



GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL-SIZED PROJECT
TYPE OF TRUST FUND: GEF TRUST FUND

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PART I: PROJECT INFORMATION

Project Title:	Supporting Mainstreamed Achievement of Roadmap Targets on Energy in Nauru (SMARTEN)		
Country(ies):	Nauru	GEF Project ID: ¹	9974
GEF Agency(ies):	United Nations Development Programme	GEF Agency Project ID:	PIMS 6188
Other Executing Partner(s):	Department of Commerce, Industry and Environment (DCIE)	Submission Date:	28 Dec 2017
		Resubmission Date:	29 Jan 2018
		Resubmission Date:	28 March 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 (\$)	313,782

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CCM-1; Program 1	GEFTF	3,302,968	13,354,400
Total Project Cost		3,302,968	13,354,400

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: Enabling the increased applications of feasible renewable energy and energy efficiency technologies for supporting socio-economic development in Nauru in accord with the country's energy roadmap targets.						
Project Components	Financing Type ³	Project Outcomes	Project Outputs	Trust Fund	(in US\$)	
					GEF Project Financing	Co-financing
1. Energy Policy & Regulatory Framework Strengthening	TA	Enforcement of approved policies and rules and regulations on the widespread application of cost-effective RE and EE technologies for energy production and use.	1.1. Formulated and approved standards, policies and implementing rules and regulations (IRRs) on the application of RE & EE technologies in the energy and energy end use sectors. 1.2. Enforced policies on the promotion and support for the implementation of action plans to achieve the RE and EE targets of the updated Nauru Energy Road Map (NERM). 1.3. Revised and updated National Energy Policy Framework (NEPF), inclusive of updated national energy balance and action plans. 1.4. Completed energy-integrated development planning at the national level.	GEFTF	78,684	100,000
2. Supporting	TA	Improved	2.1. Established and operational	GEFTF	157,200	350,000

¹ Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.

² When completing Table A, refer to the excerpts on [GEF 6 Results Frameworks for GETF, LDCF and SCCF](#) and [CBIT guidelines](#).

³ Financing type can be either investment or technical assistance.

RE & EE Initiatives		institutional and financial mechanisms in the integrated planning and implementation of RE & EE technologies for energy generation and utilization.	institutional framework that supports the implementation of low carbon (EE & RE) development policies, standards and IRRs 2.2. Completed study of the feasible financial support schemes for RE & EE technologies application projects in the energy end-use sectors, inclusive of the implementation arrangements, and procedures for financial assistance application process. 2.3. Completed study on the derisking of RE-based power generation and grid stability initiatives of the state utility, and grid-connected or decentralized RE-based energy generation at the district level, inclusive of business plans based on the derisking study for the GON and private sector to facilitate financing and implementation of feasible RE and EE technologies applications ⁴ 2.4. Approved and implemented energy-integrated development projects in the end-use sectors including the mining industry and the regional processing centers.			
3. Promotion of RE & EE Technologies Applications	TA	Improved confidence in, and application of, RE & EE technologies.	3.1.1. Completed feasibility analyses of RE and EE technologies applications in the energy generation and energy end-use sectors in Nauru. 3.1.2. Documented and disseminated reports about the energy performance and impact assessments of implemented demonstrations. 3.1.3. Approved implementation plans and project designs for the replication and/or scale up of demonstrated RE & EE technologies applications.	GEFTF	236,000	1,800,000
	Inv		3.2.1. Completed engineering designs and implementation plans of the identified demonstrations of RE & EE technologies applications in the energy generation and end-use sectors. 3.2.2. Implemented and operational RE & EE technologies application demonstrations.	GEFTF	2,516,500	10,200,000
4. Improvement of Energy Sector Capacity	TA	Improved awareness and capacity of the government, private sector	4.1. Completed capacity development program for government officials and authorities, and the private sector on energy-integrated development planning, including RE and EE	GEFTF	157,300	596,200

⁴ Among those that may be considered include: district level decentralized RE-based power generation financed and commercially operated by a private sector entity; Community-owned and operated non-power applications of renewable energy (productive and social uses); and, GON-funded financing schemes for low income households in the purchase of EE appliances and solar home systems.

		and communities about the cost-effective application of RE and EE technologies and practices.	technology applications. 4.2. Established and operational information sharing system for the promotion and dissemination of knowledge on all aspects of sustainable energy and low carbon development. 4.3. Established and operationalized energy supply and consumption monitoring and reporting and database system. 4.4. Continuing program on the promotion and awareness enhancement on integrated sustainable energy development for Nauruans.			
			Subtotal		3,145,684	13,046,200
			Project Management Cost (PMC) ⁵		157,284	308,200
			Total Project Cost		3,302,968	13,354,400

B. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
Recipient Government	Department of Commerce, Industry and Environment (DCIE)	Grant	300,960
		In-kind	33,440
Recipient Government	Nauru Utilities Corporation (NUC)	Grant	12,920,000
Private Sector	Private companies and entrepreneurs ⁶	Grant	TBD
GEF Agency	United Nations Development Programme	Grant	100,000
Total Co-financing			13,354,400

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS ^{a)}

GEF Agency	Trust Fund	Country/Regional/Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee (b) ^{b)}	Total (c)=a+b
UNDP	GEFTF	Nauru	Climate Change		3,302,968	313,782	3,616,750
Total GEF Resources					3,302,968	313,782	3,616,750

a) Refer to the [Fee Policy for GEF Partner Agencies](#).

