



# GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

**PROJECT TYPE: Full-sized Project**

**TYPE OF TRUST FUND: GEF Trust Fund**

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## PART I: PROJECT INFORMATION

Project Title: <b>Barrier Removal for Achieving National Energy Road Map Targets of Vanuatu (BRANTV)</b>			
Country(ies):	Vanuatu	GEF Project ID: <sup>1</sup>	9574
GEF Agency(ies):	UNDP	GEF Agency Project ID:	PIMS 5926
Other Executing Partner(s):	Department of Energy - Ministry of Climate Change & Natural Disaster (DOE-MCCND) <sup>2</sup>	Submission Date:	14 Apr 2018
		Resubmission Date:	29 May 2018
GEF Focal Area (s):	Climate Change	Project Duration (Months)	48
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>	Corporate Program: SGP <input type="checkbox"/>	
Name of Parent Program	N/A	Agency Fee (\$)	250,774

### A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES<sup>3</sup>

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in \$)	
			GEF Project Financing	Co-financing
CCM-1 Program 1	Accelerated adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration	GEFTF	2,216,970	15,513,410
	Policy, planning and regulatory frameworks foster accelerated low GHG development and emissions mitigation	GEFTF	265,755	1,770,037
	Financial mechanisms to support GHG reductions are demonstrated and operationalized	GEFTF	157,001	878,997
<b>Total Project Costs</b>			2,639,726	18,162,444

### B. PROJECT DESCRIPTION SUMMARY

Project Objective: Enabling the achievement of energy access, sustainable energy, and green growth target of Vanuatu						
Project Components/Programs	Financing Type <sup>4</sup>	Project Outcomes	Project Outputs	Trust Fund	(in US\$)	
					GEF Project Financing	Confirmed Co-financing
1. Capacity and Awareness Enhancement on Sustainable	TA	1. Improved capacity and awareness on sustainable	1.1 Completed technical capacity building programs in off-grid RE technology and EE cook stove applications	GEFTF	302,775	2,669,517

<sup>1</sup> Project ID number remains the same as the assigned PIF number.

<sup>2</sup> The Ministry of Climate Change and Natural Disaster (MCCND) is the short name of the actual name of the ministry, which is Ministry of Climate Change, Adaptation, Meteorology, Geo-Hazards, Environment and Energy and NDMO.

<sup>3</sup> When completing Table A, refer to the excerpts on [GEF 6 Results Frameworks for GETF, LDCF and SCCF](#) and [CBIT programming directions](#).

<sup>4</sup> Financing type can be either investment or technical assistance.  
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Energy and Low Carbon Development		energy, energy access, and low carbon development in the energy, public, private, and residential sectors	<p>1.2 Designed, published, and disseminated how-to guidebooks for off-grid RE and EE provided in Bislama, with accompanying MP4/MP5 videos in Bislama and mechanisms to remotely ask questions of experts</p> <p>1.3 Completed awareness raising program for the public on off-grid RE technology and EE cook stove applications</p> <p>1.4 Established and operational information exchange network for the promotion and dissemination of knowledge on sustainable energy and low carbon development</p> <p>1.5 Established and operationalized energy (petroleum and electricity) supply and consumption monitoring and reporting and database system</p>			
2. Improvement of Energy Policy and Planning Formulation and Implementation	TA	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	<p>2.1 Adopted and implemented detailed rural electrification plan (Vanuatu Off-Grid Rural Electrification Roadmap) covering all 65 inhabited islands of Vanuatu</p> <p>2.2 Adopted and adhered to national guidelines and adopted and enforced standards to support quality and cost effective development of off-grid RE electrification and EE cook stoves</p> <p>2.3 Adopted and implemented Off-Grid Rural Electrification Policy that promotes and ensures the quality development of off-grid renewable energy power systems</p>	GEFTF	148,900	831,063
3. Institutional Framework Enhancement for Sustainable Energy and Low Carbon Development	TA	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	<p>3.1 Promoted and implemented management models for sustainably running off-grid pico-/small micro-hydro mini-grids, village community PV systems (with and without mini-grids), and family compound-scale PV nano-grids distributed across full villages</p> <p>3.2 Implemented institutional mechanisms for cooperation between DOE and other national level departments to promote off-grid RE power generation and EE cook stoves, and their utilization</p>	GEFTF	104,200	911,695

		carbon technologies	<p>for productive uses</p> <p>3.3 Implemented institutional mechanisms to facilitate adherence to guidelines and enforcement of standards and regulations related to pico/ micro-hydro, village community PV, family compound-scale PV nano-grids, and EE cook stoves</p> <p>3.4 Implemented institutional mechanisms to facilitate the sustainable rollout of household scale PV systems in Vanuatu</p> <p>3.5 Established and operational Northern Vanuatu Rural Renewable Energy and Energy Efficiency Promotion Center of DOE</p>			
4. Sustainable Energy and Low Carbon Initiatives Financing	TA	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	<p>4A.1 Completed outreach program to identify and secure international funding for Vanuatu's NGEF</p> <p>4A.2 Implemented program to assist those applying to NGEF for funding for replication of the BRANTV demos</p> <p>4A.3 Implemented program to assist those applying to NGEF or other funding source for loan or grant to support their "productive uses" (productive initiatives that will make use of renewable energy based power).</p>	GEFTF	58,000	292,000
		4B. Increased financing and investments from private sector on sustainable energy and low carbon projects in the energy supply and demand sectors	<p>4B.1 Completed capacity building for the existing banks on financing low carbon development projects</p> <p>4B.2 Established and operational commercial or private sector financing scheme for low carbon technology (power and non-power applications) projects</p> <p>4B.3 Completed sustainable EE and RE technologies application projects financed either through the established commercial or private sector financing scheme; or by multiple one-off private sector investments</p> <p>4B.4 Completed evaluation of suggested enhanced financing schemes for supporting commercial or private sector initiatives on low carbon development.</p>	GEFTF	91,525	573,450

292 5. Sustainable Energy and Low Carbon (RE and EE) Technology Applications	TA	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	5A.1 Established and operational high quality, low cost sourcing channels and available best cost breakdowns for renewable energy and energy efficiency systems in Vanuatu 5A.2 Confirmed and secured community support for project demos 5A.3 Completed research and assessment of best energy efficient stove types for local market and testing of their associated energy savings 5A.4 Completed and disseminated monitoring and assessment reports on project demos 5A.5 Completed assessment of other applicable low carbon technologies (besides those of the project demos) that can be feasibly implemented in the on-grid and off-grid areas to supplement the planned NAMA and rural electrification projects in Vanuatu	GEFTF	203,437	382,300
	Inv	5B. Enhanced confidence in the economic and technical viability and long-term sustainability of sustainable energy and low carbon technology projects	5B.1 Well-managed operational off-grid hydro-based power generation and power distribution systems comprised of a mini-hydro station, a micro-hydro station, and multiple pico- or small micro-hydro village power stations (5-20 kW) and accompanying mini-grids with sustainable payment system to support ongoing O&M 5B.2 Well-managed operational solar PV power grids (around 100 kW), institutional solar PV systems (1.9-5.2 kW), and village community PV systems (3-10 kW) with and without accompanying mini-grids with sustainable payment system to support ongoing O&M 5B.3 Well-managed and operational household solar PV systems and family compound-scale PV nano-grids, the latter installed across selected villages, with sustainable payment system to support ongoing O&M 5B.4 Energy efficient cook stoves disseminated and adopted and	GEFTF	1,605,188	12,222,507

			used daily by 12,000 households across the country 5B.5 Operational and revenue-generating productive uses of off-grid renewable energy based power generation that both raise incomes and increase the revenue of off-grid RE mini-grids			
Subtotal					2,514,025	17,882,532
Project Management Cost (PMC) <sup>5</sup>				GEFTF	125,701	279,912
<b>Total Project Costs</b>					2,639,726	18,162,444

### C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount (\$)
Recipient Government	Department of Energy - Ministry of Climate Change & Natural Disaster (DOE-MCCND)	Grant	16,348,000
		In-Kind	714,444
	Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business	Grant	1,000,000
GEF Agency	United Nations Development Programme (UNDP)	Grant	100,000
<b>Total Co-financing</b>			18,162,444

### D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee <sup>a)</sup> (b) <sup>2</sup>	Total (c)=a+b
UNDP	GEFTF	Vanuatu	Climate Change	N/A	2,639,726	250,774	2,890,500
<b>Total Grant Resources</b>					2,639,726	250,774	2,890,500

a) Refer to the Fee Policy for GEF Partner Agencies

### E. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS<sup>6</sup>

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO <sub>2e</sub> mitigated (direct and indirect)	768,847.8 metric tons (direct and bottom-up consequential)

### F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? **No**

(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/CBIT Trust Fund) in Annex D.

<sup>5</sup> For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D.

<sup>6</sup> Update the applicable indicators provided at PIF stage. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the GEF-6 Programming Directions, will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

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## **PART II: PROJECT JUSTIFICATION**

### **A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF<sup>7</sup>**

#### *A.1. Project Description.*

- 1) *The global environmental and/or adaptation problems, root causes and barriers that need to be addressed: N.A*
- 2) *The baseline scenario or any associated baseline projects: N.A*
- 3) *The proposed alternative scenario, GEF focal area<sup>8</sup> strategies, with a brief description of expected outcomes and components of the project: Please refer to **Annex E** of this document.*
- 4) *Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, CBIT and co-financing: N.A.*
- 5) *Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF) N.A.*
- 6) *Innovativeness, sustainability and potential for scaling up: N.A.*

*A.2. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact. N.A.*

*A.3. Stakeholders. Identify key stakeholders and elaborate on how the key stakeholders' engagement is incorporated in the preparation and implementation of the project. Do they include civil society organizations (yes ☒ /no ☐)? and indigenous peoples (yes ☒ /no ☐)?<sup>9</sup>*

The main stakeholder of this project is the Department of Energy - Ministry of Climate Change & Natural Disaster (DOE-MCCND), which is the designated project implementing partner. The other stakeholders include private sector technical and equipment companies, commercial banks, private sector equity investors, local business persons on the islands and in villages, engineers / high level technical persons, rural electricians, and artisans/ potential artisans. This project will also work closely with relevant non-governmental organizations/civil society organizations, local villagers and indigenous people; women – particularly in productive use initiatives, and other marginalized groups in the villages to improve the future implementation of outreach/training activities.

*A.4. Gender Equality and Women's Empowerment. Elaborate on how gender equality and women's empowerment issues are mainstreamed into the project implementation and monitoring, taking into account the differences, needs, roles and priorities of women and men. In addition, 1) did the project conduct a gender analysis during project preparation (yes ☒ /no ☐)?; 2) did the project incorporate a*

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<sup>7</sup> For questions A.1 –A.7 in Part II, if there are no changes since PIF , no need to respond, please enter “NA” after the respective question.

<sup>8</sup> For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving..

<sup>9</sup> As per the GEF-6 Corporate Results Framework in the GEF Programming Directions and GEF-6 Gender Core Indicators in the Gender Equality Action Plan, provide information on these specific indicators on stakeholders (including civil society organization and indigenous peoples) and gender.

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gender responsive project results framework, including sex-disaggregated indicators (yes ☒ /no ☐)?; and 3) what is the share of women and men direct beneficiaries (women 50%, men 50%)? <sup>10</sup>

The BRANTV project 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. This strategy will promote the mainstreaming of gender and associated enhancement of the situation of women with the following measures: (a) ensuring that women play a key role in village/ community decision-making associated with the project; (b) women will be given priority for project funds provided for productive use initiatives; (c) ensuring that women participate in the project's training and capacity building program with strong representation; and, (d) 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. Furthermore, the project is designed to not only carry out these measures but also achieve a "gender responsive" status, with results that address the differential needs of men and women and equitable distribution of benefits, resources, status, and rights.

*A.5 Risk. Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.*

During the project design stage, it was found out that in addition to the set of risks that were identified during the PIF stage, there were also other potential risks that the proposed project must mitigate. The table below summarizes the set of risks that were identified during the PIF and PPG stages of the BRANTV Project development.

PIF	ProDoc	Explanation of Changes
a. Inadequate local capacity to implement the project activities	Inadequate local capacity will result in lack of national experts to fill national roles, lack of personnel to operate demos, and lack of effective project management.	Elaboration added.
b. Limited and high cost of transport to outer islands will not allow regular access to project sites for project monitoring purposes.	High cost of transport between islands will not allow regular access to project sites for project monitoring purposes.	Project demos focus mostly on main islands that are larger population centers rather than outer islands for which there is more limited transport access. Transport costs for getting to all islands, however, is high.
c. Not timely availability of committed co-financing for specific activities of the project.		Progress to date suggests rollout of co-financing will be timely, so that risk is no longer considered significant.
d. Unsustained outcomes and benefits of implemented GEF-funded activities.	PV system parts and cook stove parts will be abandoned after their useful lifetime.	This ProDoc risk and the two following it offer elaboration of sustainability issues referenced in PIF risk statement (d). The first, in the cell to the left, references unsustainable discard of RE and EE parts.
	Off-grid RE power systems supported by project will lack the funds to carry out repairs and purchase new parts as	This risk elaborates on PIF risk statement (d).

<sup>10</sup> Same as footnote 8 above.

	needed.	
	Unsuccessful productive use initiatives will result in lack expected of income generation.	This risk elaborates on PIF risk statement (d).
e. Adverse climate-related events may hamper the installation of RE-based power generation units.	Natural disasters, frequent in Vanuatu, will destroy the installed off-grid RE power system demos of the project.	Modification recognizes that the more likely scenario is that natural disasters will impact systems after installation, rather than during installation.
f. Island communities may not support the project implementation promptly and sufficiently	Diversification of water for pico-/small micro-hydro demos will negatively impact ecosystem and/or will impact other uses.	This ProDoc risk and the two following it elaborate PIF risk statement (f). Concerns about diversion of water may lessen community support for pico-hydro demos.
	Project will reinforce ongoing problems in Vanuatu of lack of opportunity for women and other marginalized groups.	This ProDoc risk elaborates an aspect of PIF risk statement (f).
	Demos will be established on lands of indigenous people against their will.	This ProDoc risk elaborates an aspect of PIF risk statement (f).
g. Delayed or even failed approval and enforcement of the recommended policies and regulations of the project by the pertinent GOV agencies.	Lack of political will and coordination among government departments will result in RE and EE policies, plans, standards, and guidelines either not being adopted or not being effectively implemented.	This ProDoc risk elaborates PIF risk statement (f), and emphasizing coordination/ institutional issues.
h. Potential possibility of reduced government support to the project in case of changes in national government administration.		The main aspect of PIF risk statement (h) that is relevant is now reflected in ProDoc risk in the row directly above.

