

Piloting Subsidized Renewable Energy Lighting Models within Rural Private Tourism Sector Bungalow Owners as a Catalyst for Sustainable Economic Development in Vanuatu



Lessons Learned

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The Government of Vanuatu



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Vanuatu Department of Tourism

Table of Contents

Executive Summary	3 - 4
Implementation	4 - 7
Rapid Assessment Results Summary	
Stakeholder Interest.....	8
Value for Money.....	9
Business Revenue.....	10 - 13
Energy Demands.....	13 - 14
Institutional / Business Model.....	15
Key Lessons	16 - 18
Recommendations	19 - 21
Annexes	
A. List of Participants.....	22 - 23
B. Participant Agreement.....	24
C. Rapid Assessment Methodology.....	25 - 26
D. Launching Agenda.....	27
E. Educational / Awareness Poster.....	28
F. VREP Product Catalogue.....	29 - 33

Executive Summary

The purpose of this document is to capture the key lessons learned from the implementation of a pilot study which tested subsidized and sustainable renewable energy and energy efficiency models within the private tourism sector. These lessons are intended to assist with the analysis and development of innovative & sustainable business models to increase access to renewable energy and energy efficiency for small-scale tourism operators in Vanuatu.

Overall project objectives were to successfully pilot a subsidized 'Dealer Model' for distributing renewable energy technologies to the private sector, specifically in the high tourism area of North Efate and nearby islands of Nguna, Pele and Emae. The intention was to sustainably increase the use of renewable energy and energy efficiency lighting systems among off-grid rural tourism operators. Furthermore, the pilot was to support the Government of Vanuatu's National Energy Road Map (NERM), Green Growth Policy and priorities from the Vanuatu Strategic Tourism Action Plan (VSTAP) in promoting the use of renewable energy and energy efficiency in Vanuatu's tourism sector. These goals were accomplished through exploring the characteristics of the rural tourism industry that would allow for introducing renewable energy sustainably.

Tourism leads Vanuatu's formal economy, and contributed nearly 50% of the Vanuatu's GDP in 2014. As this contribution is expected to increase by 4.5% per annum to 58% of GDP in 2025, both government and private sector leaders acknowledge tourism to be a key economic driver for the country.

Vanuatu, similar to other Pacific island states, is heavily dependent on reliable, affordable and environmentally friendly energy supplies. Unfortunately, the country's current energy production, including in rural areas, is reliant predominantly on the combustion of fossil fuels and in particular, petroleum-based products. The population of Vanuatu is spread over 65 geographically remote islands, making the distribution of energy services both technologically challenging and costly. In consequence, energy services are available to only a small portion of the rural population, and often only at prohibitively high prices.

In this context, small tourism operators on off-grid outer islands are commonly unable to provide minimum services to their guests such as lighting, cooling, or refrigeration. In remote areas, electricity for these services is primarily produced by diesel generators, at a high cost

(approximately \$2.25USD/liter).¹ With diesel costs among the highest in the region, and considering additional costs placed on remote outer islands due to transportation, most tourism operators find that electricity generation is one of the largest operational expenses. Off-grid tourism operators are at a disadvantage to compete for customers with operators whose facilities are connected to the power grid and therefore able to provide more reliable and affordable services.

The Department of Tourism (DoT) estimates there to be 425 rural tourism business operators in Vanuatu. Less than 25% of these operators comply with Government minimum standards, which determines lighting is to be provided in every room.² Without access to electricity, off-grid tourism operators have limited ability to best prepare for and be resilient to natural disasters and climactic events such as tropical cyclones, earthquakes and tsunamis. This lack of capacity was demonstrated during Tropical Cyclone Pam in March of 2015, when several off-grid operators were unable to adequately charge mobile phones. This led to an inability to give or receive emergency warnings prior to the cyclone arriving, as well as hindering recovery efforts immediately afterwards.

Implementation

The implementation of this pilot project was the first subsidized renewable energy and energy efficiency scheme made available to private sector tourism operators in Vanuatu. The initiative, supported by GIZ in conjunction with the Department of Energy (DoE) and DoT engaged a 'Dealer Model' subsidy approach wherein rural tourism operators were to purchase 'plug and play' renewable energy and energy efficiency lighting systems from competing private vendors.³



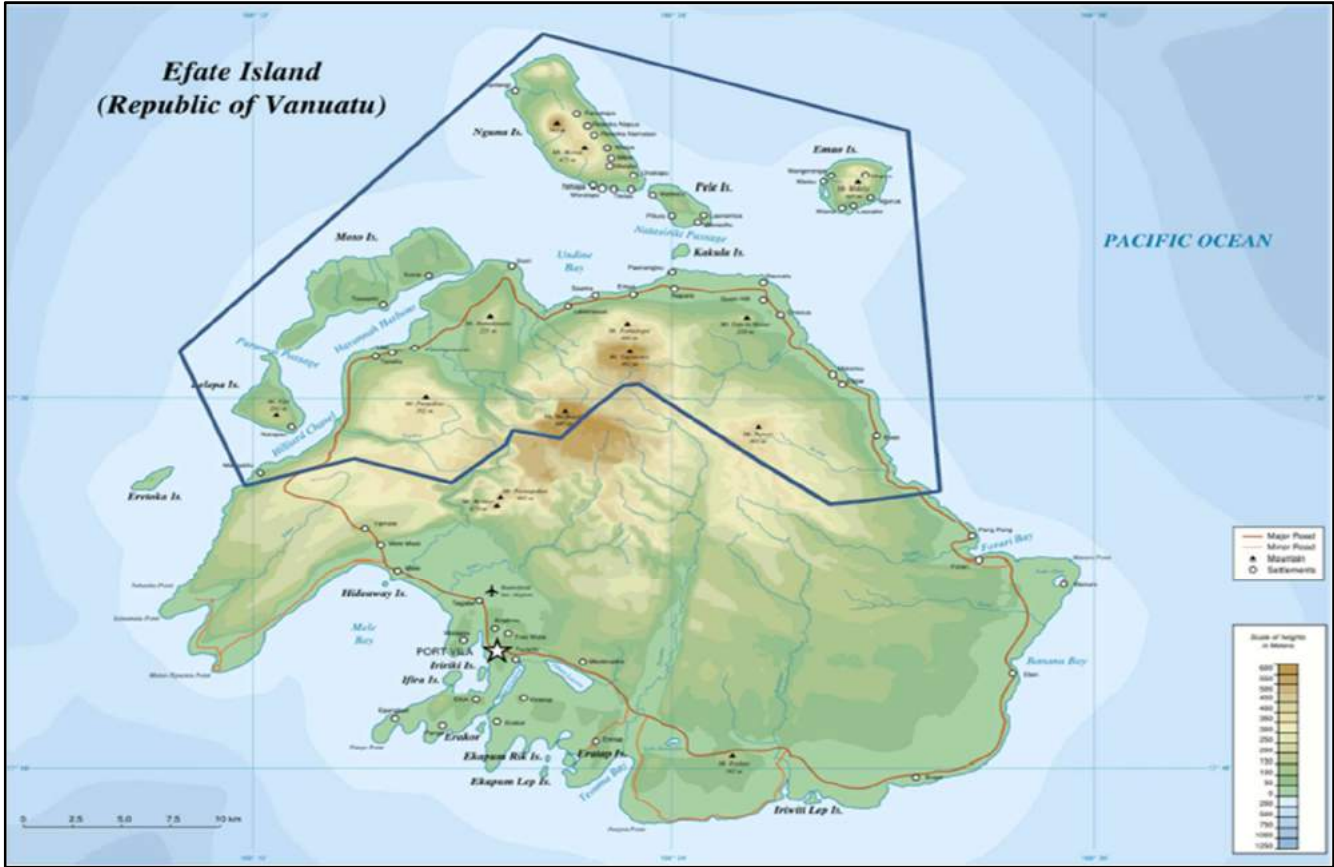
PCS Limited staff lead an installation demonstration for project participants on Nguna

¹ Price per liter varies greatly depending on geographical proximity to the capital city of Port Vila. Project participants reported prices per liter in their locale as between 200vt (\$2USD) to 300vt (\$3USD).

