Scientific and Technical Advisory Panel

The Scientific and Technical Advisory Panel, administered by UNEP, advises the Global Environment Facility
(Version 5)

STAP Scientific and Technical screening of the Project Identification Form (PIF)

Date of screening:	November 06, 2017
Screener:	Sunday Leonard
Panel member validation by:	Ralph E. Sims
Consultant(s):	

I. PIF Information *(Copied from the PIF)*

FULL-SIZED PROJECT	**GEF TRUST FUND**
GEF PROJECT ID:	9752
PROJECT DURATION:	4
COUNTRIES:	Niue
PROJECT TITLE:	Accelerating Renewable Energy and Energy Efficiency Applications in Niue (AREAN)
GEF AGENCIES:	UNDP
OTHER EXECUTING PARTNERS:	Department of Utilities, Ministry of Infrastructure
GEF FOCAL AREA:	Climate Change

II. STAP Advisory Response *(see table below for explanation)*

Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies):
Minor issues to be considered during project design

III. Further guidance from STAP

1. To meet Niue's targets for energy access, sustainable energy, and green growth, there is a need for greater support for small-scale energy efficiency (EE) and renewable energy (RE) projects with regard to policy planning, capacity building, financing mechanisms and improved awareness by communities. This project aims to create an enabling environment for meeting these needs.

2. A range of project investments totaling around USD 16.6 M has already been made under the baseline. To meet Niue's target of 80% renewable electricity by 2025 (currently a 2% share in spite of these previous investments), the project aims to overcome a range of institutional, financial and technical barriers and to create greater awareness of the potential for RE and overcome the present lack of confidence in the technologies.

3. Of the 2MW installed generation capacity that exists in Niue, only around half is currently utilized. Of the 343 kWp solar PV installed, only 80 kWp is operational due to grid instability in spite of 150 kW of battery storage. This problem has been well analyzed (see for example http://www.utas.edu.au/__data/assets/pdf_file/0005/778613/IPS-Connect-2015-Geoff-Stapleton.pdf and https://mro.massey.ac.nz/bitstream/handle/10179/6909/01_front.pdf;sequence=1. (It seems the data quoted has come from a 2014 Massey University research Engineering Masters study by Warren Crawley, but this is not acknowledged.)

4. One of the technical barriers is the issue of grid instability when RE-based systems are integrated into the existing power grid. However, the specific reasons for this issue have not yet been identified. This lack of successful RE-grid integration exemplifies the need for skilled personnel to design RE systems and for capacity building to become a key part of any RE project developments. Hence, adequate resources need to be devoted to building the capacity necessary for identifying the cause of the problem, implementing the solutions, and for continuous maintenance of the RE and grid systems.

5. It was stated in the first paragraph of page 8 that "actions to address this typical problem in island grids with connected RE-based power generation units are currently being studied and planned". More information about this would be useful. Does the study relate directly to the Niue situation or more generally? Who is undertaking the study? How is it being funded? Who will be undertaking the assessment of the problem? Do those undertaking the study have appropriate skills in power engineering to solve the grid integration and reliability problems? This information will be important for determining the appropriate activities that will guarantee the success of this project.

6. 110kt CO2-eq are calculated to be avoided (around 2kt during the 3-year project period with continuing saving for 25 years) due to CO2 emission reductions through the displacement of diesel generation with the renewable electricity systems. Additional savings can result from transport and heat energy applications when fossil fuels are also displaced. Diesel engines, including used for stationary power generators, are important sources of black carbon (see, for example, Evans et al., 2015: https://www.atmos-chem-phys.net/15/8349/2015/acp-15-8349-2015.pdf; WHO: http://www.who.int/sustainable-development/cities/health-risks/climate-risks/en/; and Chow et al., 2006: https://www.arb.ca.gov/research/apr/past/04-307_v1.pdf). Hence, the successful implementation of this project would also help avoid black carbon emissions with consequent climate and health benefits.

7. The population of Niue has declined from over 5,000 in 1970 to around 1,600 today (https://www.livepopulation.com/country/niue.html). The total budget for the project of USD 19.72 M equates to a cost of around USD 180 / t CO2-eq avoided and an investment of over USD 12,000 per capita. The social co-benefits will help offset these relatively high investment costs that are over and above the USD 16 M that has already been invested in RE and EE projects on the Island.

8. Given the significantly large per capita cost of this project, as well as the substantial previous investments, it is important that the actions to be taken to overcome the identified barriers are identified and strategically implemented to guarantee success.

The project proponent should address the issues raised above as outlined in the follow-up action section of this review.

STAP advisory response	*Brief explanation of advisory response and action proposed*
1. Concur	In cases where STAP is satisfied with the scientific and technical quality of the proposal, a simple "Concur" response will be provided; the STAP may flag specific issues that should be pursued rigorously as the proposal is developed into a full project document. At any time during the development of the project, the proponent is invited to approach STAP to consult on the design prior to submission for CEO endorsement.
2. Minor issues to be considered during project design	STAP has identified specific scientific /technical suggestions or opportunities that should be discussed with the project proponent as early as possible during development of the project brief. The proponent may wish to: (i) Open a dialogue with STAP regarding the technical and/or scientific issues raised. (ii) Set a review point at an early stage during project development, and possibly agreeing to terms of reference for an independent expert to be appointed to conduct this review. The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.
3. Major issues to be considered during project design	STAP proposes significant improvements or has concerns on the grounds of specified major scientific/technical methodological issues, barriers, or omissions in the project concept. If STAP provides this advisory response, a full explanation would also be provided. The proponent is strongly encouraged to: (i) Open a dialogue with STAP regarding the technical and/or scientific issues raised; (ii) Set a review point at an early stage during project development including an independent expert as required. The GEF Secretariat may, based on this screening outcome, delay the proposal and refer the proposal

	back to the proponents with STAP's concerns. The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.