*A.6. Institutional Arrangement and Coordination. Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.*

The project will be implemented following UNDP's national implementation modality, per the Standard Basic Assistance Agreement between UNDP and the Government of Vanuatu, and the Country Programme. The **Implementing Partner** for this project is Department of Energy, Ministry of Climate Change & Natural Disaster (DOE-MCCND). The Implementing Partner is responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP and GEF resources. The project organization structure is shown in Fig. 1.

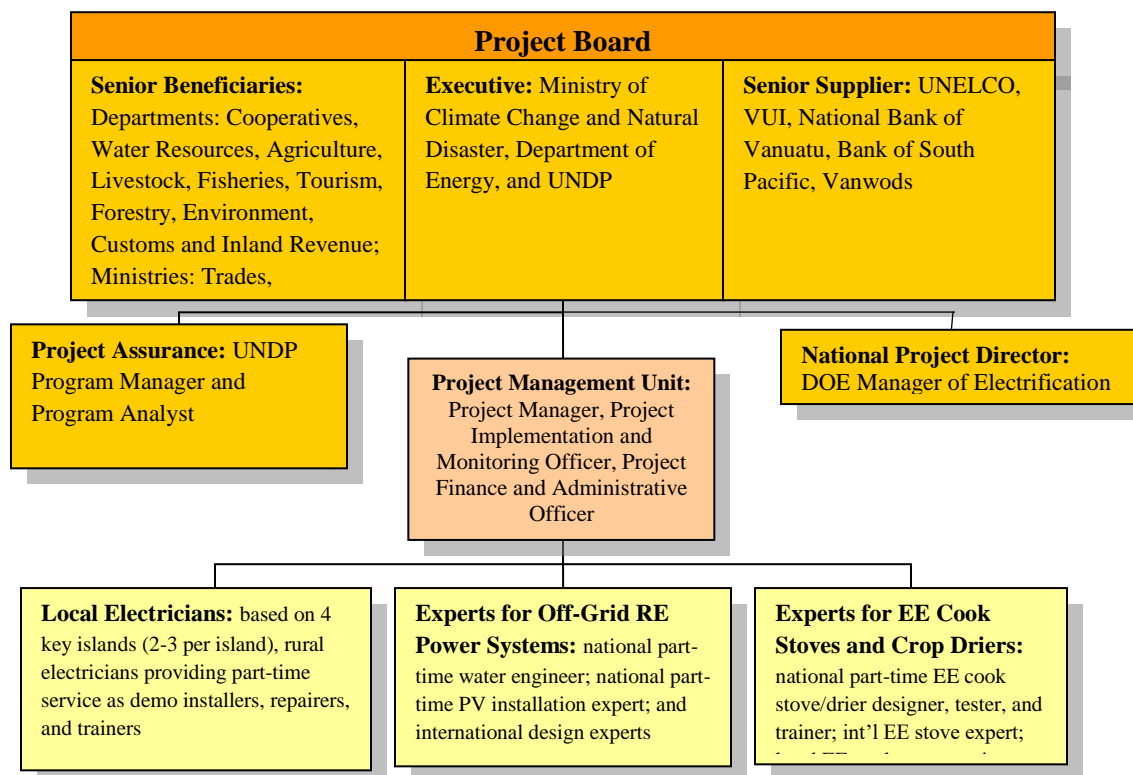
The **Project Board** is responsible for making by consensus, management decisions when guidance is required by the Project Manager, including recommendation for UNDP/Implementing Partner approval of project plans and revisions. The **National Project Director** (NPD), will be the Director, Electrification, DOE, as delegated by the Director of DOE. The NPD will be responsible for weekly oversight of the Project Management Unit (PMU), including strategic oversight and guidance to project implementation in close collaboration with UNDP. The **Project Manager** will run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The **project assurance**

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role will be provided by the UNDP Pacific Office, specifically the relevant Program Manager and the relevant Program Analyst. Additional quality assurance will be provided by the UNDP Regional Technical Advisor as needed.

**Fig. 1: Project Organization Structure**



Additional Information not well elaborated at PIF Stage:

*A.7 Benefits. Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?*

BRANTV presents a compelling win-win situation in which actions with global environmental benefits have the potential for strong national and local socioeconomic benefits. Global environmental benefits of the project, presented in Annex 2 of the ProDoc, will be the substantial reduction in (and avoidance of future) GHG emissions. At the national level, a large proportion of Vanuatu's roughly 280,000 people lack access to the electricity grid (71%). Of those, about 72% have access only to solar lanterns (56% of the off-grid population) or other limited systems such as pico-PV or battery lanterns, etc. The diesel generation alternative to providing increased energy access to such households would require increased imports of diesel fuel and have a negative impact on foreign exchange reserves. RE and EE at the village and household scale have the potential of being cost effective solutions superior to diesel power generation in the long run for bringing increased energy access to Vanuatu's rural areas. Integrating these technologies with productive uses will benefit the overall economy.

Local level benefits overlap with national ones in the areas of cost savings, energy access, and livelihood enhancement through productive uses. There is also a substantial benefit of reduction of local air pollution. Individual RE power systems over their lifetime will save communities money as compared to diesel generation. Increased energy access will bring local communities a better quality of life and the potential for income generation through productive uses. By specifically targeted productive use initiatives in demo villages and working with government departments in the productive sectors, BRANTV will accelerate the adoption of this means of increasing incomes. By targeted at least half of productive use work to benefit mainly women, the project will further contribute to the position of women locally. The RE power systems, particularly the EE cook stoves will also have the very important local benefit of improved air quality. RE power generation avoids the local air pollution emitted by diesel generation. And, EE cook stoves can reduce indoor smoke emissions by 80%. Open hearth fires in village huts have very negative health impacts; and these disproportionately affect women and children. Thus, the EE cook stove program will have a very important social benefit in health, not to mention its benefits in terms of reduction of local people's time spent collecting fuel wood and benefits to local ecosystems because of reduced cutting of trees.

*A.8 Knowledge Management. Elaborate on the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user-friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. community of practices, organize seminars, trainings and conferences) with relevant stakeholders.*

In line with knowledge management, the BRANTV Project is designed to: (1) generate the knowledge that Vanuatu needs to get to the next level in the application of RE and EE technologies in its rural areas; and, (2) ensure that this knowledge reaches a broad range of persons and is available for them to access on an ongoing basis. Thus, within the project activities are interwoven the knowledge management strategy of creating critical information, documenting this information, and ensuring both in the near term and long term that key groups in society both know about this information and can access it as needed. The key information and knowledge products that will be generated by the project include: (a) Information on best channels for sourcing quality pico-/ small micro-hydro, mini-grid, village-scale community PV, compound-scale PV nano-grid, household-scale SHS, and plug-and-play pico-SHS systems at the lowest price possible; (b) How-to guides and accompanying video training on MP4/5s on the installation, maintenance, and repair of rural off-grid RE systems and EE cook stoves and crop dryers; (c) Vanuatu Off-Grid Rural Electrification Roadmap, a Government plan documenting specific technologies and configurations of those technologies for electrifying each of Vanuatu's off-grid villages; (d) Database on energy supply and consumption in Vanuatu; and, (d) Monitoring reports on the project demos. The dissemination of these information and knowledge products and management of their long-term availability will be through: (i) National guidelines that will be developed and be officially issued by the government; (ii) direct dissemination of demo results to key audiences/beneficiaries; (iii) extensive promotion activities utilizing social media, text message, and radio; (iv) nationwide roadshow will be undertaken to introduce various villages to RE & EE technologies; (v) online information exchange focused on low carbon technology; and, (vi) online access for energy supply, demand and consumption database for long-term upkeep of and access to the data.

## **B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

*B.1 Consistency with National Priorities. Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.:*

BRANTV is highly consistent with Vanuatu's national strategies. This project is expressly designed to facilitate realization of the targets in Vanuatu's National Energy Road Map (NERM). The NERM is Vanuatu's core document for expressing the envisioned energy future of the nation. It calls for achieving 100% electricity access in rural areas by 2030. It also calls for electricity provided in the nation (and thus in rural areas) to be 100% RE generated by 2030. The NERM also puts promotion of EE cook stoves and EE crop driers in its "highest priority" category.

BRANTV is also consistent with Vanuatu's NDC, which bases its targets on the NERM targets. The NDC states that Vanuatu has the target of achieving close to 100% renewable energy based power generation by 2030, reducing emissions from business as usual. The NDC further states that, based on NERM targets, Vanuatu targets GHG emission reductions from business as usual in 2030 to be 100% for the electricity sector and 30% for the energy sector overall. The NDC specifies, however, that "the target would be conditional, depending on funding commensurate with putting the transition in place being made available from external sources."

Finally, BRANTV is consistent with Vanuatu's NAMA on Rural Electrification through Renewable Energy in Vanuatu, which was prepared with the support of UNDP and in conjunction with DOE and MCCND. The first of the two overall targets of the NAMA overlaps with the objective of BRANTV. As stated in the NAMA: "...the overall target of the NAMA is to support Vanuatu in achieving the vision and goals defined in: (i) the National Energy Road Map: 'to increase electricity access of rural population and extend the existing grid to reach an increasing number of people...".

### C. DESCRIBE THE BUDGETED M&E PLAN:

To track the successful completion of the project activities and delivery of the intended outputs, the continuous monitoring of project components and activities towards achieving the expected outcome and outputs will be done. This will be carried out in line with the UNDP-GEF monitoring and evaluation (M&E) system. A formal M&E Plan will be adopted during the project inception corresponding to a full-scale project to track the activities and contributions of the activities by all the project partners, in terms of both in-cash and in-kind co-financing contributions to augment the GEF funds. These M&E findings will be reported on in the project's two in-depth independent reviews during the mid-term and towards the end of the project.

The table below shows the project's M&E Plan. The M&E will be conducted at multiple levels. At the most basic level, the PMO will be responsible for tracking project indicators and preparing quarterly reports and initial drafts of annual project reports. The PMO will also carry out site visits to the project demos to monitor their progress. The Project Board will meet at least once every six months to monitor and evaluate project progress, taking actions as necessary. In addition, a mid-term review will be conducted after about two years of implementation and a terminal evaluation as the project is nearing its close. These evaluations will be carried out by parties who have not previously been involved with the project. The project's M&E plan and indicators will be finalized at the time of inception.

GEF M&E Requirements	Primary Responsibility	Indicative Costs to be Charged to the Project Budget <sup>11</sup> (US\$)		Time Frame
		GEF Grant	Co-financing	

<sup>11</sup> Excluding project team staff time and UNDP staff time and travel expenses.  
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GEF M&E Requirements	Primary Responsibility	Indicative Costs to be Charged to the Project Budget <sup>11</sup> (US\$)		Time Frame
		GEF Grant	Co-financing	
<b>Inception Workshop</b>	UNDP Pacific Office	3,092	10,000	Within two months of project document signature
<b>Inception Report</b>	Project Manager	None	5,000	Within two weeks of inception workshop
<b>Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP</b>	UNDP Pacific Office	None	None	Quarterly, annually
<b>Monitoring of indicators in project results framework</b>	Project Manager and Project M&E Officer	None - handled by M&E officer	16,000	Annually
<b>GEF Project Implementation Report (PIR)</b>	Project Manager and UNDP Pacific Office and UNDP-GEF team	None	None	Annually
<b>NIM Audit as per UNDP audit policies</b>	UNDP Pacific Office	16,000 (4,000 per year)	16,000	Annually or other frequency as per UNDP Audit policies
<b>Lessons learned and knowledge generation</b>	Project Manager	None	10,000	Annually
<b>Monitoring of environmental and social risks, and corresponding management plans as relevant</b>	Project Manager UNDP CO	None	5,000	On-going
<b>ESMP monitoring &amp; evaluation</b>	Project Manager UNDP Pacific Office	10,000	10,000	Annually
<b>Addressing environmental and social grievances</b>	Project Manager UNDP Pacific Office BPPS as needed	None for time of project manager, and UNDP CO	20,000	
<b>Project Board meetings</b>	Project Board UNDP Pacific Office Project Manager	None	8,000	At minimum annually
<b>Supervision missions</b>	UNDP Pacific Office	None <sup>12</sup>	4,000	Annually
<b>Oversight missions</b>	UNDP-GEF team	None <sup>12</sup>	4,000	Troubleshooting as needed
<b>GEF Secretariat learning missions/site visits</b>	UNDP Pacific Office and Project Manager and UNDP-GEF team	None	4,000	To be determined.
<b>Mid-term GEF Tracking Tool to be updated by a local institution</b>	Project Manager	3,000	None	Before mid-term review mission takes place.
<b>Independent Mid-term Review (MTR) and management response</b>	UNDP Pacific Office and Project team and UNDP-GEF team	27,050	3,000	Between 2 <sup>nd</sup> and 3 <sup>rd</sup> PIR.