² DoT specifications regarding what constitutes "lighting in every room" is currently under review.

³ Both vendors, Power and Communication Solutions (PCS) Limited and eTech (Vanuatu) Limited, also supply products under the DoE's Vanuatu Rural Electrification Program (VREP).

The provision of a 60% subsidy was intended to lessen financial barriers for participation as well as increase the overall number of operators included in the pilot. This was made in contrast to the 50% subsidy provided under the DoE’s Vanuatu Rural Electrification Program (VREP). A solar fan system was offered as an incentive for participants to meet the DoT’s minimum operator standards. Both vendors, Power and Communication Solutions (PCS) Limited and eTech (Vanuatu) Limited, also supply products that had been certified under VREP. This ensured all RE/EE lighting systems were up to international standards (IFC/World Bank-supported Lighting Global Standards).



Map of high priority tourism area of North Efate and nearby surrounding islands of Pele and Nguna

The DoE is currently engaging a similar pilot (VREP¹) for rural households, aid posts and community halls, but that program is not available for private tourism businesses. GIZ has filled a gap by understanding how private tourism operators can sustainably increase their use of renewable energy systems. An educational/awareness poster was also created, aimed at increasing knowledge of the RE benefits for rural off-grid tourism operators.

¹ <http://doe.gov.vu/index.php?r=vrep/>

Successful Project Outcomes:

- Increased access to sustainable and affordable energy for project participants through installation of renewable energy and energy efficient lighting systems. This includes approximately 30 direct beneficiaries and 2,000 indirect beneficiaries spread over 4 islands. Approximately 1,800 tourists per year will be affected.
- Reduced dependency on expensive imported fossil fuels, which enhanced income generation and service delivery for project participants. More than 130 liters of benzene will be saved monthly.
- Successful demonstration of subsidized renewable energy initiative for tourism sector for replication and scaling-up. Specifically, the use of subsidized 'plug and play' systems from private vendors in conjunction with government partners. Successful partnership with the provincial Tourism office on data sharing and participant consultations has formed a foundation for future collaborations.
- Creation of an educational/awareness poster, highlighting the economic and environmental benefits of renewable energy to off-grid tourism operators. Constructive input was provided from focus groups with representation from the DoE, DoT, GIZ and private bungalow operators. 200 laminated color copies were provided to the DoE for use in future projects.
- Enhanced skills and capacity in project operation, management and monitoring for DoE, DoT, private vendors and project participants.
 - The DoT's field capacity was strengthened with new information on off-grid tourism operators and partial financial support during outer island consultations.
 - The DoE's efforts towards education and awareness of renewable energy were enhanced with the creation of knowledge management materials targeting households and business outside of concession areas.
 - Private vendors strengthened their relationship with outer island customers, improving their installation staffs' field capacity.
 - Project participants' awareness of the substantial benefits of using renewable energy was increased, as well as technical capacity in operating RE equipment.

Implementation Schedule⁵

Activity	Timeline
Pilot rural off-grid tourism site and stakeholders identified and confirmed	Late-May
Site visits and preliminary baseline assessment completed including business revenue, value for money and energy demand assessment for selected site completed and appropriate business and institutional models developed and recommended	June - July
RE & EE systems packages/pricing assessed and finalized through consultations with two DoE approved suppliers	
Launch of subsidized RE/EE system in pilot site, commencement of installations	
Conduct implementation monitoring and evaluation with bungalow owners and project stakeholders	
Develop Awareness Materials on RE/EE targeted for rural tourism owners (in Bislama/English)	
Draft Lessons Learned/Assessment document that will feed into DoE, DoT, GGGI proposal development	Early-August

Pilot Budget

Item	Budget (Euros)
Approx. 30 small pilot subsidized systems consisting of Solar PV lighting system (LED lights, power for mobile phones)	9,500
Third party Technical Advice / consultancy (local, not international) support for pilot program development and launch of subsidized tourism RR & EE scheme in North Efate	5,000
Travel and per diems	1,500
Project management costs	1,000
Monitoring and evaluation	1,000
Communication and visibility	500
TOTAL	€ 18,500

⁵ Implementation schedule was significantly delayed due to supplier dependence on international shipping vessels, requiring an additional 6 – 8 weeks before all equipment could be delivered and installed at each project site.

Rapid Assessment Results Summary⁶

Between May 23rd – June 17th a Rapid Assessment was conducted by GIZ with private tourism operator project participants in North Efate and the islands of Nguna and Pele. The purpose was to conduct a baseline assessment of stakeholder interest, tourism business revenue, renewable energy value for money and energy demand to assess appropriate business and institutional models. Separate consultations by the DoT were held with the remaining 6 project participants on the island of Emae (Sesake, Marae and Finonge) between May 25th – 26th.

Stakeholder Interest

1. Why do you want to participate in the renewable energy-tourism pilot?

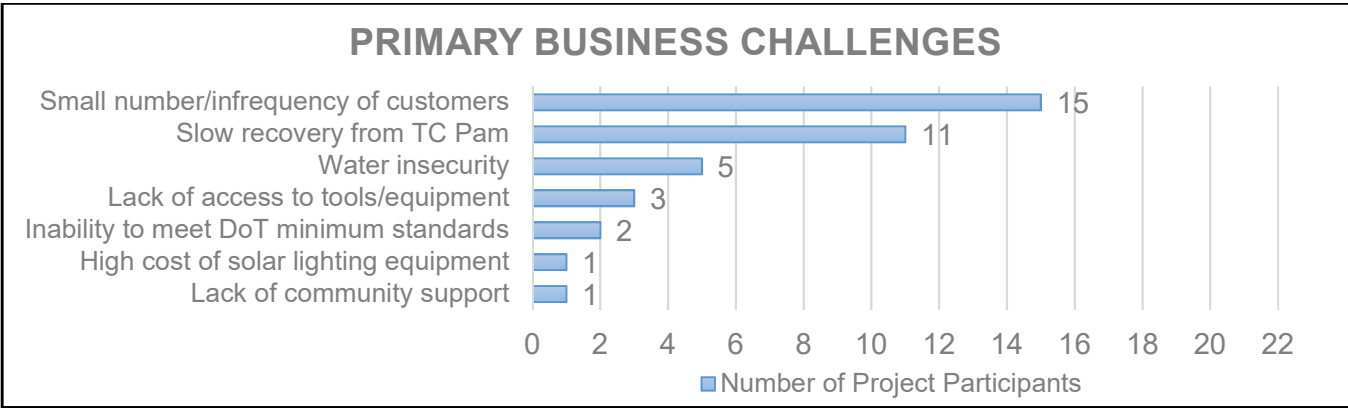
- 91% of project participants (21) cited improved service delivery to customers as a motivating factor for procuring renewable energy for their rural tourism business.
- 35% of project participants (8) cited the opportunity to take advantage of a 60% subsidy on solar lighting equipment which would otherwise be prohibitively costly.

2. Does your bungalow or guesthouse currently have a tourism permit?

- 66% of project participants (15) currently hold tourism permits with the Department of Tourism or SHEFA Tourism office.

3. What challenges does your business face?

- 68% of project participants (15) cited the small number and infrequency of customers as a primary challenge to their business.
- 48% of project participants (11) cited damage from Tropical Cyclone Pam as a primary challenge to their business.



⁶ The rapid assessment consulted 23 of 29 bungalow operators participating in the project: 7 on Nguna (Taloa, Unakapu and Mere Sauwia), 13 on Pele (Worearu, Launamoa, Piliura and Worasivu) and 3 on North Efate (Emua).

