Reports	Document Review and KIIs
	Is there an effective Environmental and Social Management Framework (ESMF) in place.	E&S Reports, E&S Management Framework	Document Review and KIIs
	Has compliance with the ESMF been ensured and E&S performance of the project been tracked by the M&E functions?	E&S Reports, E&S Management Framework	Document Review and KIIs
	Were mitigation and adaptation measures implemented according to the agreed Environmental and Social Management Plans (ESMPs)?	E&S Reports, E&S Management Framework	Document Review and KIIs
GEF Additionality			
Are the outcomes related to incremental reasoning?	Are there quality quantitative and verifiable data demonstrating the incremental environmental benefits, increased share of RE in energy mix and gender mainstreaming?	Energy Mix, E&S Reports, E&S Management Framework, Gender Reports	Document Review and KIIs
	Is there evidence of the outcomes achieved in creating a more supportive environment as envisaged at the endorsement stage?	Energy Mix, E&S Reports, E&S Management Framework	Document Review and KIIs
Can the outcomes be attributed to the GEF contribution as originally anticipated?	Do monitoring and evaluation documents provide evidence of the causality between the rationale for GEF involvement and the incremental environmental and other benefits directly associated with the GEF-supported project?	M&E Documents, E&S Reports, E&S Management Framework	Document Review and KIIs

Annex F: TE Rating scales

Ratings for Outcomes, Effectiveness, Efficiency, M&E, Implementation/Oversight, Execution, Relevance	Sustainability ratings:
6 = Highly Satisfactory (HS): exceeds expectations and/or no shortcomings 5 = Satisfactory (S): meets expectations and/or no or minor shortcomings 4 = Moderately Satisfactory (MS): more or less meets expectations and/or some shortcomings 3 = Moderately Unsatisfactory (MU): somewhat below expectations and/or significant shortcomings 2 = Unsatisfactory (U): substantially below expectations and/or major shortcomings 1 = Highly Unsatisfactory (HU): severe shortcomings Unable to Assess (U/A): available information does not allow an assessment	4 = Likely (L): negligible risks to sustainability 3 = Moderately Likely (ML): moderate risks to sustainability 2 = Moderately Unlikely (MU): significant risks to sustainability 1 = Unlikely (U): severe risks to sustainability Unable to Assess (U/A): Unable to assess the expected incidence and magnitude of risks to sustainability

Annex G: Signed Evaluation Consultant Agreement form

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing, or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: Ammar Habib Khan

Name of Consultancy Organization (where relevant): _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for

Evaluation. Signed at Karachi (Place) on 21/6/2023 (Date)

Signature: 

Annex H: Signed UNEG Code of Conduct form

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject. Independence provides legitimacy to and ensures an objective perspective on evaluations. An independent evaluation reduces the potential for conflicts of interest which might arise with self- reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals, and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

Evaluators/Consultants:

10. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
11. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
12. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
13. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
14. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
15. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings, and recommendations.
16. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
17. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
18. Must confirm that they have not been involved in designing, executing, or advising on the project being evaluated and did not carry out the project's Mid-Term Review.

Evaluation Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Evaluator: Ammar Habib Khan

Name of Consultancy Organization (where relevant): _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Karachi (Place)

on 21/3/2023 (Date)

Annex K: Signed TE Report Clearance form

Terminal Evaluation Report for *(Barrier Removal for Achieving the National Energy Road Map Targets of Vanuatu (BRANTV) Project & UNDP PIMS ID: 5926)*

Reviewed and Cleared By:

Commissioning Unit (M&E Focal Point)

Name: Merewalesi Laveti

Signature:  Date: 30/06/2023

Regional Technical Advisor (Nature, Climate and Energy)

Name: Bahtiyar Kurt

Signature:  Date: 30/06/2023

Commissioning Unit (Deputy Resident Representative)

Name: Yemesrach Workie

Signature:  Date: 30/06/2023