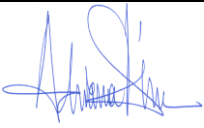
<sup>12</sup> The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GEF Agency Fee.  
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GEF M&E Requirements	Primary Responsibility	Indicative Costs to be Charged to the Project Budget <sup>11</sup> (US\$)		Time Frame
		GEF Grant	Co-financing	
<b>Terminal GEF Tracking Tool to be updated by a local institution</b>	Project Manager	3,000	None	Before terminal evaluation mission takes place
<b>Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response</b>	UNDP Pacific Office and Project team and UNDP-GEF team	27,050	3,000	At least three months before operational closure
<b>TOTAL indicative COST</b> Excluding project team staff time, and UNDP staff and travel expenses		<b>89,193</b> (3% of GEF grant)	<b>118,000</b>	

### **PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)**

#### **A. GEF Agency(ies) Certification**

**This request has been prepared in accordance with GEF policies<sup>13</sup> and procedures and meets the GEF criteria for CEO endorsement under GEF-6.**

Agency Coordinator, Agency Name	Signature	Date	Project Contact Person	Telephone	Email Address
Adriana Dinu Director, Sustainable Development (Environment) a.i.  Executive Coordinator, Global Environmental Finance		May 29, 2018	Manuel L. Soriano Sr. Technical Advisor Energy, Infrastructure, Transport & Technology	+66-2- 304-9100 Ext 2720	<a href="mailto:manuel.soriano@undp.org">manuel.soriano@undp.org</a>

<sup>13</sup> GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, SCCF and CBIT  
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## ANNEX A: PROJECT RESULTS FRAMEWORK

<b>This project will contribute to the following Sustainable Development Goal (s):</b> SDG7 - Ensure access to affordable, reliable, sustainable and modern energy for all					
<b>This project will contribute to the following country outcome included in the UNDAF/Country Programme Document:</b> <i>UN Pacific Strategy 2018-2022: Outcome 1 – Climate Change, Disaster Resilience and Environmental Protection; UNDP Sub-Regional Programme Document 2018-2022: Outcome 1 – By year 2022, people and ecosystems in the Pacific are more resilient to the impacts of climate change, climate variability and disasters; and environmental protection is strengthened.</i>					
<b>This project will be linked to the following output of the UNDP Strategic Plan:</b> <i>Output 1.4: Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented. Output 1.5. Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)</i>					
Strategy	Objective and Outcome Indicators	Baseline	Mid-term	End of Project	Assumptions
<b>Project Objective:</b> 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 CO <sub>2</sub> ) <sup>14</sup>	0	6,080.9	45,016.1	Commitment of the government to RE&EE targets, irrespective of the party in power, will not change
	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 <sup>15</sup>	0	8,400 <sup>16</sup>	14,000 <sup>17</sup>	
	Total new, incremental reductions in or newly avoided amounts of annual diesel consumption achieved (liters DFO) <sup>18</sup>	0	67,238 <sup>19</sup>	272,212	
	Incremental fuel wood saved annually by use of energy efficient cook stoves, million kgs <sup>20</sup>	0	3.9	15.6	Households find that benefit of reduced smoke and reduced needs for fuel wood outweigh any

<sup>14</sup>Direct greenhouse gas emission reductions that are attributable to the incremental activities of the project, e.g., from adoption of village-scale off-grid rural RE (pico-/ small micro-hydro mini-grids, village community PV with or without mini-grid, family compound-scale PV nano-grids installed across a village), and EE cook stoves

<sup>15</sup> Number of households will be computed based on the sum of the number of households with an EE cook stove that did not have one before launch of project and the number of households that, after launch of project, get access to village RE power (hydro, village-scale community PV, or family compound-scale nano-grid PV) that exceeds their previous potential level of access to power in kWh per day by at least 50%. (The level of access to power is based on the amount of power they could use daily, not their actual use.)

<sup>16</sup> Consisting of 7,200 households (25% of total target in year one and 35% in year two) acquiring EE stoves and 1,200 households gaining access to village-scale power systems or to family compound-scale nano-grids installed in all compounds in a village. For the village-scale power or the village-wide “sets” of nano-grids, each “system” (where a village-wide set of nano-grids is also considered a single virtual system) is assumed to provide power to an average of 50 households, so that 24 systems (25% of total in year one and 35% in year two) mid-way through project could reach 1,200 households.

<sup>17</sup> Consisting of 12,000 households acquiring EE cook stoves and 2,000 households gaining access to village-scale power or to nano-grids installed in all compounds in a village. For the village-scale power or the village-wide “sets” of nano-grids, each “system” (where a village-wide set of nano-grids is also considered a single virtual system) is assumed to provide power to an average of 50 households, so that 40 systems by end of project will reach 2,000 households.

<sup>18</sup> Diesel Fuel Oils (DFO's) HHV (higher heat value), which is the same as the GCV (gross calorific value) and assumes the water from combustion is entirely condensed, is 44,800 kJ/ kg (source [www.eisco.co](http://www.eisco.co)).

<sup>19</sup> Targets are based on diesel fuel use avoided by incremental demos: pico-/small micro-hydro, village-scale community PV, and PV nano-grids across villages. The scale of the demos, capacity factors, and the roll-out over the lifetime of the project are given in Annexes 1 and 2 (covering demo descriptions and GHG emission reductions, respectively).

<sup>20</sup> Savings is from use of EE cook stoves that replace open hearth cooking. Targets based on annual rural household fuel wood use of 2,600 kg per year being reduced by half when family uses EE cook stove instead of open hearth fire. The HHV (see footnote 5 above for explanation of HHV) of dry wood is estimated to be the range of 14,400 - 17,400 kJ/kg (source [www.eisco.co](http://www.eisco.co)). Rollout of EE cook stoves given in Annex 2 (covering GHG emission reductions).

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					reluctance to give up traditional open hearth cooking practices
<b>Outcome 1.</b> 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.	0	150 <sup>21</sup>	300	Individuals have the needed capacity to utilize available information to carry out installation, maintenance, repair operation, design, etc. of systems
	Number of artisans in Vanuatu fabricating EE cook stoves as their main source of income	0	10	20	
<b>Outcome 2.</b> 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 <sup>22</sup> , %	0	50	100	---
	Number of regulations under the <i>Off-Grid Rural Electrification Policy</i> that are enforced	0	0	5	Other relevant agencies have the will to support DOE in getting the guidelines and standards officially issued and enforced or adhered to, as relevant
<b>Outcome 3.</b> 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	0	10	40	<ul style="list-style-type: none"> <li>• National level entity interested and willing to oversee process and funds for off-grid RE system management</li> <li>• Local level entities are interested and willing to manage the off-grid RE systems and invest efforts or funds in the process</li> <li>• Villagers willing to accept outside management of their village RE systems</li> </ul>
	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	0	0	60	<ul style="list-style-type: none"> <li>• Productive departments interested and willing to cooperate</li> <li>• Water Resources Department (WRD) interested and willing to cooperate</li> <li>• Department of Forestry interested</li> </ul>

<sup>21</sup> Targets include persons with capabilities in all listed system types, though the greatest number of persons will have capabilities in the individual SHS area, with lesser numbers in each of pico-/ micro-hydro, village-scale community PV, and family compound-scale PV nano-grids.

<sup>22</sup> Plan for each village should indicate type of RE technology to be used and type of management system for fee collection, repairs, and sustainability. Total of 2,000 off-grid villages assumed, so that ¼ would be 500 villages and 100% would be 2,000 villages.

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					and willing to cooperate
<b>Outcome 4A.</b> 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	0	2	10	International sources of funding receptive to idea of supporting replication of project demos and of supporting NGEF generally
<b>Outcome 4B.</b> 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	0	0	4	Local entities pursuing low-carbon projects find terms and conditions of financing scheme loans or equity acceptable and attractive
<b>Outcome 5A.</b> 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 <sup>23</sup>	0	8	8	---
<b>Outcome 5B.</b> 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: <ul style="list-style-type: none"> <li>• Pico-/ small micro-hydro</li> <li>• Hybrid pico-hydro &amp; PV</li> <li>• Village community PV (with or without mini-grid)</li> <li>• Village-wide family compound-scale PV nano-grids</li> <li>• EE cook stoves</li> <li>• RE-powered freezers</li> </ul>	<ul style="list-style-type: none"> <li>• 0</li> <li>• 0</li> <li>• 0</li> <li>• 0</li> <li>• 0</li> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• 0</li> <li>• 0</li> <li>• 0</li> <li>• 0</li> <li>• 0</li> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• 38</li> <li>• 2</li> <li>• 20</li> <li>• 20</li> <li>• 12,000</li> <li>• 60</li> </ul>	Villagers willing to pay for electricity services.

<sup>23</sup> One point for each of: (i) quality pico-/ small micro-hydro turbine/ generator set with ELC, (ii) key parts for repair of quality turbine/ generator set, (iii) solar panels for community PV, family compound-scale PV nano-grids, or small household-scale SHS, (iv) batteries for community PV, family compound-scale PV nano-grid, or small SHS, (v) inverters, (vi) plug and play PV system, (vii) meters to monitor household power usage, and (viii) other mini-grid parts, such as cabling, etc.  
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**ANNEX B: RESPONSES TO PROJECT REVIEWS** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

This annex includes, in table form, the original (@ PIF stage) and updated (@ PPG stage) responses to project reviews: (1) Responses to GEF Secretariat Comments of July 26, 2016 (Exhibit B-1); (2) Responses to STAP Comments of September 30, 2016; and (3) Responses to GEF Council Comments of October 18, 2016.

**Exhibit B-1: Responses to GEFSec Comment 26 July 2016**

Comment & Response	Reference
<b>2. Is the project consistent with the recipient country's national strategies and plans or reports and assessments under relevant conventions?</b>	
<p><b>Comment:</b>  <i>(1) Please include specific languages in the PIF documenting alignment with the country's INDC. (2) Please include the following information in the PIF: When was the INDC submitted to the UNFCCC? Has the Country signed the Paris Agreement? How does the project propose to align with and contribute to implementation of the INDC, including reference to specific measures or activities in the INDC that will be addressed by the project activities?</i></p> <p><b>Response:</b>            Since Vanuatu already signed the Paris Agreement, its INDC is already referred to as NDC. Hence, there were no references in the PIF to the country's INDC but its NDC. Vanuatu submitted its INDC to UNFCCC on 29 September 2015. The Paris Agreement was signed by Vanuatu's Prime Minister in New York early this year on 22 April 2016.</p> <p>The project is intended to build on the country's NDC, in addition to its National Energy Road Map (NERM), and Nationally Appropriate Mitigation Actions (NAMA). The alternative scenario that the proposed GEF project will bring about include actions that will contribute to the eventual implementation of relevant sustainable energy and low carbon projects identified and promoted in the Vanuatu NERM, as well as in the country's NAMA and NDC documents. This would involve making use, in a rational and cost-effective manner, of available feasible RE and non-RE resources to ensure socio-economic growth that contributes to increased climate resilience, productivity and income generation of the citizens, and GHG emission reduction.</p> <p>Per the country's NDC, the main mitigation contribution is to achieve the outcomes and targets under the National Energy Road Map (NERM) and 2<sup>nd</sup> NC, and that Vanuatu's main mitigation option will be for a close to 100% transition to RE for electricity production to be achieved by 2030. This target was also included in Vanuatu's INDC (now NDC). However, considering the current rate of progress, i.e., 29% RE electricity in 2015, if this continues, Vanuatu will not meet the 2020 target (65% RE electricity) or the NDC target for 2030 (100% RE electricity). The facilitation of the achievement of the NERM targets, among which is the 100% RE electricity NDC target is the objective of this proposed GEF project.</p> <p>Among the climate change mitigation actions in the NDC that will be facilitated by the proposed GEF project are: (1) National Energy Road Map; (2) Rural Electrification</p>	<p>PIF: Part II; Sec 1.1.; Footnote 7</p> <p>PIF: Part II; Sec. 1.3; 1<sup>st</sup> Para</p> <p>PIF: Part II; Sec. 1.4; 2<sup>nd</sup> Para Sec. 6</p> <p>Footnote 7</p>

Comment & Response	Reference
NAMA; (3) Off grid renewable energy projects under Scaling Up Renewable Energy in Low Income Countries Program; and, (4) Energy efficiency measures to contribute to the target 15% energy savings in the energy sector.	Vanuatu INDC Report
<b>3. Does the PIF sufficiently indicate the drivers of global environmental degradation, issues of sustainability, market transformation, scaling, and innovation?</b>	
<p><b>Comment:</b>  <i>(1) The proposed project is innovative by introducing community-based RE and improving access to financial resources. However, because the proposal covers on and off-grid RE and EE, it does not show priorities and it is not clear if this innovative activity will realize transformation. Please review the components and prioritize the activities.</i></p> <p><b>Response:</b>  As stated in the PIF, the objective of the proposed project is to facilitate/enable the achievement of the sustainable energy, energy access and green growth (i.e., low carbon development) targets as stated in the NERM<sup>24</sup>. The sustainable energy targets refer mainly to the electricity generation utilizing RE resources, and energy efficiency in the electricity and electricity end-use sectors; energy access targets refer to electricity access in and around grid areas (or concession areas), as well as in off-grid areas; and green growth targets refer to electricity generation from biofuels. There are already baseline activities being done in the country regarding sustainable energy but due to some barriers, the level of achievement is not even near the set target. There are also baseline activities on energy access, i.e., electrification within and around utility concessional areas or in urban/peri-urban areas, but not much yet in off-grid areas. On the green growth area, the country is targeting, among others, the utilization of biofuels for electricity generation. In line with expanding further the work in this area, the proposed project will focus on low carbon development, which will not only cover RE utilization for non-power applications, energy efficiency, and low carbon and energy-integrated development planning.</p> <p>Hence, the priority areas that the project will focus on are in facilitating the achievement of the NERM targets on sustainable energy, energy access and LCD. Addressing the barriers to the timely achievement of the targets in these areas will be the approach that will be employed. Instead of the current approach of addressing the specific technical, investment and operational requirements of individual projects (e.g., on rural electrification), an integrated way of understanding and removing the typical barriers encountered in developing, implementing, operating and maintaining power generation (RE and non-RE) projects in Vanuatu would be more cost effective. With the barriers removed, or at the very least minimized, more investments on RE-based power generation and LCD activities can be expected enabling the achievement of the set NERM targets. Note that the way the GEF funding has been allocated to each project component manifests the way the prioritization of the interventions that was done in the conceptualization of the proposed GEF project, with interventions to address technical barriers and financial barriers getting the biggest share of the GEF incremental budget at about 40% and 33%, respectively. This is to say that the prioritization was also based on the extent of barriers that must be addressed to enable the achievement of the target in</p>	<p>PIF: Part II; Sec. 1.3; 1<sup>st</sup> Para</p> <p>PIF: Part II; Sec. 1.3; 2<sup>nd</sup> Para</p> <p>PIF: Part I; Sec. B</p>