Value for Money

4. What criteria did you use to select a solar lighting package?⁸

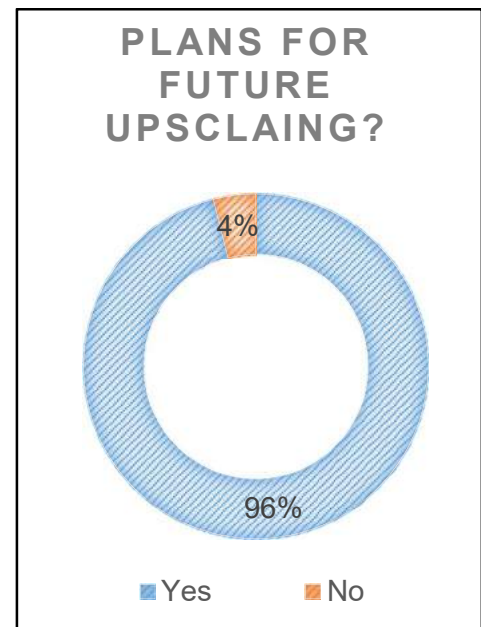
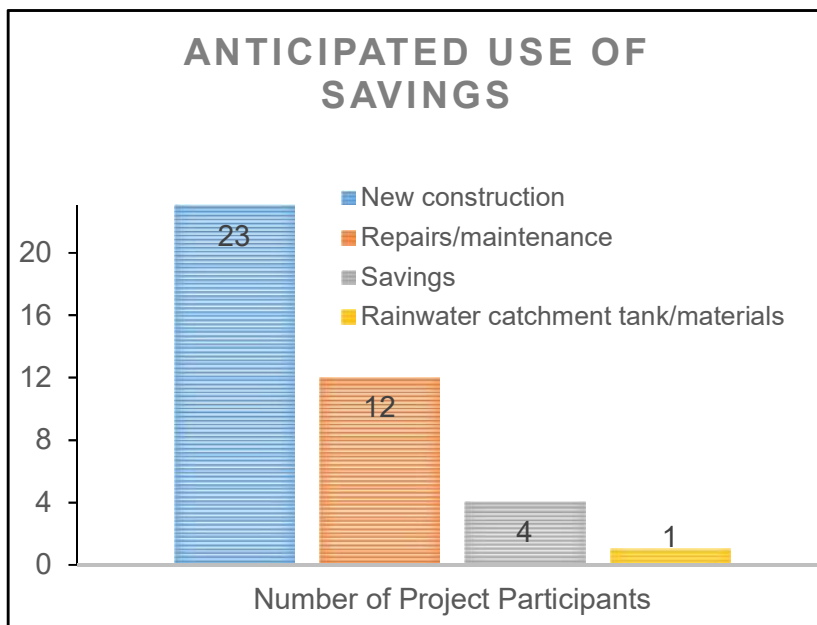
- 78% of project participants (18) cited *functionality* (number of lights and mobile phone charging ports) as the primary criteria in selecting a solar lighting package.
- 30% of project participants (7) cited *price* as the primary criteria in selecting a solar lighting package.

5. What will you do with the cost savings resulting from the use of renewable energy?

- 100% of project participants (23) anticipate using energy savings on *new construction*.
- 52% of project participants (12) anticipate using energy savings on *maintenance and repair work*.
- 17% of project participants (4) anticipate putting energy savings into a *savings fund*.
- 4% of project participants (1) anticipate using energy savings on *rainwater catchment tanks and materials*.

6. Do you have plans for future upscaling?

- 96% project participants (22) *have plans* for future upscaling of their bungalow/guesthouse, including improvements to power and solar lighting systems.



⁸ DoE's Vanuatu Rural Electrification Program (VREP) product catalogue. However, this project provided a 60% price subsidy to participants, rather than 50% as offered under VREP.

Business Revenue

7. What is your maximum overnight capacity?

- 78% of project participants (18) have a maximum overnight capacity of 1 – 4 customers.
- 9% of project participants (2) have a maximum overnight capacity of 6 – 8 customers.
- 13% of project participants (3) have a maximum overnight capacity of 9 or more customers.

7a. Number of beds?

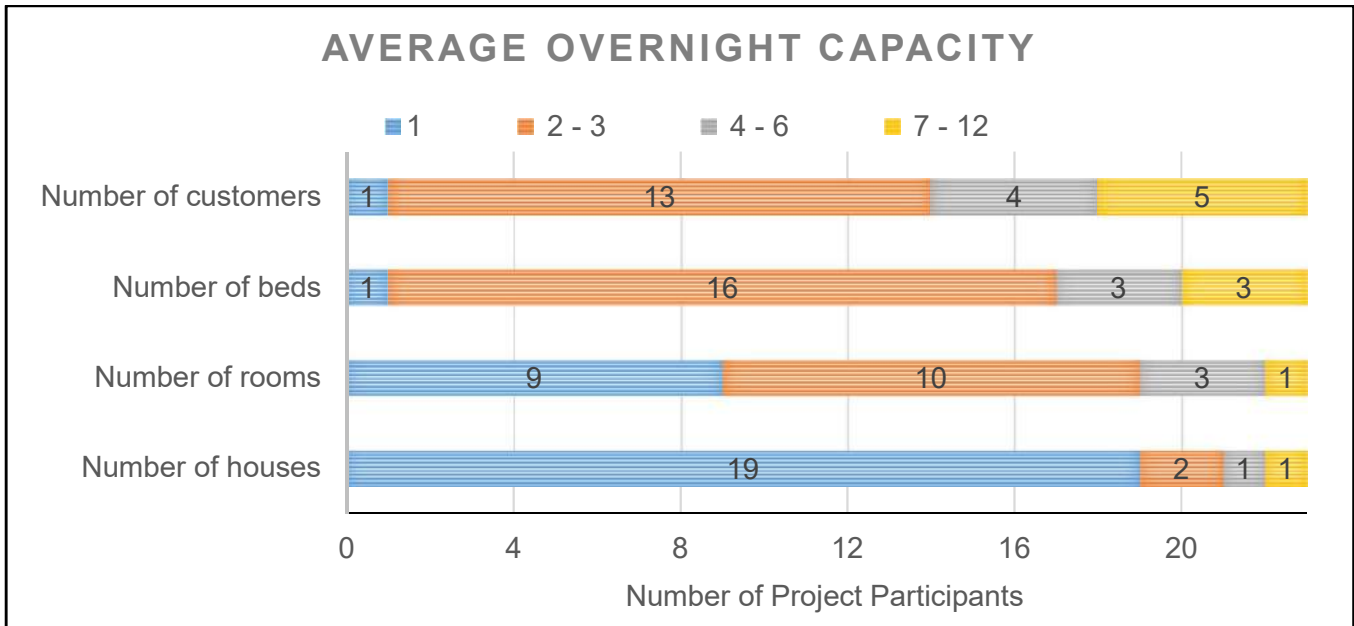
- 78% of project participants (18) have *between 1 – 4 beds*.
- 22% of project participants (5) have *between 6 – 10 beds*.

7b. Number of rooms?

- 39% of project participants (9) have *only 1 room*.
- 43% of project participants (10) have *2 rooms*.
- 17% of project participants (4) have *between 4 – 10 rooms*.

7c. Number of houses / units?

- 82% of project participants (19) have *1 house / unit*.
- 9% of project participants (2) have *2 houses / units*.
- 9% of project participants (2) have *between 3 - 10 houses / units*.