E. PROJECT PREPARATION GRANT (PPG)⁷

Is Project Preparation Grant requested? Yes No If no, skip item E.

⁵ 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 below.

⁶ This includes RONPHOS, as well as interested private entrepreneurs engaged in the fisheries industry, engineering and trading firms and potential ESCOs.

⁷ PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to \$50k for PF up to \$1 mil; \$100k for PF up to \$3 mil; \$150k for PF up to \$6 mil; \$200k for PF up to \$10 mil; and \$300k for PF above \$10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country/ Regional/Global ^{a/}	Programming of Funds	(in \$)		
				PPG (a)	Agency Fee ⁸ (b)	Total c = a + b
UNDP	GEFTF	Nauru	Climate Change	150,000	14,250	164,250
Total PPG Amount				150,000	14,250	164,250

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS⁹

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 _{2e} mitigated	1.029 million tons CO ₂ reduced (direct & indirect)*

*This is a conservative estimate of the potential lifetime direct and consequential GHG emission reductions from increasing the RE electricity production in the country up to 50%.

PART II: PROJECT JUSTIFICATION

1. Project Description.

1.1. Global environmental problems, root causes and barriers that need to be addressed

Nauru is the smallest state in the South Pacific and second smallest state by population in the world. It has a population of approximately 10,000 people and a land area of 21 km². The rate of population growth has been low (0.58%) in recent decades. The economy of the country is mainly from phosphate production (by RONPHOS), which currently continues to decline as primary phosphate becomes more difficult to find and secondary phosphate takes an increasing share of production. Currently, the country's economy is boosted by the operation of the Australian regional processing center (RPC) for asylum seekers. The RPC is a major economic boost to Nauru for the country providing substantial benefits to Nauru in terms of more jobs. Government expenditure has grown considerably in recent years due to large increases in RPC-related revenues and, to a lesser extent, strong growth in fisheries license revenues.

Although the small country of Nauru contributes very low levels of CO_{2e} emissions (0.0002 % of global emissions in 2014), it endeavors to play its part in addressing the threat of global warming. This is despite being saddled by serious economic challenges. The local infrastructure, including power generation, drinking water and health services, have been adversely affected in recent years by the decline in income from the once thriving phosphate industry, which is Nauru's major lifeline revenue source. With fewer prospects in the phosphate industry, and with its limited natural resources, Nauru must find other alternative revenue sources to support its economic development, while meeting also its commitment to mitigating climate change.

Nauru is dependent on imports for almost everything that are consumed in the country. Among these imports is fossil fuel, which is required in supporting the country's economy, as well as the livelihoods, health and well-being of its citizens. Bulk of the country's GHG emissions are from the consumption of

⁸ PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

⁹ 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.

fossil fuel in power generation and transport. Through the optimal use of its indigenous renewable energy resource (mainly solar energy) and implementing energy efficiency measures, the country will be able to reduce fossil fuel consumption in electricity generation. The efficient use of electricity in the end-use sectors will also contribute to the reduction in electricity demand and consequently reduce fossil fuel imports. However, with the dwindling income from its phosphate mining industry, it would be tough for this small developing country to fully and expeditiously meet these actions. It is also facing development challenges such as in the diversification of its economic activities beyond reliance on phosphate mining, foreign aid, and revenues from fishing licenses. It is uncertain how long the RPC will operate. Because of this, the country cannot be expected to mitigate out of its own resources and would need international assistance. The increased operations of the RPC, while contributing much needed income to the country, also increased the demand for fossil fuels for the operation of their diesel power generation units and transport vehicles. This translates to increased GHG emissions from these additional energy demands.

The National Sustainable Development Strategy 2005-2025 (NSDS) outlines Nauru's long-term vision, message and goals. The NSDS is currently being updated, and the relevant information in the updated version will be considered in the detailed design of the project. A future where individual, community, business and government partnerships contribute to a sustainable quality of life for all Nauruans is the overall vision of the NSDS. This also outlines Nauru's energy vision - *Provide a reliable, affordable, secure and sustainable energy supply to meet the socio-economic development needs of Nauru.* The energy sector in Nauru has been supported by development partners, particularly in electricity generation and supply. Among these are: (a) The Governments of Australia, New Zealand and United Arab Emirates through provision of capital infusions for Nauru Utilities Corporation's (NUC) power and water-supply operations; and (b) European Union through contributions to NUC's capital stock in distribution network improvements.