<sup>24</sup> The updated version of the NERM (June 2016) focuses on five priorities: accessible energy, affordable energy, secure and reliable energy, sustainable energy, and green growth.  
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Comment & Response	Reference
each of the specific NERM area.	
<p><b><u>Comment:</u></b>  <i>(2) Awareness and Capacity barriers are duplicating with policy, institutional and technical barriers, such as installing and management of RE technologies. Please revise this section, so that the alternative scenario and project component do not duplicate with other components.</i></p> <p><b><u>Response:</u></b>  The awareness and capacity barriers are not duplicating with the other types of barriers, and this fact is clear in the description of the barriers. What could be considered as “duplication” is the capacity development approach of removing barriers. As presented in the PIF, there are proposed capacity development activities in addressing the lack (and to certain extent absence) and inadequacy of capacity or capability in regards the technical, information, institutional and financing aspects of sustainable energy and low carbon development. To avoid confusion, all capacity development activities (including those for enhancing awareness) are now consolidated in Component 1 of the proposed GEF project. Component 1 has been changed to Capacity Enhancement on Sustainable Energy and Low Carbon Development.</p>	<p>PIF: Part I;  Sec B  Part II; Sec 1.3  Component 1</p>
<p><b><u>Comment:</u></b>  <i>(3) On financial and technical barriers, there are no discussions available on energy efficiency. Also, it is not clear if there are any financial barriers in on-grid RE. Please include the relevant barriers.</i></p> <p><b><u>Response:</u></b>  Despite the potential energy and energy cost savings, consumers often fail to carry out EE improvements due to a variety of barriers/challenges. There is a lack of awareness of the benefits of EE and of investments and behavioral changes that could make energy use more efficient. As in the case of RE technologies, in many cases, cultural traditions, social norms, and habits limit consumers’ willingness to change their behavior. Investing in energy efficient appliances generally involves upfront costs for consumers that may face financial constraints. Furthermore, the type of technical, logistical, financial, and policy barriers that pose challenges to the uptake of energy efficient initiatives in the energy end use sectors of the country are the same as that for RE development and utilization.</p> <p>The grid-connected RE-based power generation projects also have financing challenges, mainly due to high capital costs of RE-based power generation systems (geothermal, solar, wind, and hydro), and the high operating costs of biofuel-based power generation, specifically for CNO-based biofuel because of the high value of copra as an export good.</p>	<p>PIF: Part II;  Sec. 1.1  Barriers to EE for Sustainable Energy</p> <p>PIF: Part II;  Sec. 1.1  Financial Barriers</p>
<b>4. Is the project designed with sound incremental reasoning?</b>	
<p><b><u>Comment:</u></b>  <i>(1) Vanuatu has implemented Renewables Readiness Assessment supported by IRENA and developed NAMA supported by UNDP. Please clarify if these results are reflected in the PIF, and prioritize the activities based on these existing results (please see box 3).</i></p> <p><b><u>Response:</u></b>  The Renewables Readiness Assessment (RRA) that was done by IRENA including the Rural Electrification NAMA were among the bases of the NERM, which in turn is what this proposed project is basically promoting and assisting to implement. The RRA came</p>	<p>PIF: Part II;  Sec 1.1; 3<sup>rd</sup>  Para</p>

Comment & Response	Reference
<p>up with useful recommendations for the utilization of Vanuatu's RE resources. It reiterates that Vanuatu has an excellent solar resource and that this resource is available throughout the populated areas of the country and could be used to generate electricity to offset the cost of imported fuels. In terms of major mitigation options this report identifies a mix of geothermal, wind, biofuels and solar PV as the key technologies suitable for Vanuatu. The NAMA on Rural Electrification in Vanuatu through RE-based electrification is designed as a holistic framework that will help Vanuatu to move towards a low-carbon pathway while advancing long-term sustainable development benefits. In addition to the NERM and the Scaling Up Renewable Energy in Low Income Countries (SREP) report, both the RRA and NAMA reports were the main bases of Vanuatu's NDC. These facts have been emphasized in the relevant sections of the PIF.</p> <p>Based on the targets set in the NERM and NDC, and the relevant recommendations of the RRA and NAMA, the focus of the proposed project is on the enhanced utilization of feasible RE resources for electricity and non-electricity applications for supporting socio-economic development in Vanuatu. The priority areas shall be on sustainable energy, energy access, and green growth (low carbon development).</p>	<p>Sec. 1.2; 2<sup>nd</sup> Para</p> <p>Sec 1.3; Footnote 10</p> <p>PIF: Part II; Sec. 1.3; 2<sup>nd</sup> Para</p>
<p><b><u>Comment:</u></b></p> <p><i>(2) All components of this proposed project include assessment activities. However, the above Renewables Readiness Assessment and NAMA also have done similar analysis. Please explain the added value of this project to these existing initiatives, and revise the PIF accordingly.</i></p> <p><b><u>Response:</u></b></p> <p>The RRA that was done by IRENA in 2015 was a comprehensive review of renewable energy development at present in Vanuatu to improve understanding of the RE sector. It identified and analyzed key issues associated with and arising from the development and utilization of available RE resources. This assessment, which was also the basis of the NAMA, came up with a summary of recommendations and opportunities for scaling up RE development and utilization in the country. Among these recommendations are the conduct of specific reviews<sup>25</sup>, which are now being suggested to be carried out under the proposed GEF project. In addition to that, the assessments/reviews that will be carried out under the proposed project are intended to adequately address and remove specific barriers that currently are hindering the achievement of Vanuatu's NERM targets.</p> <p>In that regard, the proposed assessments in the PIF are not duplicating the RRA and NAMA assessments. Rather, the proposed GEF project is complementing, and taking on the recommendations of, the RRA and NAMA.</p>	<p>PIF: Part II; Sec 1.3 (Assessment activities)</p>
<p><b>5. Are the components in Table B sound and sufficiently clear and appropriate to achieve project objectives and the GEBs?</b></p>	
<p><b><i>All Components</i></b></p>	
<p><b><u>Comment:</u></b></p> <p><i>(1) Please see box 3 and prioritize the activities to be implemented under this project.</i></p>	

<sup>25</sup> Among that assessments/reviews that were recommended by the RRA are the following: (1) Review of enabling legislation and other documents relating to URA and DoE responsibilities and tasks, and align them with NERM; (2) Review the institutional approaches used in Fiji, Tonga, the Solomon Islands and Kiribati to keep rural SHS installations continuously running; and, (3) Review of past programs in increase access to electricity in rural areas, to come up with a specific strategy for rural electricity provision to households and villages using renewable energy.

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Comment & Response	Reference
<p><b><u>Response:</u></b> Per the response in Question 3, what were prioritized are the aspects of the NERM that the project will cover, namely sustainable energy, energy access, and green growth (low carbon development). The prioritization was mainly based on the extent of barriers that must be addressed to enable the achievement of the target in each of the specific NERM area. This is also manifested by the way the GEF funding has been allocated to each project component, with interventions to address technical barriers and financial barriers getting the biggest share of the GEF incremental budget at about 40% and 33%, respectively.</p>	<p>Response to Question 3 above</p>
<p><b><u>Comment:</u></b> <i>(2) The estimated target of about 343,030 tonnes of CO2 from the proposed amount of financing is very low. Please improve the project's target contribution to GEBs by prioritizing project activities and identifying opportunities to have a greater impact.</i></p> <p><b><u>Response:</u></b> <b>Before PPG Stage:</b> Please note that the stated CO2 emission reduction amount is mainly from actions that will lead to the realization of the %RE electricity targets in 2020 and 2030. This however is a conservative estimate inasmuch it only considers those that are expected during the project implementation period and during a 10-year influence period. If the lifetime (average 25 years) CO2 emission reduction is considered, this can be up to about 484,830 tons CO2. This can even be more when the GHG emission reductions that will also come from fossil fuel substitutions in other energy end-uses particularly in rural areas using available feasible RE resources are considered. Sustainable energy initiatives that would lead to the improvement of the specific energy consumption of energy end use sectors through improved energy utilization efficiency and other LCD activities will also contribute to this. A more detailed estimation of the potential amount of CO2 emission reductions will be done during the project design stage when the most likely sustainable energy and low carbon technology (non-power) application demonstrations and replications are identified, assessed and designed.</p> <p><b>After PPG Stage:</b> Detailed calculations for CO2 emission reductions are given in Annex 2 of the ProDoc. The total incremental emission reductions attributable to GEF financed interventions (including direct emission reductions, direct post-project emission reductions, and bottom-up consequential emission reductions) are 768,848 tons CO2, suggesting a cost of USD 3.43 per ton.</p>	<p>PIF: Part I; Sec. F Part II; Sec. 1.5</p>
<p><b><u>Comment:</u></b> <i>(3) Please clarify if commercial and industrial sectors as energy user and RE developer are targeted by this proposed project. If so, please include them in the relevant components and in the stakeholder section.</i></p> <p><b><u>Response:</u></b> The commercial and industrial sectors are among the energy end-use sectors that are covered by this project. The involvement of the private sector (commercial and industrial entities) is now stated in the stakeholder section of the PIF.</p>	<p>PIF: Part II; Secs. 1.3 and 2.0</p>
<b><u>Component 1</u></b>	
<p><b><u>Comment:</u></b> <i>(3) Green growth is very general theme and may include various activities beyond sustainable energy. In addition, there is no national policy provided on this theme. In order to develop better project framework, please revise this component to focus the</i></p>	



Comment & Response	Reference
<p><i>prioritized mitigation actions, namely sustainable energy and energy access (on-grid and off-grid RE, and EE).</i></p> <p><b>Response:</b> In the context of the proposed project, green growth refers to low carbon development (LCD). Please note that the updated version of the NERM (June 2016) better emphasizes Vanuatu’s vision for sustainable energy and sustainable development. Particularly, it expands on the potential role of RE and EE, by introducing new EE targets and <u>a new priority area—green growth</u>—that explicitly links Vanuatu’s economic growth with opportunities in the energy sector. In this regard, the country intends to promote the use of green energy for sustainable development by expanding the use of locally produced bio-fuels as an alternative to fossil fuels for electricity generation and transport; use of RE in Vanuatu’s main economic sectors; appropriate use of RE and EE technologies in the water sector; and improve energy-related business and technical skills among rural island people. These are all stated in the updated NERM.</p> <p>The proposed GEF project will assist the government in their green growth (low carbon development) objectives, particularly on the formulation of appropriate LCD policies; development and showcasing of applicable LCD technologies and measures in the end-use sectors; assisting end-users in the financing of their feasible LCD (RE/EE) projects; and facilitating productive applications of RE (for power and non-power purposes) in rural areas.</p>	<p>Updated Vanuatu NERM (2013-2030); June 2016</p> <p>PIF: Part II; Sec. 1.3; Last Para</p>
<p><b>Comment:</b> <i>(4) The outcome of this component is the improved awareness and attitude toward sustainable energy, but all detail activities discuss capacity development. As a result, capacity development targeted by this component may also duplicate with other components. Also, the target level of awareness/capacity is not clear enough to develop the result framework. If this component focuses awareness and access to the information, please revise activities and avoid duplication with the other components.</i></p> <p><b>Response:</b> Among the proposed interventions to improve awareness and attitude toward sustainable energy and LCD is capacity development (which would typically include activities related to <u>information, communication and education</u>). The evaluation activities are meant to determine the extent of improvement in awareness and attitude toward sustainable energy and LCD. There are also 2 major activities that are included in Component 1 that are not directly on “capacity development”, but are instrumental in the dissemination and sharing of information and in gauging, among others, the actual energy supply, demand and consumption in the various energy end use sectors of the country.</p> <p>As per response to Question 3 (Item 2) above, to avoid confusion, all capacity development activities are now consolidated in Component 1 (renamed Capacity Enhancement on Sustainable Energy and Low Carbon Development) of the proposed GEF project. The section on barrier analysis clearly shows that many of the things that are absent, lacking or inadequate in the country to understand, conceptualize, design, plan, implement, operate and maintain systems and frameworks for sustainable energy LCD systems is the low level of capacity (policy making and planning, institutional, technical, financial, and information) in the country. Please note that capacity</p>	<p>PIF: Part I; Sec. B Part II; Sec 1.3; Component 1</p>

Comment & Response	Reference
development is a common thread that links the interventions that are needed to remove the barriers.	
<b>Component 5</b>	
<p><b>Comment:</b>  <i>(5) Please indicate on page 12 that the outcome (i) is from technical assistant and (ii) from investment.</i></p> <p><b>Response:</b>  The suggested corrections have been reflected in the PIF.</p>	PIF: Part II; Sec 1.3; Component 5
<p><b>Comment:</b>  <i>(6) Please clarify (b) demonstration projects for outcome (i) and (b) demonstrations in pilot communities for outcome (ii) are the same activities or different ones.</i></p> <p><b>Response:</b>  Outcome I (Activity b): Preparation and approval of engineering designs and implementation plans of demonstration projects on sustainable energy and low carbon technology applications that will contribute to the rural electrification program of the country and the achievement of NERM targets – This will be prior to the demonstration, and will involve the provision of technical assistance in the preparation and approval (by relevant authorities) of engineering designs and implementation plans of the demo projects. The owner/developer of a demo projects will be assisted in the design of the project particularly in the incorporation of the incremental features that would enhance the energy savings and GEBs from the projects.</p> <p>Outcome ii (Activity b): Conduct of detailed evaluation of the energy and operational performances of the different sustainable energy and low carbon technology application demonstrations in pilot on-grid and off-grid communities – This is during the implementation and operation of the demonstration, and will involve the evaluation of the actual operating parameters, in general, and particularly the resulting energy saving and GHG emission reductions.</p>	

### Exhibit B-2: Responses to STAP Comments (30 September 2016)

Comments	Responses		
Nineteen existing projects have been identified in the baseline. Their total value is not provided but it is of some concern that additional input is still required to enable their successful uptake by removing barriers to their deployment. It is claimed that by themselves, these baseline projects, if successful, will not	<u>Before PPG Stage:</u> The estimated costs of the subsumed activities from the baseline projects are presented in the table below:		
	Estimated Budget of Subsumed Activities		
	Baseline Projects	Implementer	Estimated Budget, US\$
	GPOBA Grid Based Electricity Access Project	GOV (DOE)	1,000,000
	Vanuatu Rural Electrification Project (VREP) - Phase 1	GOV (DOE)	800,000