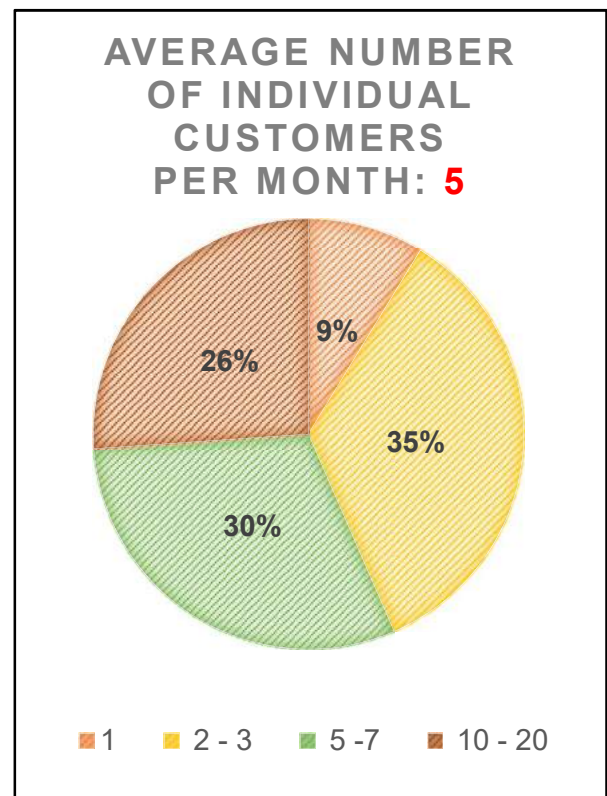
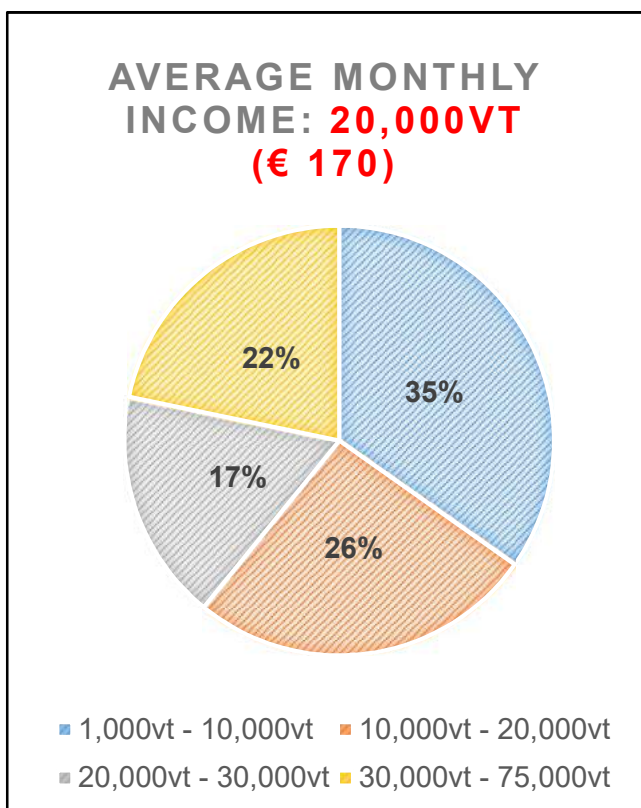


8. What is your average monthly accommodation-related revenue?⁹

- 35% of project participants (8) have an average monthly income *between 1,000vt – 10,000vt*. (€ 8.5 - € 85)
- 26% of project participants (6) have an average monthly income *between 10,000vt – 20,000vt*. (€ 82 - € 170)
- 17% of project participants (4) have an average monthly income *between 20,000vt – 30,000vt*. (€ 170 - € 250)
- 22% of project participants (5) have an average monthly income *between 30,000vt – 75,000vt*. (€ 250 - € 635)

8a. Average number of individual customers per month?

- 43% of project participants (10) have an average *between 1 – 3 customers per month*.
- 30% of project participants (7) have an average *between 5 – 7 customers per month*.
- 26% of project participants (6) have an average *between 10 – 20 customers per month*.



⁹ Does not include sources of irregular income, such as providing tour guides services, snorkeling access, extra meals or charging mobile phones.

8b. Average “room rate” per individual overnight customer?

- Average income per individual overnight customer is 3,391vt, not including miscellaneous income. (€ 29)
- 78% of project participants (18) have an average overnight income of 3,500vt per customer. (€ 30)
- 17% of project participants (4) have an average overnight income between 2,500vt – 3,000vt per customer. (€ 21 - € 26)
- 4% of project participants (1) have an average overnight income of 4,500vt per customer. (€ 39 +)

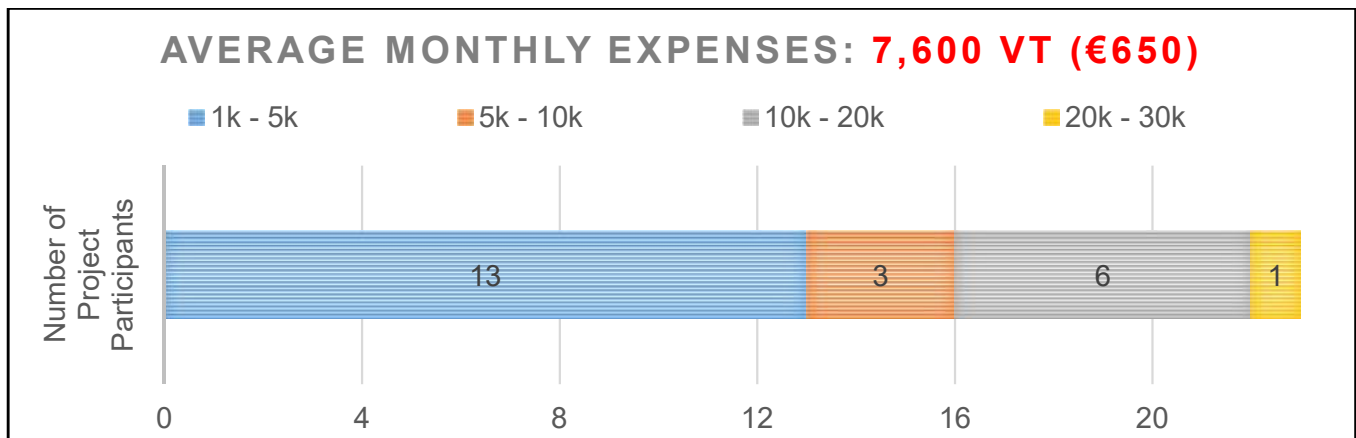
8c. Are meals complimentary for customers?

- 74% of project participants (17) include complimentary meals for customers.
- 22% of project participants (5) include complimentary breakfast only for customers.
- 4% of project participants (1) do not include complimentary meals of any kind for customers.

8d. Other tourism-related revenue?

- 43% of project participants (10) do not offer various services and goods¹⁰ for additional income.
- 30% of project participants (7) offer various services and goods for an additional 1,000vt per customer. (€ 8.5)
- 22% of project participants (5) offer various services and goods for an additional 500vt per customer. (€ 4)

9. What are your average monthly accommodation-related expenses?¹¹



¹⁰ Examples include providing tour guides services, snorkeling access, extra meals or charging mobile phones.

¹¹ Includes multiple sources of expenses, such as providing meals, hiring additional labor, and procuring benzene, batteries and kerosene.

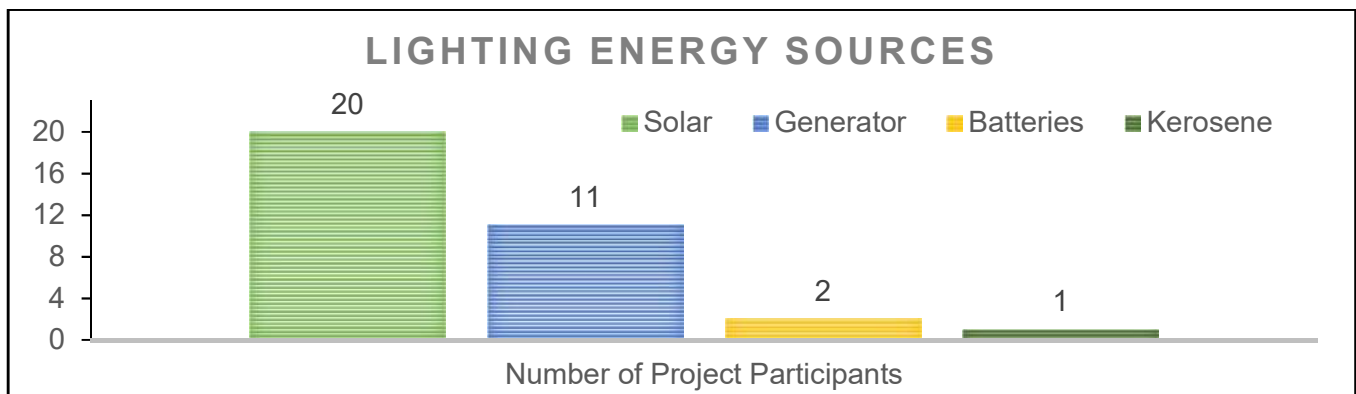
9a. Average cost per individual overnight customer?