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Comments	Responses		
meet the NEMA targets and more effort is required as shown in the alternative scenario. The 5 components are aimed to bridge the gap.	Biofuel Rural Electrification Project	GOV (DOE)	500,000
	Talise Hydro Project	GOV (DOE)	100,000
	Scaling Up Renewable Energy in Low Income Countries Program	GOV (DOE)	11,200,000
	DOE (Energy Acts)	GOV (DOE)	200,000
	UNELCO (Undine && NE Malekula)	UNELCO	1,000,000
	VUI (LLTS)	VUI	100,000
	National Green Energy Fund	GOV (DOE)	1,100,000
	Sub-Total		16,000,000
	UNDP POF	UNDP	100,000
	TOTAL		16,100,000
<p>The preliminarily identified specific activities of the baseline projects are those that are contributing to the removal of the identified barriers, but on their own will only have limited impacts in terms of barrier removal. The proposed BRANTV project will build on these activities, complementing/supplementing them to achieve the expected outcomes of the project. A more detailed identification of the baseline activities that will form part of the activities of the proposed BRANTV project, and a more detailed quantification of their budgets will be carried out during the project preparation stage, i.e., PPG stage.</p> <p><u>After PPG Stage:</u> The baseline activities and other co-financing (DOE in-kind and UNDP) are listed in the table below. GEF incremental financing is necessary both (a) to fully leverage the invested funds so that maximum results in moving towards NERM targets are derived from the associated baseline investments and (b) to fill in gaps in the baseline activities of the <i>Vanuatu Rural RE and EE Promotion Program</i>. For hydro and PV baseline activities, BRANTV incremental activities provide support for developing an effective management systems to ensure long-term sustainability of installed systems, lack of which is agreed by stakeholders to have been a major barrier to sustainability of such systems in the past. Further, for PV activities, BRANTV’s incremental work will provide needed training programs, sourcing work, and work to ensure replacement parts are locally available, thus providing critically needed support for (a) sustainability and (b) ensuring greater uptake of product by the market. In terms of filling gaps in</p>			



Comments	Responses												
	<p>the current program, the BRANTV incremental demos will introduce technology and/or technology at scales/ configurations needed to appropriately take Vanuatu towards increased energy access and 100% renewable energy power generation in rural areas, as well as substantially decrease wood consumption (the nation’s number one primary source of energy) via energy efficiency. Particularly, the project introduces pico-/small micro-hydro mini-grids, which are appropriate in scale in many locales to the small populations of Vanuatu’s villages when considered along with the dispersed nature of the villages. It will also introduce pico-hydro PV hybrid, suitable for those villages in which the dependable and low cost baseline power source of pico-hydro is not enough to meet productive use needs. It also introduces two new village-wide configurations for PV: village-scale community PV (which will focus on providing power for productive uses with or without a mini-grid bringing the power to homes) and family compound-scale PV nano-grids (of roughly 300 W and connecting roughly 5 buildings each) deployed across villages. These incremental RE demos (both hydro and PV) will further demonstrate a management system that ensures payment of operators and savings for parts/repairs, lack of which has been a repeated source of failure of previous donor projects in the past. To fill in gaps regarding baseline activities in productive uses (freezers and fridges), BRANTV will have an incremental productive use program at the village hydro and PV power installations. Thus, a new approach to productive uses will be introduced. Instead of free-standing solar PV appliances with dedicate PV panels, these incremental productive use initiatives will depend on power shared with other uses in the village. They will also introduce a broader range of applications, such as making of ice to be taking on fishing boats alternating, perhaps, with crop processing applications. Finally, BRANTV will have an incremental program for introducing EE cook stoves and EE crop driers. While these are priority in the nation’s NERM, they have not yet been addressed by any comprehensive effort and thus remain virtually unknown in rural Vanuatu.</p> <p>Estimated Budget of Subsumed Activities and Other Co-financing</p> <table><tr><th>Baseline Activity (or other co-financing source)</th><th>Implementer</th><th>Estimated Budget, US\$</th></tr><tr><td>Brenwei Hydro</td><td>GOV (DOE)</td><td>3,823,000</td></tr><tr><td>Talise Hydro</td><td>GOV (DOE)</td><td>255,000</td></tr><tr><td>Vanuatu Rural Electrification Project (VREP) - Phase 2 – Household and Institutional PV</td><td>GOV (DOE)</td><td>5,300,000</td></tr></table>	Baseline Activity (or other co-financing source)	Implementer	Estimated Budget, US\$	Brenwei Hydro	GOV (DOE)	3,823,000	Talise Hydro	GOV (DOE)	255,000	Vanuatu Rural Electrification Project (VREP) - Phase 2 – Household and Institutional PV	GOV (DOE)	5,300,000
Baseline Activity (or other co-financing source)	Implementer	Estimated Budget, US\$											
Brenwei Hydro	GOV (DOE)	3,823,000											
Talise Hydro	GOV (DOE)	255,000											
Vanuatu Rural Electrification Project (VREP) - Phase 2 – Household and Institutional PV	GOV (DOE)	5,300,000											


Comments	Responses		
	Systems		
	VREP – Phase 2 – PV Mini-grids	GOV (DOE)	6,800,000
	ASCE Project’s solar freezers for fishermen	GOV (DOE)	170,000
	Solar fridges for cooperatives	GOV (Dept. of Cooperatives)	1,000,000
	DOE in-kind	GOV (DOE)	714,444
	Sub-Total		18,062,444
	UNDP POF	UNDP	100,000
	TOTAL		18,162,444
Policy measures, low-carbon standards and regulations are key to making progress in the uptake of sustainable energy. Emphasis is given to electricity generation more than to process heat or transport fuels, although both can also contribute to the NDC.	The project is intended to bridge the current gaps (due to barriers) in achieving the NERM and NDC targets. Eight of the twelve specific targets in NERM are directly on electricity. Nonetheless, the BRANTV project will also assist in achieving the new green growth (low carbon development) objectives of the country, particularly on the formulation of appropriate LCD policies; development and showcasing of applicable LCD technologies and measures in the end-use sectors. The project will also include activities on assisting end-users in the financing of their feasible LCD (RE/EE) projects; and facilitating productive applications of RE (for power and non-power purposes) in rural areas. It will also include interventions such as the formulation of policies on financing incentives for RE-based energy systems (power and non-power), and the design, establishment and operationalization of feasible models and schemes for financing of sustainable energy and low carbon technology (power and non-power applications) projects. While transport is a significant energy end-use sector, for this project the proponents have focused on the electricity generation sector and the energy end-use sectors that primarily use electricity. It should be noted that there is only 1 out of 12 objectives in the updated NERM.		
Renewable energy resources are claimed to be good, though no data on mean annual wind speeds, solar irradiation levels or annual biomass volumes available is provided in the PIF. It is assumed that these parameters have been measured, but if not, they should be assessed urgently since evaluating a renewable energy project cannot be done effectively if the local resources are not known.	There are pieces of information about the assessment of the identified indigenous RE resources in the country. Most of this information were produced from previous RE projects that were carried out in the country. These pieces of information were used in the development of the NERM and INDC, as well as in the development of the other baseline projects on RE and the rural electrification program of the country that are funded by other multi-lateral and bi-lateral donors. In retrospect, the project proponents agree that it would have been appropriate to mention these details in the PIF. Since the project will be designed and implemented in coordination with the implementers of the relevant baseline projects (most of which are also with the DOE-MCCND), collaborative work on further assessment and/or updating of RE resources will also be included in the proposed project.		
The calculation of how to achieve "62.681 t CO2 emission	Before PPG Stage: The estimated potential amount of GHG emission reduction is incremental to what would have been realized		

Comments	Responses
<p>reduction" is not provided. (Can it really be determined that accurately?) What assumptions were used for the emissions factor for electricity generation? How was the emission reduction from transport biofuels assessed? How much CO<sub>2</sub> emission reduction does this project claim as an additionality over and above the avoidance from the other 19 projects already in progress? What is the approximate investment cost / t CO<sub>2</sub> avoided?</p> <p>Given this is a 4-year project in the climate change mitigation focal area, this information is an omission from the PIF that will restrict the future monitoring and evaluation of the success (or otherwise) of the project.</p>	<p>from baseline activities. The estimated amount is based on the projected annual electricity generation from the energy modeling that was done by the Global Green Growth Institute (GGGI) in the development of the National Energy Efficiency Policy, Strategy and Action Plan for Vanuatu (NEEPSAPV). The same forecast data were also used in the updating of the NERM and the formulation of the country's INDC.</p> <p>Using these forecast annual electricity generation values during the period 2018 to 2020, and the target and probable %RE electricity for each year during the same period, the annual non-RE electricity generation considering the annual target %RE electricity and annual probable %RE electricity is calculated for each year. For each year, the difference between the target and probable non-RE electricity generation is the amount of electricity production from diesel power generation if the target is achieved in that year. Please refer to the summary of the calculations in attachment i.</p> <p>The project proponents are not clear about what's being asked regarding "<i>whether it (GHG ER) can really be determined accurately</i>". Please note that it is based on forecast values. Hence, there is no certainty of this being realized exactly if that is what is being asked. If the question is more on the precision of the estimated value, this is about 62,700 tons (rounding to nearest thousands).</p> <p>The average specific fuel consumption (SFC) of diesel power generation in Vanuatu is 0.253 kg/kWh. This translates to a GHG emission of about 0.869 kg CO<sub>2</sub>/kWh. In the modelling done for the updating of the NERM and development of the INDC, the assumed average SFC for diesel power generation during the period 2015-2020 is 0.248 kg/kWh (GHG emission <math>\approx</math> 0.852 kg CO<sub>2</sub>/kWh)</p> <p>The emission reduction from the use of biofuels in transport is not included in the stated amount.</p> <p>Since the project will facilitate the achievement of the annual targets through the implementation of incremental barrier removal activities, the resulting GHG emission reductions will be incremental.</p> <p>As to the investment cost, the model that was used in the NERM update and INDC preparation used the costs of similar projects implemented in other SIDS: Micro/Mini hydro (US\$ 4,500/kW on-grid; and US\$ 4,500/kW off-grid); Solar PV (US\$ 1,500/kW large grid; and US\$ 3,500/kW small isolated grid); and Wind (US\$ 1,300/kW on-shore, on-grid). For PIF development, the project proponents think that the results of the modelling that have been done would suffice for the order-of-magnitude estimates of the investments costs for the new RE-based power generation facilities that will be installed to meet the country's %RE electricity target. More detailed estimation of the investment costs will be carried out during the project preparation stage.</p>

Comments	Responses
	<p><u>After PPG Stage:</u> Annex 1 of the ProDoc provides cost estimates for the incremental demos. In the case of pico-/ small micro-hydro, these are broken down into various costs including main cable, distribution cable, circuit breaker boxes, turbine-generator-ELC set, costs for circuit breaker boxes, civil works (catchment basin), and PVC pipe. Totals include: USD 21,500 for a 5-kW system or USD 19,100 if households provide their own distribution cabling. The costs (including distribution cabling) are USD 21,350 for 7.5 kW system, USD 23,700 for a 10-kW system, and USD 28,100 for a 15-kW system. Costs for village-scale community PV are estimated at USD 4,000 per kW, or USD 20,000 for smaller systems (5 kW) and USD 30,000 (7.5 kW) for larger systems, not including battery replacement over the 20-year lifetime. For the family compound-scale PV nano-grids, costs are estimated at USD 500 per 100 W, or USD 1,500 for the typical 300 watt systems, not including battery replacement that will be required over the 20-year lifetime of the system. Preliminary estimates of total costs of equipment for targeted villages with 8 family compounds are USD 12,000 per village and for village with 11 systems, US16,500. As for EE cook stoves, these are now being sold on the market by the one known artisan for about USD 28 (or USD 46 with a baking attachment). The cost of materials (for the cook stove only) is less than USD 5. Experience to date and a focus group during project design suggest that these purchase prices are acceptable to people in Vanuatu; and there is thus not a need to subsidize stove purchase.</p>
<p>There have been several GEF projects supporting sustainable energy deployment in the South Pacific. There is no indication in Section 7 "Knowledge Management" that these have been reviewed so that any lessons learned could be applied for the benefit of this project. Such a review is recommended as several have proved less successful than anticipated.</p>	<p>In Sec. 7 (Knowledge Management) of the PIF, it is mentioned that energy planning and the organized usage of knowledge about the energy situation in the country can benefit from the information exchange network that will be established and operationalized under the project. With such network, data/information on lessons learned and best practices in the application of low carbon development techniques and practices, as well as implementation of sustainable energy and low carbon technologies specifically in small island settings, can be obtained from other PICs and SIDS, and applied to specific situations and localities in the country. The project proponents would like to say that the results of the review of the GEF projects in the region (e.g., mid-term and terminal evaluation reports of ongoing and completed UNDP-GEF projects) will also be incorporated in the information exchange network.</p>

**Attachment I to Exhibit B2: BRANTV Estimated GHG Emission Reduction (2018-2021)**

<b>Particulars</b>	<b>Forecast Annual Electricity Generation and Distribution</b>						
Year	2015	2016	2017	2018	2019	2020	2021
Total Electricity Generated, kWh	72,914,617	74,311,494	75,765,698	77,284,032	78,874,656	80,547,392	82,314,096
Target RE Electricity, %	40	45	50	55	60	65	69
Probable RE Electricity, %	29	31	33	36	38	40	42
Target RE Electricity, kWh	29,165,847	33,440,172	37,882,849	42,506,217	47,324,794	52,355,805	56,796,726
Probable RE Electricity, kWh	21,145,239	23,185,186	25,305,743	27,513,115	29,814,620	32,218,957	34,571,920
Target Non-RE Electricity Used, kWh	43,748,770	40,871,322	37,882,849	34,777,814	31,549,863	28,191,587	25,517,370
Probable Non-RE Electricity Used, kWh	51,769,378	51,126,308	50,459,955	49,770,916	49,060,036	48,328,435	47,742,176
Diff. in Non-RE Electricity Generation, kWh	8,020,608	10,254,986	12,577,106	14,993,102	17,510,174	20,136,848	22,224,806
Equivalent DFO Saved, kgs	1,989,111	2,543,237	3,119,122	3,718,289	4,342,523	4,839,891	5,341,732
Energy Savings, GJ	90,843	116,150	142,450	169,814	198,323	221,038	243,957
GHG Emission Reduction, tons CO2	6,835	8,739	10,717	12,776	14,921	16,630	18,354

 = BRANTV Project Implementation Period

**Explanations:**

**Target % RE Electricity:** This refers to the annual %RE electricity level that can be facilitated by the BRANTV towards the achievement of the NERM targets of 65% RE electricity by 2020, and 100% RE electricity by 2030

**Probable % RE Electricity:** This refers to the annual %RE electricity level that can be achieved with the ongoing and non-integrated baseline activities of the country under its rural electrification program.