- Average cost per customer is 1,118vt (€ 9.5), not including miscellaneous income.
- 48% of project participants (11) have an average cost between 500vt – 1,000vt per overnight customer. (€ 4 – € 8.5)
- 52% of project participants (12) have an average cost 1,000vt – 2,000vt per overnight customer. (€ 8.5 – € 17)

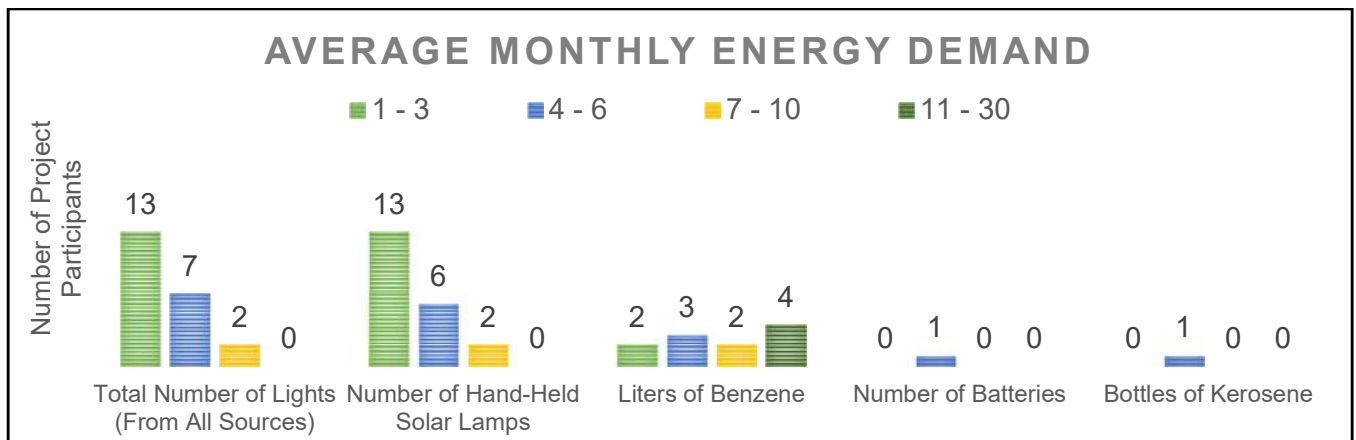
Energy Demands

10. What sources of energy do you currently use for lighting in your bungalow?

- 87% of project participants (20) utilize *solar lighting* (either small solar lamps or home solar systems)
- 48% of project participants (11) utilize a *benzene-powered generator*.
- 9% of project participants (2) utilize *battery-powered lighting*.
- 4% of project participants (1) utilize *kerosene lanterns*.



11. What are your average energy needs per month?

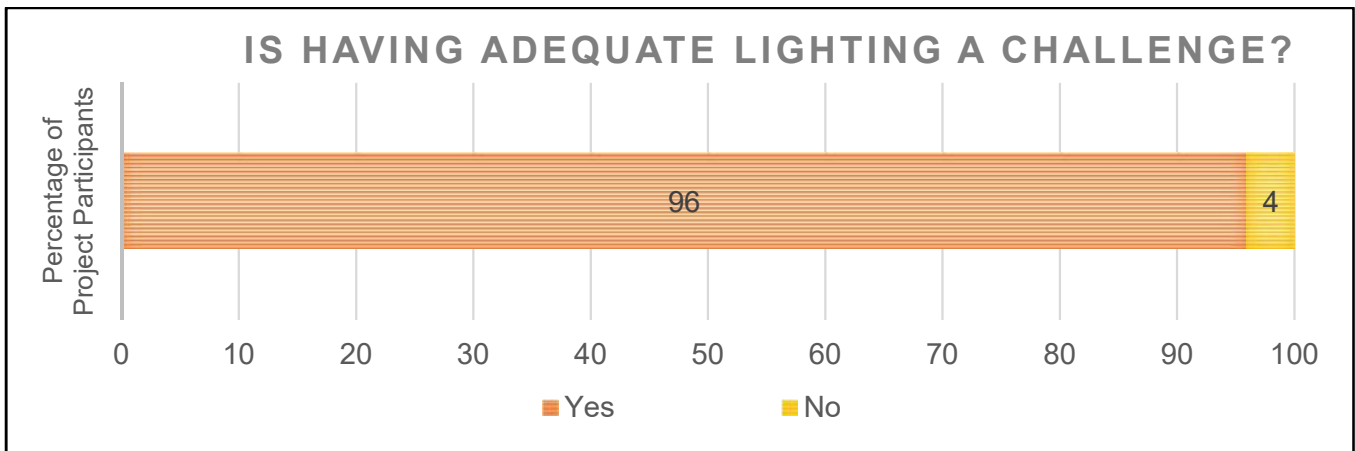


12. Number of hours per night that your lights have power?

- 43% of project participants (10) have *between 2 – 4* hours of lighting available for guests each night.
- 17% of project participants (4) have *between 5 – 6* hours of lighting each night.
- 39% of project participants (9) have *12 or more* hours of lighting each night.

13. Is it a challenge for your business to adequately meet the energy and lighting needs of your guests?

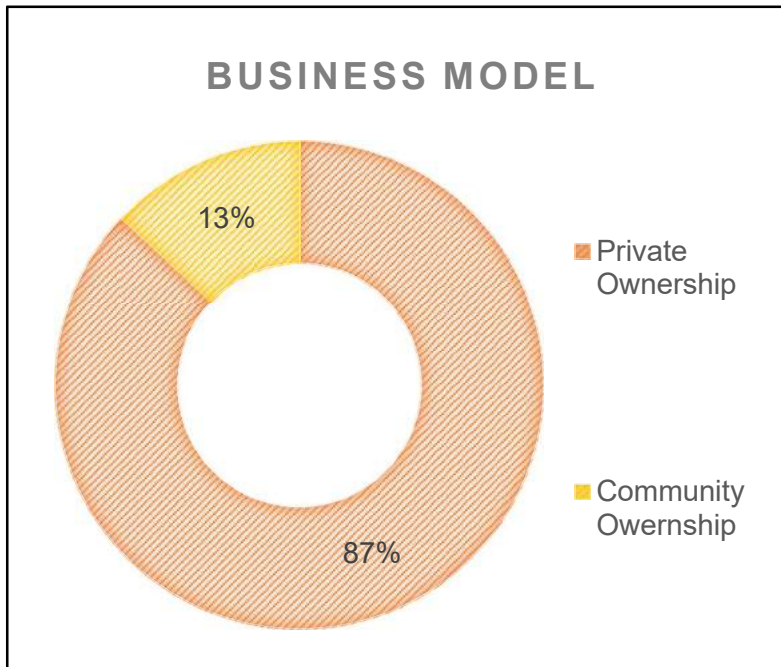
- 96% of project participants (22) state that their current systems are *unable* to meet their energy and lighting needs.
- 4% of project participants (1) state that that their current systems are *able* to meet their energy and lighting needs.



Institutional / Business Model

14. What is your current business model?

- 87% of project participants (20) operate *privately-owned* bungalows/guesthouses.
- 13% of project participants (3) operate *community-owned*¹² bungalows/guesthouses



¹² Governance structure vary between the 3 of 23 project participants operating community-owned bungalows/guesthouses. Nakie Women's Guesthouse is managed by the Nakie Women's Club Committee with 3-year terms for members. Mere Sauwia Village Homestay has 85%/15% revenue-sharing arrangement between the business operator and the community. Lukunamoa (Woranamoa) Bungalow has a 4-member committee with equal male and female membership. Demonstrated benefits between private and community owned businesses depend heavily on the capacity of the operator. For example, community-owned bungalows have a larger capacity to raise capital and provide labor, however are unable to streamline operating decisions as easily as privately-owned bungalows with less stakeholders.

Key Lessons

Stakeholders' Interest

- The main motivating factor for participation in the project was the opportunity to improve service delivery to customers, rather than the subsidized price of solar lighting equipment. This indicates that there is likely a strong demand among rural tourism operators in Vanuatu to improve on the quality of the experience of their guests, and that renewable energy and its services is locally perceived as an important contribution to guest experience. The subsidy was also an important factor in the program, indicating that Vanuatu's rural bungalow owners currently do not have sufficient capital to purchase RE systems at retail prices.
- One-third of project participants did not hold tourism permits with the DoT at the time of implementation. Incentives to apply, such as the fully-subsidized solar fan systems offered to current permit-holders, resulted in several project participants starting their application process. This indicates that while the majority of operators are abiding by the DoT minimum operator standards, there are a substantial number of bungalows unable to overcome barriers to participation such as the expense of renovating facilities or providing adequate lighting.
- The greatest operating challenges facing project participants is the small number and infrequency of customers, as well as ongoing recovery costs associated with Tropical Cyclone Pam in March of 2015. This indicates that improving services alone to customers may not be sufficient to increase tourism economic benefits.