NOTES:

Average % electricity distributed	93.0%
Average SFC of diesel generators	0.253 kg/kWh
Forecast Ave. SFC (2015 - 2020)	0.248 kg/kWh
Forecast Ave. SFC (2015 - 2020)	0.24035 kg/kWh

Diesel Fuel Oil (DFO) Characteristics

Heating Value 45.67 MJ/kg (38 MJ/lit)

Density 0.832 kg/lit

CO2 Emission (Diesel Gensets) 3.436 kg CO2/kg (2.859 kg CO2/lit)

SUMMARY (BRANTV Project Period 2018-2021):

Cumulative Energy Savings, klits DFO	21,926
Cumulative Energy Savings, GJ	833,132
Cumulative GHG ER, tons CO2	62,681

### Exhibit B-3: Responses to GEF Council Member (U.S.A.) Comments (18 October 2016)

Comment	Response
<p>The main aim of the proposal is supporting capacity building to help achieve low-carbon development. However, solutions to overcome barriers are not clearly presented and are not well linked to the IRENA report on actions needed. What solutions will the project team use to overcome these barriers?</p>	<p>As stated in the PIF, the main aim (or objective) of the proposed project is to facilitate/enable the achievement of the sustainable energy, energy access and green growth (i.e., low carbon development) targets as stated in the country's National Energy Road Map (NERM). To realize this aim, the identified barriers to the achievement of these specific objectives in the NERM must be removed. In this regard, a barrier removal approach will be applied for this project.</p> <p>The proposed project will facilitate the application of appropriate technological, institutional, financial and policy-oriented measures that would enable the removal of the current gaps in the timely achievement of the NERM targets. This will also include actions that will contribute to the eventual implementation of relevant sustainable energy and low carbon initiatives and measures identified and promoted in the Vanuatu NERM and NDC, and the recommendations in the country's NAMA and RRA (i.e., Renewables Readiness Assessment by IRENA).</p> <p>Each component of the project is intended to address a major barrier category (policy/regulatory/institutional, technical, financial, awareness/info). The successful removal of barriers and creation of enabling environment, are manifested by the realization of the stated expected outcome in each project component. Such outcome will be brought about by the delivery of specific outputs that will be produced through the implementation of barrier removal and enabling activities. These activities are for delivering the solutions to address the barriers, and these indicative activities in each project component are presented in the PIF (Part II, Sec. 1.3, pp. 11-13). The IRENA RRA including the UNDP-funded Rural Electrification NAMA were among the bases of the NERM, which in turn is what this proposed project is basically promoting and assisting to implement. Hence, the solutions that will be implemented are linked to the RRA.</p> <p>Please refer to Annex A for examples of general solutions, i.e., barrier removal modalities, that will be incorporated in the design of the proposed GEF project.</p>
<p>Additionally, while nineteen existing projects have been identified in the baseline, no guidance is given in terms of how barriers can be overcome for each of these, and if existing funds from these projects will still be available to apply to this adjusted approach in a synergistic manner.</p>	<p>The identified baseline projects have components that include activities that focus on energy access, sustainability, and green growth. Some of them just focus on 1 or 2 of these objectives, or all of them. However, the scope of the activities would differ depending on the main objective of the project. These projects may not specifically be intended to remove barriers. For example, an ongoing project has an activity on training local technical service providers to install solar home systems (SHSs) in rural communities. Such activity is mainly to supplement another activity of the project for promoting the financing of SHSs. In this case, what the proponents of the proposed GEF project will do during the design of the proposed GEF project is to build on such ongoing project, and work with its owner/implementer to make use of</p>



Comment	Response
	<p>the capacity building activity as part of the GEF project's intervention to remove technical capacity barriers. The activity on promoting the financing of SHSs can be subsumed into the proposed GEF project to become part of the interventions to remove financial barrier. The subsumed activity can either be modified to enhance its effectiveness to remove barriers, or expanded to increase the coverage, and in so doing realize more global environmental benefits. The budget (i.e., remaining available budget) for the subsumed activities will form part of the co-financing to the proposed GEF project. This is how to make the most of the potential synergies between the baseline projects and the proposed GEF project.</p>
<p>Does the "62,681 t CO2 emission reduction" attributed to this project include the CO2 reductions from achieving 65% renewable energy by 2020? If so, this would not specifically be incremental additions attributable to this proposal and should be corrected.</p>	<p>Without the GEF project, it is projected (based on the simulation studies that were carried out to develop the country's INDC) that by 2020 the %RE electricity would just be 40%. This is the baseline scenario with just the baseline projects (ongoing and planned) being implemented. Considering the project timeline 2018-2021, the baseline scenario (i.e., without the GEF project) is forecast to bring about 42% RE electricity by 2021. The proposed GEF project will facilitate the realization of an alternative scenario, wherein 65% of the electricity generated in the country is from RE resources by 2020, and 69% by 2021. The fossil fuel displacement that will be realized by 2021 from the increased share of RE in power generation in the country from 42% to 69% would therefore be incremental, and so is the corresponding GHG emission reduction, which is estimated at 62,681 tons CO2 by end-of-project.</p>
<p>Why were geothermal technologies not explored for utility scale production, given the ample resource base in the islands?</p>	<p>In the country's NDC, among the identified climate change mitigation contributions is from the electricity generation sub-sector. Among the key planned mitigation interventions in this sub-sector are the following: Commissioning the proposed first stage 4 MW Geothermal plant by 2025; and, Commissioning the second stage 4 MW Geothermal plant by 2030.</p> <p>The planned capital intensive geothermal power generation projects are intended for the expansion of the existing power grids since this type of RE-based power generation is typically meant to be base loaded to be cost-effective. Since the BRANTV Project is more focused on the rural off-grid areas and the outer islands where the energy demands are relatively lower compared to the on-grid and urban areas in the major islands of the country, the main technical interventions did not include the capital intensive geothermal energy technology applications. However, the policy and awareness raising interventions of the project shall include the promotion and support of the use of the country's indigenous RE resources, including geothermal energy.</p>
<p>Why did the PIF not mention the other GEF projects supporting sustainable energy deployment in the South Pacific, particularly</p>	<p><u>Before PPG Stage:</u> This is an inadvertent omission, and not the intention. The proposed GEF project will benefit from lessons learned from other relevant GEF-funded projects in the Pacific Region and in other SIDS. For example, some of the envisioned barrier removal activities, and some of RE-based energy production demos will build on the results of the UNDP-GEF regional RE project - PIGGAREP that</p>



Comment	Response
incorporating the lessons learned into this investment?	<p>includes Vanuatu. The proposed GEF project includes policy research, impact analyses and assessment on sustainable energy and low carbon development policies and regulations in the country and in other SIDS. These will include best practices and lessons learned from both GEF and non-GEF funded RE projects in the Pacific and in SIDS in other regions. The final project document will include the names of the relevant GEF-funded projects in the region whose owners/implementers the GEF project proponents will coordinate with during the project design and development, and project implementation.</p> <p><u>After PPG Stage:</u> Information exchange efforts leveraging the project's information exchange network as well as coordination work by UNDP's Pacific Office (based in Fiji) will, in particular, include concerted effort to reach out to and exchange with the following South Pacific island nation GEF projects (selected because of similar project content and similar national conditions) to share lessons learned: PNG <i>Facilitating Renewable Energy and Energy Efficiency Applications for Greenhouse Gas Reduction</i> (FREAGER, currently under implementation, UNDP), Tuvalu <i>Facilitation of the Achievement of Sustainable National Energy Targets of Tuvalu</i> (FASNETT, currently under implementation, UNDP), Solomon Islands <i>Stimulating Progress towards Improved Rural Electrification in the Solomons</i> (SPIRES, currently under preparation, UNDP), Kiribati <i>Promoting Outer Island Development through the Integrated Energy Roadmap</i> (POIDIER, currently under preparation, UNDP), <i>Accelerating Renewable Energy and Energy Efficiency Applications in Niue</i> (AREAN, currently under preparation, UNDP).</p>
The PIF notes that the country is lacking in training for technical support of renewable energy installations, so why are there no plan for supporting renewable energy technical education for local employees?	Component 1 of the proposed GEF project includes the design and implementation of suitable capacity development programs for key stakeholder groups. Among the envisioned programs (PIF, Footnote 1) is on the design, engineering, operation and maintenance of RE-based energy systems (power and non-power applications). The stakeholder group was not specifically mentioned, but this capacity development program will be for local engineering firms, local technical service providers including repair and maintenance people, and operators of RE-based energy systems.

#### Annex A: Indicative General Modalities for Barrier Removal

(Note: This is for Exhibit B-3)

Based on the targets set in Vanuatu's NERM and NDC, and the relevant recommendations of the IRENA RRA Report and the UNDP NAMA, the focus of the proposed GEF project is on the enhanced utilization of feasible RE resources for electricity and non-electricity applications for supporting socio-economic development in Vanuatu. To realize this, the identified barriers to the achievement of this objective must be removed. In this regard, a barrier removal approach will be applied for this project.

Focus of Interventions	Indicative Barrier Removal Modality
1. Improvement of the awareness and access to information of the	<ul style="list-style-type: none"> <li>Capacity building (e.g., Design, engineering, operation and maintenance of RE-based energy systems; Integrated energy</li> </ul>

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Focus of Interventions	Indicative Barrier Removal Modality
national and provincial governments and the private sector in the fields of sustainable energy, energy access, and green growth.	<p>planning; low carbon town and village/community development)</p> <ul style="list-style-type: none"> <li>• Technical assistance (e.g., development and operation of information exchange network; and energy supply and consumption monitoring and reporting and database system).</li> </ul>
2. Facilitation of the enforcement of improved policy and regulatory regimes for sustainable energy	<ul style="list-style-type: none"> <li>• Targeted Research (e.g., special policy researches and impact assessments)</li> <li>• Technical Assistance (e.g., development of standards, policies and implementing rules and regulations (IRRs) on sustainable energy and low carbon development; publication of guides and reference documents for integrated energy planning and low carbon development)</li> <li>• Demonstrations (e.g., piloting of selected sustainable low carbon standards, policies, and IRRs).</li> </ul>
3. Enabling appropriate institutional mechanisms for the effective enforcement of policies and regulations that support sustainable energy and energy access, and facilitate low carbon development;	<ul style="list-style-type: none"> <li>• Technical Assistance (e.g., Development of institutional framework that supports the implementation of low carbon development policies, and IRRs)</li> <li>• Institutional Strengthening (e.g., Adoption of suitable institutional mechanisms that integrate low carbon development with the socio-economic, climate change and disaster management objectives of the country)</li> </ul>
4. Improving the availability/access to financial resources (local and foreign) for financing sustainable energy, energy access and green growth initiatives	<ul style="list-style-type: none"> <li>• Technical Assistance (e.g., Design and development of feasible financing models and schemes to facilitate financing of sustainable energy and low carbon technology projects)</li> <li>• Investments (e.g., Establishment, funding and operation of financing scheme for low carbon technology projects.</li> </ul>
5. Demonstration of the cost-effective application of sustainable energy and green growth initiatives including integrated energy planning, and the design and implementation of energy-related aspects of low carbon development	<ul style="list-style-type: none"> <li>• Technical Assistance (e.g., Design, engineering and implementation planning of demo projects on sustainable energy and low carbon technology applications)</li> <li>• Demonstration &amp; Investment (e.g., Funding, implementation and operation of sustainable energy and low carbon technology application demonstrations in pilot on-grid and off-grid communities)</li> </ul>

**Exhibit B-4: Responses to GEF Council Member (Germany) Comments on PIF (Oct 2016)**  
 (Note: Responses as of 16 May 2018. All comments responded to during the PPG phase only)

Comment & Response	Reference
<p><b>Comment:</b></p> <p><i>For off-grid applications and in the absence of institutional arrangements for operation and maintenance of energy systems, governance and management systems (e.g. fee collection systems) this project will be addressing a key gap. A focus on high-rotation biomass combustion energy systems in the design would be appreciated.</i></p> <p><b>Response:</b></p> <p>Consultations and field work that were conducted during the PPG stage further highlighted how the critical barrier of lack of effective management for off-grid RE</p>	<p>ProDoc: Sec. IV,</p>

Comment & Response	Reference
<p>power systems in Vanuatu has in the past led to lack of sustainability of such systems. Thus, the detailed project design puts very strong emphasis on developing institutional arrangements for the operation, maintenance, governance, and management of off-grid RE power systems. This emphasis in the detailed design cuts across several project components and activities. The policy/planning component (Component 2) includes the development of regulations for the management of multiple off-grid RE power systems (Activity 2.3.2). The component addressing institutional barriers (Component 3) includes heavy emphasis at the national level on design, consensus building, and refining of the national model for such management systems. This includes Activity 3.1.1 (identification and analysis of options for management models) and Activity 3.1.2 (outreach to stakeholders on, consensus building on, and final refinement of selected management models). Finally, the proposed demos (Component 5) include the demonstration of the selected management models at 20 pico/ micro-hydro sites, 10 village-scale community PV sites, and in 10 villages in which family compound-scale PV systems are installed village-wide.</p>	<p>Sub-Sec. i, pp. 17, 18, 24, and 25.</p>
<p>During the PPG phase, the project development team (PDT) investigated the potential of including biomass-based power generation as part of the project activities. In the end, biomass-based power generation was not included among the project demos, though energy efficient biomass cook stoves and energy efficient biomass crop driers are included. Further, the project design includes an activity for assessment of low carbon technologies not included in the project demos and includes high-rotation biomass combustion energy systems among the recommended technologies to be considered (Output 5A.5, Activity 5A.5.1). Biomass power generation is not included among the demos for two reasons. First, project design work showed that the highest impact/highest need areas for RE power generation demo intervention are in smaller-scale, off-grid applications. The nation's two utilities and two main grids have had substantial donor support in RE-based power generation initiatives. Second, and most important, based on information gathered in consultations, the opportunity for biomass power generation as a cost-competitive form of grid-connected RE is not evident now for either of the two grids. UNELCO, which operates the grid on Efate, has in the past considered the option of biomass power generation (a 1 MW installation) on Efate as a potentially low cost baseload option, but found this would not work in Efate due to the lack of enough resource. The other grid operator, VUI, which manages the grid on Santo, has access to very low cost baseload power in the form of hydropower, financed with grants from JICA, so that biomass power generation for baseline would also not be an attractive option in the case of this grid. Vanuatu does have copra (coconut oil) biofuel power generation, both on-grid and mini-grids, the latter being recently developed or under development. The price of copra, however, is relatively high now, making the use of coconut oil more profitable for non-power applications. For example, the biofuel-based power generation mini-grid system at Port Orly has been a net cost center for the utility that operates it.</p>	<p>ProDoc: Sec. IV, Sub-Sec. i, p. 23.</p>
<p><b>Suggestions for improvements to be made during the drafting of the final project proposal</b></p>	
<p><b>Comment:</b></p> <p><i>Development of a 'marginal cost of abatement curve' to drive the least cost /highest return path toward achieving the CO2 abatement target. A similar curve could be created purely toward driving progress for the 65% RE target.</i></p> <p><b>Response:</b></p>	

Comment & Response	Reference
<p>During the project design stage, the PDT compared the costs of various EE and RE options in terms of CO2 emissions reduction and in the case of RE power generation in terms of kWh generated. Further, the detailed design calls for preparation of two cost curves as a part of Output 1.4's "operational information exchange network." Activity 1.4.1 includes the assessment of information needs of the energy sector, preparation of a cost curve showing the costs of various EE and RE options per ton of CO2 avoided, and preparation of a cost curve for various RE power generation technologies showing the cost per kWh generated. The selection of areas of technology focus in the detailed design were driven in large part by cost effectiveness comparisons of EE and RE options for rural off-grid areas during the PPG phase (with cost effectiveness assessed both in terms of CO2 ERs per GEF funds invested in the relevant activity and in terms of long term IRR to power generation investments)<sup>26</sup>.</p> <p>The suggestion to develop MACCs will be considered during the implementation of Activity 1.4.1, which will produce the cost curve for various EE and RE options (cost per ton of CO2 avoided), and the cost curve for various RE power generation technologies (cost per kWh generated) that are applicable and technically feasible in Vanuatu.</p>	<p>ProDoc: Sec. IV, Sub-Sec. i, p. 14.</p> <p>ProDoc: Annex 18, pp. A108-A111.</p>
<p><b>Comment:</b> <i>Consider the risk of over-ambitiousness in the given time-frame with regards to the soft enabling aspects (policies, legislative changes, regulatory instruments) and with regards to the availability of co-financing.</i></p> <p><b>Response:</b> Project design has considered the risk of over-ambitiousness in regards the time-frame in the detailed design of policy, legislative, and regulatory aspects, which are part of Component 2. Indeed, during design, the implementing partner also expressed concern on achieving policy, planning, and regulatory targets. As such, strong efforts were made to make tasks narrowly focused and specific. Further, the targeted timeline for adoption for each item was extended to the end of the project's four-year lifetime. The three main policy outputs are: a nation-wide rural electrification plan, guidelines and standards for key RE and EE technologies demonstrated in the project (EE cook stoves, pico/ small micro-hydro, community PV, and PV nano-grids) and related equipment, and an off-grid rural electrification policy. In all cases, the Multi-Year Work Plan targets for these</p>	<p>ProDoc: Annex 3, pp. A-33 and A-34.</p> <p>ProDoc: Sec. V, Sub-Sec. ii, pp. 31-34.</p>

<sup>26</sup> As for off-grid RE power generation, the project compared the cost effectiveness of various multi-building options (as single household PV systems are already being extensively promoted). Cost-effectiveness of these systems in terms of GHG ER per GEF funds invested and cost effectiveness in terms of IRR provided the same ranking of technologies. It was found that when a suitable water resource nearby a village is available, pico-/ small micro-hydro mini-grids provided the lowest cost/ highest return off-grid RE systems for Vanuatu, given the technology's higher net capacity factor and no need for battery storage. Further, the larger the pico/ small micro-hydro system (assuming good demand for power generated), the higher the cost effectiveness. After hydro, a community PV system serving a full village was found to be the most cost effective, assuming productive uses are promoted thus enhancing ability to pay for power. Lastly, the small, family-compound scale nano-grids were somewhat higher cost, but still cost effective. The financial analysis carried out during the PPG estimated the following IRRs for these off-grid systems: 15 kW micro-hydro mini-grid, 24% IRR; 10 kW micro-hydro mini-grid, 21% IRR; 7.5 kW micro-hydro mini-grid, 18% IRR; 5 kW pico-hydro mini-grid, 15% IRR; village-scale community PV with no mini-grid (7.5 kW or 5 kW), 15% IRR; and family compound-scale PV nano-grid installed across village, 11% IRR. Energy efficient cook stoves and driers were found to be the most cost-effective options in terms of GHG emission reduction per GEF funds invested. This is because the main barrier to the EE cook stoves and driers in Vanuatu are lack of artisans to produce them and lack of dissemination/ information rather than cost/ financing. Expert consultation, analysis, and focus group consultation all show that the cook stoves are affordable and desired by the public without subsidy, so that the main project investment will not be the hardware/ equipment subsidies, but the training of artisans and dissemination of information on the cook stoves, which are relatively low in cost.

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Comment & Response	Reference
<p>plans or policies to be adopted/ launched only by end of project. Further, PPG work included a comprehensive review of project risks and design of appropriate mitigation measures as included in the ProDoc main text, ProDoc Annex 10, and the CER. For the policy and planning related targets, the main risk is lack of political will to adopt the proposed policies and plans once they are drafted, consulted upon, and revised. Two key mitigation strategies to this risk that are incorporated into the detailed project design are: (1) significant institutional coordination activities that will get multiple agencies/ ministries on board with regard to promoting RE and EE and (2) extensive demonstration of the financial, technical, and management aspects of specific RE and EE systems, so that by “seeing is believing” political actors will come on board with policy initiatives, particularly those related to these specific technologies and their management systems.</p>	<p>ProDoc: Annex 10, pp. A-81 to A-85.</p> <p>CER: Part II, Sec. A5, pp. 7-8.</p>
<p><b>Comment:</b>  <i>Funding may also be needed for GIS mapping exercises, as these are required to identify the size of communities and the distance between households, and can also feed into a least cost/proportionality driven approach toward the rural electrification targets.</i></p> <p><b>Response:</b>  The project’s Output 2.1 calls for preparation of Vanuatu Off-Grid Rural Electrification Roadmap. It includes activities to identify suitable pico-/ small micro-hydro mini-grid sites, suitable village-scale community PV sites, and suitable villages for implementation of family compound-scale PV nano-grids village-wide. It also includes activities to develop national targets for each of these technology/configuration types. As part of this work, the implementers will need to gather information for each of the nation’s communities: on community size (number of households), distance between households, and natural resources available (such as rivers/ streams and sunlight resources). The ProDoc indicates that such information may be input into a GIS map if that will better facilitate Roadmap design.</p>	<p>ProDoc: Sec. IV, Sub-Sec. i, p. 15.</p>
<p><b>Comment:</b>  <i>The proposal would benefit from outlining the RE low Carbon policy directives mentioned in the National Climate Change &amp; Disaster Risk Reduction Policy or new National Sustainable Development Plan.</i></p> <p><b>Response:</b>  The project design process and resulting project design are highly consistent with Vanuatu’s national strategies. The project is expressly designed to facilitate realization of the targets of Vanuatu’s National Energy Road Map (NERM). The NERM is Vanuatu’s core document for expressing the envisioned energy future of the nation. More discussion of how the project design is aligned with national strategies, such as the NERM, NDC, and NAMA are included in the CER. The project design is also aligned with the low carbon policy directions mentioned in the National Climate Change &amp; Disaster Risk Reduction Policy (NCC&amp;DRRP) and the National Sustainable Development Plan (NSDP). As for the former, it refers specifically to the NERM (support of which, as mentioned is the focus on the proposed project). The following quote from the NCC&amp;DRRP illustrates the strong alignment of the proposed project with that policy via its focus on RE and EE, RE power generation, and its alignment with the NDC</p>	<p>CER: Part II, Sec. B1, pp 10-11.</p>

Comment & Response	Reference
<p>“An energy sector priority identified in the road map is mitigating climate change through renewable energy, energy efficiency and conservation. A further objective is to reduce reliance on imported diesel and petroleum products through efficiency improvements in the transport sector and investment in renewable energy in the power generation sector. Many of Vanuatu’s specific priorities are also outlined in the Intended Nationally Determined Contribution document submitted to the United Nations Framework Convention on Climate Change.”</p> <p>As for the NSDP, the proposed project is closely aligned with two of the five key development aspirations expressed. These two aspirations are:</p> <p>“Maintaining a pristine natural environment on land and at sea that serves our food, cultural, economic and ecological needs.” and “A stable economy based on equitable, blue-green growth that creates jobs and income earning opportunities accessible to all people in rural and urban areas.”</p> <p>Alignment with the first listed aspiration is by the focus on RE and EE, which replaces and/or avoids use of fossil fuels. Alignment with the second listed aspiration is achieved through the project’s strong focus on livelihoods. The project targets that sustainability of RE power systems is achieved, in part, through the development of income-generating productive uses that can both enhance livelihoods and generate revenues that support the operation and maintenance of the power systems.</p>	<p>Vanuatu NCC&amp;DRR P, p. 20.</p> <p>Vanuatu NSDP, p. 4.</p>
<p><b>Comment:</b>  <i>The proposal would also benefit from depicting the contribution of the EU-GIZ ACSE project and the recent GIZ-supported <a href="#">pilot of tourism private sector RE engagement</a>.</i></p> <p><b>Response:</b>  During project design, the project design team benefited from in-depth consultations with two team members of the EU-GIZ ACSE project as well as from consultation with a Vanuatu-based GIZ team member. As indicated in the ProDoc, the project will build on the learnings of PV freezers/ refrigeration from the ACSE project. As also indicated in the ProDoc, the project will build on the rural electrification plans developed under the GIZ project assignment “Consultancy Services to Develop a Renewable Energy-based Off-grid Electrification Plan for Remote Islands of Vanuatu along the Example of Four Islands,” in the proposed project’s work to develop a national rural electrification roadmap. The project has a Stakeholder Engagement Plan, which includes plans to engage other donors and donor projects, including GIZ and its projects, in exchange with the BRANTV project, beginning with the planned Inception Workshop.</p>	<p>ProDoc: Sec. IV, Sub-Sec. ii, p. 27</p> <p>ProDoc: Annex 14, p. A-97.</p>

**Exhibit B-5: Responses to GEF Council Member (Canada) Comments on PIF (Oct 2016)**  
 (Note: Responses as of 16 May 2018. All comments responded to during the PPG phase only)

Comment & Response	Reference
<p><b>Comment:</b>  <i>We agree with STAP that the final project proposal should include clear data on the potential of the various renewable energies (wind, solar, biomass). Specifically, the final project proposal should indicate clearly how much renewable energy will be generated by each source, and the direct relation to estimated GHG emission reductions. This will support the estimated GHG emission reductions figures in the proposal.</i></p> <p><b>Response:</b>                      Please see the responses to the third and fourth STAP comments as provided in the CER. The GHG emission reductions for each RE demo type are provided in Annex 1 (on demo descriptions) and Annex 2 (on GHG emission reductions). Annex 1 also provides the power generated by each demo type over its lifetime. Exhibit A1-4 (including footnote) shows <u>total power generated by all project incremental hydro demos over their lifetime is 14,144.73 MWh</u>. For the different configurations of the project's incremental PV demos, Annex 1 shows the following lifetime power generation estimates: (1) 217.35 MWh for the PV incorporated into the hybrid hydro-PV system, (2) 4,528.92 MWh for village-scale community PV, and (3) 2,050.32 MWh for PV nano-grids. Thus, the <u>total power generated by project incremental PV demos over their lifetime is 6,796.59 MWh</u>. Exhibit A2-2 of Annex 2 shows total direct ERs for the project RE demos over their lifetime, by demo category. This includes <u>11,372.4 tons CO2 for the hydro power demos</u>; 174.7 tons (PV for the hydro PV hybrid); 3,660.6 tons (for the village scale community PV); and 1,657.3 tons for the PV nano-grids, for a grand total of <u>5,492.6 tons CO2 for the PV related demos</u>.</p>	<p>CER: Annex B. Pages 26-28.</p> <p>ProDoc: Annex 1, pp. A-10, A-12, A-16, and A-19.</p> <p>ProDoc: Annex 2, p. A-25.</p>
<p><b>Comment:</b>  <i>We request that additional details be provided on the activities in Component 1 relating to capacity building for the existing banks on financing low carbon development projects. We note that while the proposal aims to build capacity with local financial institutions, it focuses the investment resources through public sector-administered demonstration projects. Please clarify why local financial institutions are not involved in delivering the investment resources.</i></p> <p><b>Response:</b>                      While the project will work closely with NGEF (National Green Energy Fund) to enhance public financing of RE and EE development in Vanuatu, the detailed design of the project also includes substantial activity to ensure the stage is set for private/commercial sector financing of RE and EE. As such, the detailed project design divides activities related to public sector financing and private sector financing as Component 4A and 4B, respectively. Component 4B addresses the private/commercial sector financing emphasized in the comment. The component has four outputs. The first focuses on capacity building for the banks and other private/ commercial sector potential financiers of EE and RE in Vanuatu. The second focuses on developing of a private/ commercial sector financing scheme for RE and EE. The third focuses on implementing that scheme to achieve actual project financing. The fourth focuses on evaluation of progress of the scheme.</p>	<p>ProDoc: Sec. IV, Sub-Sec. i, pp. 20-22.</p>