Value for Money

- The majority of project participants cited functionality, rather than price, as the primary guiding metric in having selected a solar lighting system. Specifically, operators were interested in increasing the number and quality of lights in their bungalows.
- All project participants plan on using their energy savings on new construction. A majority also proposed allocating funds towards maintenance and repair work. Nearly all participants agreed on plans for future upscaling. This indicates that energy costs can prohibit expansion or improvement to bungalow facilities, and that relieving this pressure will enable more reinvestment of profits into improved facilities and better service delivery to customers.

Business Review

- Project participants average 20,000vt (€ 170) of revenue and 5 customers per month. When compared with the average unsubsidized cost of the RE lighting systems provided (35,000vt / € 300), there is a *demonstrated need* for a price subsidy to be offered at least until the price of renewable energy equipment declines.
- The majority of project participants are operating revenue-positive, earning more than they spend.
 - The average overnight income per customer is 3,391vt (€ 28) with average overnight expenses of 1,118vt (€ 9), yielding a positive balance of 2,273vt (€ 19).
 - The average monthly income is 20,000vt (€ 170) with average monthly expenses of 7,600vt (€ 65), yielding a positive balance of 12,400vt (€ 105).
 - Given this average monthly surplus, it would take *approximately 3 months* before an operator would be able to afford an unsubsidized RE system if they dedicated all income to this purpose. Comparatively, an operator could afford a subsidized RE system (average price of 14,000vt / €115) in *approximately 1 month*.
- Most operators can accommodate up to 4 guests per night. Facilities normally comprise 1 house, with 1-2 rooms and 1-4 beds. Given that the majority of guests will sleep in 1 house with between 1 -2 rooms, it is recommended that future RE lighting initiatives continue to use 'plug and play' systems which are most efficient for smaller structures with fewer rooms.

Energy Demands

- Nearly 90% of project participants currently use solar lighting, mainly either small solar lamps or larger home solar systems. Less than half utilize gasoline or diesel-powered generators. Very few operators now use battery-powered lights or kerosene lanterns. This indicates that solar is already becoming a commonly accepted source of lighting, but is not yet able to fully meet all operator needs. There is a demonstrated demand for moving away from expensive and unsustainable fossil fuels to renewable technologies.
- A majority of operators do not have the capability to provide robust lighting for an entire evening. Most operators provide customers with small solar hand-held lamps, typically providing between 2 - 6 hours of light per full charge. Operators communicated that insufficient lighting impedes guests' ability to socialize or read at night. Guests have also indicated that strong lighting can lead to greater feelings of safety.
- It is a regular challenge for operators to meet their customers' need for adequate lighting. This is mainly due to the inaccessibility to, expense of and lack of technical knowledge regarding renewable energy lighting sources, as well as the high cost of fossil-fuel alternatives such as generators.

Institutional / Business Model

- The majority of project participants operate privately-owned bungalows / guesthouses, with a handful being operated by a community. Management and revenue-sharing arrangements for community-owned establishments differ from village to village, the majority being overseen by a local committee.
- The few examples of community-operated bungalows demonstrated onerous management arrangements, requiring consensus from a large number of stakeholders before operational decisions may be carried out. However, these bungalows are also able to pool from a large community for financial support, technical capacity and labor when necessary. Rotating committee membership also indicates that a myriad of community leaders will be knowledgeable about the bungalow's operation.
- Private operators communicated having difficulty in raising sufficient capital for repairs and future upscaling, as well as a lack of technical knowledge about managing a small business. Sporadic instances of community disputes and jealousy seemed to interfere with the ability of some operators to effectively manage their bungalow.
- Most operators do not undertake detailed business planning or revenue/expense forecasting. The procurement of relatively expensive items, like solar lighting, is often done only when there is a large and often unexpected increase in tourism revenue (e.g. after a family group departs). It has been observed that business management and savings approaches are not commonly employed by rural tourism operators, leading to a lack of disposable income for upgrades and maintenance of bungalows.
- Tourism Businesses throughout Vanuatu, including in rural and remote areas are required to obtain both a Tourism Permit as well as a Business License before operations commence. The permit process (undertaken annually) provides an opportunity to provide both subsidies for and information on RE to tourism operators in even the most remote parts of Vanuatu. Collaboration with the DoE during the permitting process may provide a window to expand RE among rural tourism operators. During the current permitting process, the DoE is not at all involved or consulted.

Recommendations

These recommendations are intended to feed into the development of a bankable funding proposal for upscaling of renewable energy and energy efficiency access among private tourism operators throughout Vanuatu.

- 1. Scale up** with new initiatives to research, analyze, and develop business models for increasing access to renewable energy and energy efficient models for small-scale tourism operators. Ideally, these initiatives would encourage profits to be reinvested into renewable energy over the long term. These may include:
 - Introduction of a renewable energy “fee” on the top of advertised room rates to help offset the high costs of solar lighting equipment.
 - Introduction of a fossil fuel “fee” to be levied on overnight guests that require use of a generator, helping offset the high costs of benzene as well as discouraging future use.
 - Using a similar business model as under this GIZ pilot, whereby tourism operators outside of the main concession areas that meet particular standards become eligible for 50-60% subsidized RE lighting, charging and fan systems.
 - Provide private bungalows with access to “community-owned” solar lighting equipment, allowing operators to “pay as they go” based on demand whilst lowering costs per bungalow.
 - Construction of “mini-grids” within densely populated areas, using more robust and technically complicated solar lighting systems. This would move away from the piloted model of “plug and play” systems being provided to individual operators, and likely cut overall costs.
- 2. Focus on the accessibility** and affordability of renewable energy and energy efficient lighting systems. Most project participants demonstrated the ability to afford the subsidized price of the solar lighting equipment. However, past a price point of approximately 14,000vt (€ 115), the equipment quickly became unaffordable. This was a strong reason why the energy subsidy was increased from 50% (as under VREP) to 60%. This challenge was evident during installations on the islands of Nguna and Pele when a handful of operators, even with nearly a month of advance notice and regular followup, were unable meet the remaining 40% balance due. The larger challenge communicated by operators was the inaccessibility of such equipment. Specifically, operators stated that similar solar lighting equipment as provided under the pilot is only available at small number of stores in the capital city of Port Vila. Given the high cost of transport from nearby outer islands to Efate (up to 3,000vt / € 25 round trip), it can be a substantial financial burden. Improved outreach on outer islands by private vendors and government partners could help improve access to such technologies. Additionally, increased awareness of energy subsidies available to

tourism operators outside of Vanuatu's main concession areas, such as under this GIZ pilot, would help lower barriers to access.

- 3. Implement an educational awareness campaign** with rural tourism operators focused on advocating the business and environmental advantages of renewable energy and energy efficient lighting systems. This would best be accomplished by working in conjunction with government partners, specifically the Ministry of Education and Training, DoT and DoE. Leaning on the provincial education and tourism offices would likely provide robust field capacity and allow for a more well-targeted message. Inclusivity of large community organizations, including churches and chiefly groups, would greatly improve household penetration. Linking the educational awareness campaign with national bodies addressing climate change may allow for a wider range of partnerships and outreach opportunities. The knowledge management materials¹³ created for this pilot should be utilized as well. Increased demand from within the tourism sector will help motivate the public and private sectors to continue improving their RE goods and services.

- 4. Allow sufficient time for implementation**, including acceptance that there will inevitably be delays throughout the supply chain management timeline. It can take bungalow owners months to compile the capital necessary to procure even a subsidized renewable energy system, as cash is largely not on hand. Due to Vanuatu's remote location, local solar lighting suppliers must rely on lengthy international shipments, often arriving by freight ship and prone to delays due to inclement weather. Furthermore, once arriving in the capital city of Port Vila, arrangements for equipment to be transported and installed on multiple outer islands is time consuming and expensive. It would be advisable to have the cost of transport for installations to be included into the overall cost of the RE systems, thereby placing the onus on suppliers rather than implementing partners or customers.

- 5. Increase visibility** of small-scale operators with improved marketing / branding, ideally with support and facilitation from provincial Tourism offices. Introduction of an "eco-accreditation" may be an effective way to increase interest of guests and support for operators. This could be facilitated by the DoE during the DoT's annual operator permitting process. International trends¹³ in tourism indicate a majority of tourists prefer "eco-friendly" accommodations and activities, impacting their choice of service providers. Increasing the average number of customers would allow for revenue growth, leading to increased accessibility and affordability of renewable energy and energy efficient systems. As communicated by the majority of project participants, their largest business challenge is the small number and infrequency of customers. Citing difficulty to properly plan and budget for groups due to the last-minute nature of bookings, many participants are left with higher

¹³ See annex documents, page 26: Educational/Awareness Poster

costs as food and supplies are often collected in Port Vila, a trip that can be prohibitively expensive.

- 6. Government should spearhead efforts** to increase the increased presence of renewable energy and energy efficiency lighting models within the private tourism sector. This GIZ-supported initiative has proven that collaboration among the private sector, development partners and Government, namely DoT and DoE, can lead to socially inclusive and replicable models for sustainable economic development. The wealth of knowledge and hands-on experience between these two Government entities is unmatched and should be utilized to the fullest extent possible for further scaling up. This pilot is the first of its kind, and generated strong motivation within these sectors to continue and strengthen collaboration. Private bungalow owners from other areas heard of this GIZ pilot and requested support in the near future. DoT could provide detailed information on which off-grid operators should be prioritized, given their depth of knowledge and experience working with individual bungalows throughout Vanuatu.
 - DoE would be able to leverage their strong relationships with vendors and suppliers to ensure RE lighting systems are of the best possible quality and price, and those systems that most appropriately match the needs of guests in rural areas.
 - Development partners, such as GIZ, would be well placed to contribute donor funds towards the subsidies required to expand access to RE as per the VERM.
- 7. Facilitate trainings** on business planning and financial management. Increasing operators' understanding of healthy business practices will reduce costly inefficiencies and allow for more-informed operational decisions. Furthermore, operators capable of producing a cost-benefit analysis on the medium to long-term cost saving considerations of renewable energy will better understand the economic incentives.
- 8. Maintain price subsidies between 50% - 60%**, as project participants responded very positively to this range. Given the previously discussed price point of 14,000vt (€ 115) per unit, staying within this subsidy range will ensure a greater number of future beneficiaries. Additionally, project participants under both VREP and the GIZ-support pilot projects have demonstrated the ability to pay the remaining balance due on solar lighting equipment. As solar panel technology continues to become cheaper and more of the world's electricity comes from solar¹⁴, the need for energy subsidies will likely decline in the near future, lessening the reliance on donor inputs.

¹³ TripAdvisor. 2012. "TripAdvisor Survey Reveals Travelers Growing Greener." press release. April 19, 2012. <http://www.multivu.com/mnr/49260-tripadvisor-eco-friendly-travel-survey-voluntourism-go-green>

¹⁴ United States Department of Energy. https://emp.lbl.gov/sites/all/files/lbnl-1000917_0.pdf

List of Participants

Nguna Island

BUNGALOW / GUESTHOUSE	VILLAGE	OWNER / OPERATOR
Uduna Cove Beach Bungalows	Taloa	Emma Sisi
Mangamus Bungalow	Taloa	Joel Kal
Nakie Women's Guesthouse	Taloa	Susan Sisi
Island Breeze Bungalow	Taloa	Loren John
Jupoi	Taloa	Susan Sisi Solomon Sisi
Paunvina Guesthouse	Unakapu	Lay Bakwa John K.
Mere Sauwia Village Homestay	Mere Sauwia	Taman Onesmas

Pele Island

BUNGALOW / GUESTHOUSE	VILLAGE	OWNER / OPERATOR
Sunset Frangipani Bungalow	Worearu	Enock Takaus
Simoa Bungalow	Worearu	Mark Song
Bella Bungalow	Worearu	George Kalsong
Sunrise Bungalow	Launamoa	Tarisu Zeth Syndia Sanieel
Lillie's Guesthouse (Nagisu)	Piliura	Lilie Kalnagis Willie Kalnagis
Lukunamoa Bungalow (Woranamoa)	Launamoa	James Jeffrey
Sandy's Rest House	Launamoa	John Alfred
Vanmarua Bungalow (Tarip's)	Launamoa	Tarip Thomas S.
JJ Bungalow	Worearu	Margaret Kalo John Roy
Jowi Bungalow	Worearu	David Samuel
Sena Papa Bungalow	Worearu	Frank Kalkaua
Serety Sunset Bungalow	Piliura	Charlie Manua Seborah Manua
Napanga Bungalow	Worasivu	Kenneth Talang

Emae Island

BUNGALOW / GUESTHOUSE	VILLAGE	OWNER / OPERATOR
Nampauwia Guesthouse	Finonge	Jamie Willie
Emae Sunset Bungalow	Marae	Jimmy Kalo
Jaytee Homestay	Sangafa	Tom Peter
Chief Barry Obed	Sesaka	Barry Obed
Freshwind Guesthouse		Willie Kalo
Mango Guesthouse		Masamouri Tom Roy

(North) Efate Island

BUNGALOW / GUESTHOUSE	VILLAGE	OWNER / OPERATOR
Raymond's Bay View	Emua	Doroline Tony
Nicky's Homestay	Emua	Phebbie Frank
Sunset Guesthouse	Emua	Louisa Obed



Bungalow Operator Agreement

Taem we mi putum nem blong mi long agreement ia, mi agri blong participate long wan renewable energy project blong GIZ wetem Department blong Energy (DOE) mo Department blong Tourism (DOT).

Mi understandem se wan bigfala part blong project ia, hemi blong kiv han long wan study mo research blong GIZ.

Mi agri blong:

- pem ol subsidized price long ol vendor we mi bin agri long hem
- filemaot ol difren kaen form blong ol vendor (olsem, Customer Declaration Form) we olgeta oli askem long mi
- givim infomesem long saed blong business income blong mi long GIZ
- allowem eni gavman or GIZ officer blong kam lukluk bungalow blong mi, jekem ol equipment mo storian long saed blong ol efekt blong project ia

Nem: _____ **Signature:** _____ **Date:** _____

Bungalow: _____ **Village/Island:** _____ **Mobile:** _____

Rapid Assessment Methodology

Stakeholder's Interest

1. Why do you want to participate in the renewable energy pilot?
2. Does your bungalow or guesthouse currently have a tourism permit?
 - a. If no, are you in the process of obtaining one?
3. What challenges does your business face?

Value for Money

4. What criteria did you use to select a solar lighting package?
 - a. Ex: functionality, price, etc.
5. What will you do with the cost savings resulting from the use of renewable energy?
6. Do you have plans for future upscaling?

Business Revenue

7. What is your maximum overnight capacity?
 - a. Number of beds?
 - b. Number of rooms?
 - c. Number of houses / units?
8. What is your average monthly accommodation-related revenue?
 - a. Average number of individual customers per month?
 - b. Average "room rate" per individual overnight customer?
 - c. Are meals complimentary for customers?
 - d. Other tourism-related revenue?
 - i. Ex: services - meals, mobile phone charging, freezer/refrigerator, etc.
 - ii. Ex: activities - snorkeling, surfing, walking/hiking, etc.
9. What are your average monthly accommodation-related expenses?
 - a. Average cost per individual overnight customer?
 - i. Ex: meals, labor, energy, etc.

Energy Demands

10. What sources of energy do you currently use for lighting in your bungalow?
 - a. Ex: solar, generator, kerosene, batteries, etc.
11. What are your average energy needs per month?
 - a. Total number of lights (from all sources)?
 - b. Number of hand-held solar lamps?
 - c. Liters of benzene per month?
 - d. Number of batteries per month?
 - e. Bottles of kerosene per month?
12. What are your lightning needs per day?
 - a. Number of hours per night that lights have power?
13. Is it a challenge for your business to adequately meet the energy and lighting needs of your guests?