**Exhibit B-6: Responses to GEFSec Comments (15 May 2018) on BRANTV ProDoc & CERDoc**

Comment & Response	Reference
<b>5. Is co-financing confirmed and evidence provided?</b>	
<p><b>Comment:</b>  <i>Not yet. Please check the co-financing letter from the Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business, and take actions.</i></p> <p><b>Response:</b>                      The original letter from the Ministry of Tourism, Trade, Commerce and Ni-Vanuatu Business refers to a summary of the USD1 million in co-financing, but had left that summary out. The Ministry has now prepared a new version of this letter that indicates that the USD1 million in co-financing is all grant/ cash co-financing. The new co-financing letter has been inserted in the ProDoc and is also provided separately.</p>	<p>ProDoc: Annex 19, pp. A-113 and A-114</p>
<b>11. Has the Agency adequately responded to comments at the PIF stage from: GEF Council?</b>	
<p><b>Comment:</b>  <i>Not completed. Please address all comments of the Council members.</i></p> <p><b>Response:</b>                      Exhibit B-3 of Annex B of the CER includes responses to Council member comments on the PIF. These were comments from the GEF Council Member from the USA. These were responded to during the PIF development period. In addition, for the fifth comment, an additional response has been added to describe what have done during the PPG stage.</p> <p>The GEF Agency just recently learned about additional comments on the PIF back in October 2016 from GEF Council Members (Canada and Germany). These comments have now been addressed, and the summary of responses are now included in Annex B of the CER Document as Exhibits B-4 &amp; B-5.</p>	<p>CER: Annex B. Exhibit B-3, pp. 31-34</p> <p>CER: Annex B: Exhibits B-4 &amp; B-5, pp. 34-39</p>
<b>12. Is CEO endorsement recommended?</b>	
<p><b>Comment:</b>  <i>No. Please address comments in boxes 5 and 11. Comments in Box 11 were ignored in the previous version of CEO RE.</i></p> <p><b>Response:</b>                      The comments in boxes 5 and 11 have been responded to adequately. The response to the comment in Box 11 was inadvertently omitted in the previous submission.</p>	



## ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS<sup>27</sup>

A. Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: USD 100,000			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent as of Feb. 4, 2018</i>	<i>Amount Committed (but not yet spent)</i>
Activity 1 - Initiate Studies & Surveys	30,000	21,631	8,369
Activity 2 - Conduct Logical Framework Analysis Workshop	20,000	17,857	2,143
Activity 3 - Identification & Assessment of Demonstration Sites	10,000	10,000	0
Activity 4 - Detail Design of Project Components & Activities	15,000	11,260	3,740
Activity 5 - Conduct of Stakeholder & Project Partner Coordination Meetings	5,000	3,804	1,196
Activity 6 - Preparation of UNDP ProDoc and GEF CER	17,500	3,097	14,403
Activity 7 - Finalization of UNDP ProDoc and GEF CER	2,500	0	2,500
<b>Total</b>	<b>100,000</b>	<b>67,649</b>	<b>32,351</b>

The objective of the PPG exercise was achieved with the successful implementation of the planned activities for the design, development and preparation of the BRANTV Project. The project development team (PDT) that was organized by the project implementing partner carried out the PPG Exercise based on the agreed project initiation plan. The PDT gathered and organized the relevant data and information that were used in the design of the various project activities. Information about the ongoing and planned programs of the GoV, as well as private sector entities that are interested, in RE-based power generation and EE technology/technique applications, were gathered, processed and analyzed to obtain a clear understanding of the current situation concerning the issues and concerns regarding the GHG emission reduction target of the country. Plans and programs of the country on rural electrification and its NDCs were also researched and reviewed. The discussions with the key stakeholders and project partners have made possible the identification of relevant issues and barriers that need to be addressed and considered in the development and implementation of the BRANTV Project. The implementing partner (DOE), local government entities, and RE/EE technology experts and suppliers in the country were engaged in intensive discussions for the project development team to fully understand the nature and extent of these issues/barriers. As is the usual practice in project design, a logical framework analysis (LFA) was carried out by the PDT together with the stakeholders to verify and confirm the project results framework that was developed during the PIF stage of the project development. The LFA confirmed the previously defined project goal and objective, and expected outcomes. Discussions with 2 utilities in the country and selected provincial governments regarding their technical capacity development needs, and other technological and business concerns became the basis of the demonstrations and specific technical assistance in various aspects of the design, engineering and installation of RE-based energy systems both

<sup>27</sup> If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.  
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for power applications. The discussions with the stakeholders and project partners also resulted in getting commitments for the co-financing of the baseline activities that were subsumed into the project, the government's contribution to the funding of some of the incremental activities, as well as in the agreed project coordination mechanisms and the project implementation arrangements. The outputs of the PPG exercise were used in the detailed design of the components of the BRANTV Project and the relevant activities that will deliver the necessary outputs that will collectively realize the expected outcomes of this GEF-funded climate change mitigation project of Vanuatu.

**ANNEX D: CALENDAR OF EXPECTED REFLOWS** (if non-grant instrument is used)

*Provide a calendar of expected reflows to the GEF/LDCF/SCCF/CBIT Trust Funds or to your Agency (and/or revolving fund that will be set up):* **N/A**

## ANNEX E: CHANGES FROM THE PIF

This annex shows how the detailed project design corresponds to the PIF and provides details of changes. The annex includes 2 tables. The first, Exhibit E-1, compares the outcomes and output statements in the PIF to that in the ProDoc. For each of these, there is either no change at all, or only minor changes of word choice to increase clarity. The changes made on the outputs are mainly on the reorganization and restructuring of the outputs, and in some cases, additional outputs were included to enhance the achievement of the component outcome. Overall, in each of the project components, the changes in some of the original output statements in the PIF did not alter the theme and overall substance of the expected outcome in each project component. The second table, Exhibit E-2, shows changes in the budget allocated to each outcome. For the cases in which changes are significant, rationale is given. In each case, changes are explained, correspondence between PIF outputs and ProDoc outputs (if there are changes) are highlighted, and justification for changes is provided.

**Exhibit E-1: Comparison PIF and ProDoc Outcomes & Outputs**

PIF Version	ProDoc Version	Changes and Explanations
<u>Component 1:</u> Capacity Enhancement on Sustainable Energy and Low Carbon Development  <u>Outcome 1:</u> Improved capacity and awareness on sustainable energy, energy access, and low carbon development in the energy, public, and residential sectors	<u>Component 1:</u> Capacity <b>and Awareness</b> Enhancement on Sustainable Energy and Low Carbon Development  <u>Outcome 1:</u> Improved capacity and awareness on sustainable energy, energy access, and low carbon development in the energy, public, <b>private</b> , and residential sectors	<p>Minor addition: “and Awareness” added to distinguish technical capacity building from raising awareness through dissemination of general information.</p> <p>Minor addition: “private” added to indicate involvement of the private sector in technical capacity building.</p> <p>Regarding Component 1 Outputs, these were reorganized along the lines of mode of capacity building, whereas the PIF outputs were structured along the lines of steps in the capacity building process. Nonetheless, the modifications of some of the original output statements in the PIF (e.g., merging 3 output statements into 1), the theme and overall substance of Component 1 remains the same; and the expected outcome from the Component 1 outputs is essentially the same.</p>
<u>Component 2:</u> Improvement of Energy Policy Formulation and Implementation  <u>Outcome 2:</u> Improved policy and regulatory regimes in the application of sustainable energy, energy access, and low carbon development in the energy, public, and residential	<u>Component 2:</u> Improvement of Energy Policy <b>and Planning</b> Formulation and Implementation  <u>Outcome 2:</u> Improved policy, <b>planning</b> , and regulatory regimes in the application of sustainable energy, energy access, and low carbon development in the energy,	<p>Minor addition: “and Planning” added to elaborate that planning is a key type of policy work included.</p> <p>Minor additions: “private” added to indicate involvement of private sector in RE and EE and “planning” added to elaborate that planning is a key type of policy work included.</p> <p>Regarding Component 2 Outputs, these have been restructured along the lines of type of policy work to be done, as opposed to steps in the policy making and enforcing process as presented in the PIF. Nevertheless, despite the modifications of some of the original output statements in the PIF, the theme and overall substance of Component 1 remains the same;</p>

sectors	public, <b>private</b> , and residential sectors	and the expected outcome from the Component 1 outputs is essentially the same.
<p><u>Component 3:</u> Institutional Framework Enhancement for Sustainable Energy and Low Carbon Development</p> <p><u>Outcome 3:</u> Established institutional framework enables the effective enforcement of policies and regulations and implementation of program and projects, on the application of sustainable energy and low carbon technologies</p>	<p><u>Component 3:</u> <i>No changes</i></p> <p><u>Outcome 3:</u> Established institutional framework enables the effective enforcement of policies and regulations, and implementation of <b>plans</b>, programs, and projects, on the application of sustainable energy and low carbon technologies</p>	<p>Minor clarification: addition of word “plans” to encompass coordination between government departments on RE and EE in site selection and development under <i>Vanuatu National Rural Electrification Road Map</i>.</p> <p>Regarding Component 3 Outputs, these were reorganized with greater specificity based on the insights gained during PPG work. An additional output (Established and operational Northern Vanuatu Rural Renewable Energy and Energy Efficiency Promotion Center of DOE) was included to further bolster the achievement of Outcome 3. Nonetheless, despite the modifications of some of the original output statements in the PIF, the theme and overall substance of Component 3 remains the same; and the expected outcome from the Component 3 outputs is essentially the same.</p>
<p><u>Component 4:</u> Sustainable Energy and Low Carbon Initiatives Financing</p> <p><u>Outcome 4A:</u> 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</p> <p><u>Outcome 4B:</u> Increased financing and investments from private sector on sustainable energy and low carbon projects in the energy supply and demand sectors.</p>	<p><u>Component 4:</u> <i>No changes</i></p> <p><i>No changes in outcome statement</i></p> <p><i>No changes in outcome statement</i></p>	<p>Overall, despite the modifications of some of the original Component 4 output statements in the PIF, the theme and overall substance of Components 4A and 4B remains the same.</p> <p>Regarding Component 4A Outputs, the changes are due to changes in the baseline situation in Vanuatu, since the time of approval of the PIF. The country’s National Green Energy Fund (NGEF) is now established, and is in the process of devising and launching schemes to finance RE and EE. BRANTV will provide incremental support by outreach to ensure that NGEF is well-funded so it can support replication of BRANTV demos.</p> <p>Regarding Component 4B Outputs, these are essentially the same as in the PIF, though specifies their focus on the commercial and private sectors, and adds as part of the first output, capacity building for the banks.</p>
<u>Component 5:</u> Sustainable Energy and Low Carbon (RE and EE) Technology Applications	<u>Component 5:</u> <i>No changes</i>	

<p><u>Outcome 5A.</u> Sustainable energy and low carbon (RE and EE) techniques and practices adopted and implemented in the energy, public, and residential sectors of the country.</p>	<p><u>Outcome 5A.</u> Sustainable energy and low carbon (RE and EE) techniques and practices adopted and implemented <b>with both cost and technical viability</b> in the energy, public, <b>private sector</b>, and residential sectors of the country.</p>	<p>Minor additions: “with both cost and technical viability” added to show results will address both cost and technical viability and “private sector” added to show participation of private sector.</p> <p>Regarding Component 5A Outputs, these were restructured to come up with greater specificity based on the findings and insights during the site visits in the outer islands. An additional output (Established and operational high quality, low cost sourcing channels and available best cost breakdowns for renewable energy and energy efficiency systems in Vanuatu) was included to further bolster the achievement of Outcome 5A. While these changes were made in the restructuring of the original output statements in the PIF, the theme and overall substance of Component 5A remains the same; and the expected outcome from the Component 5A outputs is essentially the same.</p>
<p><u>Outcome 5B.</u> Enhanced confidence in the viability of sustainable energy and low carbon technology projects.</p>	<p><u>Outcome 5B.</u> Enhanced confidence in the <b>economic and technical viability and long-term sustainability</b> of sustainable energy and low carbon technology projects.</p>	<p>Minor additions: “economic and technical” added before “viability” to clarify type of viability to be emphasized; “long-term sustainability” added as this is a key concern of stakeholders that the project’s management model for village power will aim to address.</p> <p>Regarding Component 5B Outputs, the revised outputs represent reorganization of the original ones with greater specificity based on the insights gained during the site visits in the outer islands, and other associated PPG activities. Instead of stating an overall package of completed demonstrations, the project outputs were listed in terms of types or scales of RE and EE technology applications. As in Component 5A, despite these modifications, the theme and overall substance of Component 5B remains the same; and the expected outcome from the revised outputs under this component is essentially the same.</p>

**Exhibit E-2. Changes in Distribution of GEF Budget among Project Components and Project Management**

Component	PIF Proposed Budget	ProDoc Proposed Budget	Change and Reasons for Change
Component 1	USD 325,000	USD 302,775	USD 22,225 reduction: Costs are reduced somewhat from initial expectations due to the ability to use national talent for several training and dissemination initiatives. In addition, training facilities will generally be provided with in-kind co-financing.
Component 2	USD 150,000	USD 148,900	USD 1,100 reduction ( <i>minor adjustment, less than 1% change to outcome allocation</i> )
Component 3	USD 100,000	USD 104,200	USD 4,200 increase ( <i>minor adjustment, less than 5% change to outcome allocation</i> )
Component 4A	USD 175,000	USD 58,000	USD 117,000 reduction: Since PIF approval, Vanuatu has made good progress in vetting and designing a public-sector financing mechanism for RE and EE. Thus, the activities of this outcome have been adjusted to support this mechanism rather than research, design, and vet it, as had been envisioned at the time of the PIF. Costs for the support are lower than what would have been needed for comprehensive research, design, and vetting. Thus, the excess has been moved to Outcome 5A, where needs are greater than was anticipated at the time of PIF preparation.
Component 4B	USD 700,000	USD 91,525	USD 608,475 reduction: Activities have changed from “investment” to “TA” activities and thus are less cost intensive. Instead of providing funds for financing mechanism, outcome will provide funds to support design and implementation of such a financing mechanism. Investment funds, in turn, are expected to come from the private sector.
Component 5A	USD 164,025	USD 203,437	USD 39,412 increase: During the PPG, assessment of needs to achieve technical and financial viability of RE and EE systems identified several needs, including certain strong needs that require significant budget, particularly due to need for international consultant support. Particularly, (i) work for finding reliable, high quality, low cost sourcing channels for RE products and (ii) assessment of EE cook stove and drier models for in-country production require extensive outside expertise to achieve desired results.
Component 5B	USD 900,000	USD 1,605,188	USD 705,188 increase: Most of this increase is from investment funds that have been shifted from Outcome 4B, which will no longer fund financing mechanisms to support implementation of RE and EE, but instead provide TA for such financing from the private sector. Thus, the investment money has been brought to Outcome 5B to directly support the implementation of incremental RE and EE implementation via investment in demos at an expanded range of sites. This expansion of sites will enable more effective building up of skills and examples across various regions of the nation in RE power and EE cook stove/ crop drying implementation than would a more limited portfolio of demo sites.
Project Management	USD 125,701	USD 125,701	<i>No changes</i>