Institutional/Business Model

14. What is your current business model?
 - a. Ex: community ownership, private ownership, revenue and cost-sharing arrangements?



Vanuatu Department of Energy



The Government of Vanuatu



Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



Vanuatu Department of Tourism

**Piloting Subsidized Renewable Energy Lighting Models
within Rural Private Tourism Sector Bungalow Owners as a Catalyst for
Sustainable Economic Development in Vanuatu**

Date: Tuesday 23 August, 2016

NGUNA ISLAND, VANUATU

AGENDA

TIME	EVENTS
10:00 AM	Opening Pray – Community Representative
10:05 AM	GIZ – Overview talk on Vanuatu RE & Tourism Project
10:15 AM	DoT- Importance of Lighting within Tourism Bungalow operations
10:25 AM	DoE- Importance of Renewable Energy and Environment & VREP and Renewable Energy options for households
10:35 AM	Etech and PCS – Systems Explanation & Handover
11:00 AM	Launching of RE Poster
11:15 AM	General Public Feedbacks
11:30 AM	Refreshment

Sipos **yu gat** renewable eneji...

Sipos **yu no gat** renewable eneji...



USUM RENEWABLE ENEJI LONG TURISM BLONG YU!

YU SAVE SAVEM BIGFALA MONI BLONG YU

Spos yu usum wan renewable energy sos, olsem sola powa, bambae yu pem sam equipment nomo. From se yu no nid blong pem eni benzene o petrol evri taem blong usum, yu save savem bigfala moni. I minim se, yu save putum savings blong yu iko bak long han blong yu.

YU SAVE LUKAOTEM GUD ENVRIONMENT BLONG YUMI EVRIWAN

Ol non-renewable energy sos, olsem benzene, petrol, mazut o diesel, oli save kilim ded environment mo planet blong yumi. Taem we yumi ol man i usum ol kaen energy ia, helt blong wota, air mo graon blong yumi i stap godaon. Pollution we i kamaot long energy ia i no gud stret.

YU SAVE BUILDEMAP OL SERVICES BLONG YU LONG OL CUSTOMER

Ol non-renewable energy Wetem renewable energy, olsem wan sola powa system, yu save bildemap ol difren services blong bisnes blong yu. I minim se, bambae ol customer i gat gudfala lite, save chargem wan mobile phone o usum wan smol fan.

YU SAVE KIV HAN BLONG ADAPTATION LONG CLIMATE JENJ

Taem we yumi usum eni kaen renewable energy, olsem sola powa, yumi stap kiv han blong fitem ol efekt blong climate jenj. Spos yumi usum wan non-renewable energy sos, olsem benzene o petrol long wan generator, ol rubbish gas blong hem bambae i spoilem climate blong yumi.

Thanks to:



Vanuatu Department of Energy



The Government of Vanuatu



Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



Vanuatu Department of Tourism

Vanuatu Rural Electrification Program

PLUG AND PLAY SOLAR HOME SYSTEMS



GENERAL PROGRAM INFORMATION

1 Who Is Eligible to purchase a product for 50% subsidy?

The program is available to:

- ★ Households
- ★ Aid Posts
- ★ Community Halls

located in Villages outside of the four electricity concession areas of Port Vila Efate , Luganville Santo, Lenakel Tanna and Lakatoro Malekula

2 What do I do to buy a product?

- ★ Select the product or products you think will suit your requirements and budget.
- ★ Contact the Vendors/Seller selling those products at the nearest distribution point to your location.
- ★ Only products listed in this catalogue are eligible for the 50% subsidy
- ★ It is recommended that you do obtain prices for similar products from the different vendors

3 What happens when I buy a product?

- ★ You will only pay 50% of the price.
- ★ The receipt will show the full price and the price you paid.
- ★ The seller must explain to you:
 - how to install the system,
 - the warranty information,
 - what to do if there is a problem,
 - how to safely dispose of the battery when purchasing a new one
- ★ You must sign the receipt and a declaration form that the above has been explained.
- ★ You will provide the following information to the Vendor:
 - Name of beneficiary;
 - Name of head of household;
 - Name of aid post or community hall; (if relevant)
 - Village and Island name and any other relevant details for locating the household, aid post or community hall; and
 - Contact details-(preferably a mobile phone number)
- ★ In the weeks after purchasing the system you might be contacted by an Independent Verification Agent whose role it is to verify that the vendor has made the sale when they are applying for their subsidy.

4 What happens if you have a problem?

- ★ You must contact the Vendor/Seller and explain to them what is the problem.
- ★ They will ask you some questions to gain a full understanding of the problem.
- ★ The products are covered by warranty and therefore if a product has failed it should be replaced in warranty period.
- ★ If you get no satisfaction with Vendor/Seller after a reasonable period than contact

Program Manager, Department of Energy

📍 PMB 9067 Port Vila

☎ Tel: +678 33425





✉ Email: vrep@vanuatu.gov.vu

WHAT CAN THE PRODUCTS PROVIDE?

PV Module Size	Phone Charging	How many Lights	Hours of Operation per day						What Other Appliances					Price Range	
			Light 1	Light 2	Light 3	Light 4	Light 5	Light 6	Radio	Hrs	Laptop Charging	Hrs	TV		Hrs
<10 Watts	☑	3 💡💡💡	5	5	5				N/A		N/A		N/A		19,990 VUV (Sun King Home SK-403)
	☑	3 💡💡💡	6	6	6				N/A		N/A		N/A		23,330 VUV (Sun King Home Plus SK-404)
	☑	4 💡💡💡💡	6	6	6	6			1	5	N/A		N/A		23,500 VUV (Omnivoltaic HS1-36_LB1122)
10-19 Watts	☑	3 💡💡💡	6	6	6				N/A		N/A		N/A		39,100 VUV (Fosera LSH9800)
20 to 30 Watts	☑	4 💡💡💡💡	9	9	9	9			N/A		N/A		N/A		46,000 VUV (Omnivoltaic HS1-72_LB2222)
	☑	4 💡💡💡💡	9	9	9	9			N/A		N/A		N/A		46,500 VUV (Omnivoltaic HS1-108_LB2244)






PRODUCT SPECIFICATIONS

Greenlight Planet Sun King Home SK-403

-  **5-10 Watts**
-  **3 Lights**
-  **2 Mobile charging points**
-  **Available from PCS Limited**








Greenlight Planet Sun King Home Plus SK-404

-  **5-10 Watts**
-  **3 Lights** +  **1 Torch**
-  **2 Mobile charging points**
-  **Available from PCS Limited**







Omnivoltaic HS1-36_LB1122

-  **5-10 Watts**
-  **4 Lights** +  **1 Torch**
-  **2 Mobile charging points**
-  **Available from eTech Vanuatu**








Fosera LSHS 9800 Expert Lighting Edition

-  **11-20 Watts**
-  **3 Lights**
-  **2 Mobile charging points**
-  **Available from PCS Limited**








Omnivoltaic HS1-72_LB2222

-  **11-20 Watts**
-  **4 Lights** +  **1 Torch**
-  **2 Mobile charging points**
-  **Available from eTech Vanuatu**



Omnivoltaic HS1-108_LB2244

-  **21-30 Watts**
-  **4 Lights** +  **1 Torch**
-  **2 Mobile charging points**
-  **Available from eTech Vanuatu**



VENDORS

Vendor	Contact	Other Outlets
eTech Limited	Sashi Singh PO Box 694 Level 1, La Rock Terrasse Building, Lini Highway Port Vila, Vanuatu Office: 26933 / 23800 Mobile: 7446933 Email: sashi_singh@etech.com.vu	Level 1, VNFP Building Main Street Luganvile, Santo, Vanuatu Office: 36977 Mobile: 7446933 Email: sashi_singh@etech.com.vu
PCS Limited	Sallyann Tanabose PO Box 3553 Kumul Highway Port Vila, Vanuatu Office: 25945 Mobile: 5573812 Email: info@pcspacific.com	