The state-owned NUC owns and operates the country's power generation and distribution system. It also operates (water desalination) and supply water for the entire country, and previously manages the procurement, storage, and distribution of imported petroleum fuels¹⁰. NUC's current diesel power generation units are unreliable and inefficient. Most of the older large units are operating far below design capacity, and are near the end of their useful lives. While the country is practically 100% electrified, there is still room for improving the electricity supply service reliability¹¹. Although Nauru has established ambitious targets for renewable energy-based power generation, it remains reliant on diesel generator sets for its baseload and for system stability and reliability.

Currently, the average efficiency of the existing diesel power generation in NUC is a low 3.48 kWh/lit DFO. NUC expects this to improve in 2018 to 4.1 kWh/lit DFO with the commissioning in November 2017 of two new 2.8 MW MAN medium-speed gensets funded by ADB and AusAID. Peak load is currently 5.2 MW and annual electricity generation is around 33 GWh. A new transmission line connecting the RPCs and RONPHOS is expected to increase the peak load by 4.5 MW. Based on the electricity demand forecast of the NUC, the annual load is expected to grow to 50 GWh by 2020. NUC estimates that in 2017, electricity losses are around 26%, mainly due to meter bypass; meter reading error; and, unmetered load. New power tariffs (per kWh) of AUD 0.25 (residential), AUD 0.50 (commercial), and AUD 0.70 (industrial) are now in effect and these have improved NUC's cost recovery. But the utility still requires an annual subsidy of around AUD 1.7 million to remain viable. This is roughly a subsidy of about AUD 0.052/kWh¹².

¹⁰ Vital Energy operates the country's fuel tank farm, (diesel, petrol & kerosene) and LPG is sold by separate, private importers.

¹¹ Although the system average interruption indices (duration and frequency) have gone down in the past 2 years, the values are still high compared to the Pacific Power Association (PPA) benchmark values (200 and 10). The SFC value is also relatively high at 0.29 lit DFO/kWh.

¹² NUC has a Feed-in Tariff policy for rooftop PV. Third party financing of rooftop PV is allowed and for this a Standard Rooftop Agreement is used. The NUC is in the process of developing a standard Power Purchase Agreement. For such projects,

Nauru has its national energy road map (NERM) that builds upon the energy sector development agenda outlined in the NSDS and National Energy Policy Framework (NEPF 2009)¹³. The NERM has 7 expected outcomes: (1) reliable, affordable and safe power supply and services; (2) reliable and safe supply of fossil fuels; (3) universal access to reliable and affordable energy services; (4) efficient supply and use of energy; (5) significant contribution from renewable energy towards electricity supply; (6) financial sustainability of the energy sector; and, (7) efficient, robust and well-resourced institutions for energy planning and implementation. Its specific targets by 2020 are: (a) 24/7 grid electricity supply with minimal interruptions; (b) 50% of grid electricity supplied from RE sources; and, (c) 30% improvement in energy efficiency in the residential, commercial and government sectors.

The NERM essentially represents the country's overall energy plan, which addresses all aspects of energy supply and demand, from improvements in petroleum supply chain to increased efficiency both in electricity supply and use, as well as improved access to quality energy services, with due consideration to avoiding negative impacts on the environment (both locally and globally) thereby improving energy security, while supporting the country's socio-economic development.

The NERM implementation started in 2014. The implementation of most of the NERM activities are under the responsibility of the NUC. The NUC Strategic Plan (2015-2020) is also in line with NERM. The table below shows the summary of the investment plan of NUC to 2020 in solar PV installations to meet the 50% target:

Year	% Total Power Generation	Annual Solar PV Power Generation, MWh	Annual Installed Solar PV Power Generation Capacity, MW	Cumulative Installed Solar PV Power Generation Capacity, MW	Required Annual Investment, US\$ million
2015	1.7	684.0	0.5	0.5	1.4
2016	5.0	2,735.8	1.5	2.0	4.3
2017	15.0	10,276.9	5.4	7.3	15.8
2018	25.0	19,452.6	6.6	13.9	19.3
2019	35.0	28,188.9	6.2	20.1	18.4
2020	50.0	40,144.9	8.5	28.6	25.1

Source: NUC Strategic Plan 2015-2020 (Investment figures converted to USD from original AUD)

However, the NUC has limited funds for the installation of new solar PV power generation systems. The planned allocations till 2020 can support the installation of only about 6 MW by 2020. This involves the installation of solar PV plant including storage to maintain grid stability and decrease the generation requirement during the day and evening peak. The country must tap other potential sources of finance for meeting its 50% RE electricity target. With the current trend of uptake of installed solar PV power generation assets, it is very unlikely that the NERM target will be achieved in the next 10 to 12 years. By 2020, the estimated % contribution of RE-generated electricity to the country's power generation mix would only be about 9.3%.

NUC provides the installation service. It has installed PV systems supplied from Australia and New Zealand, and plans to continue providing this installation service. The NUC is currently focusing on the completion of wiring upgrades as the priority. The transmission and distribution upgrade is reportedly 60% complete and is expected to be finalized in October 2018. The EU is funding a major transmission line upgrade that will connect three RPCs, RONPHOS and the new jail. This will significantly increase NUC's load to about 4.5 MW.

¹³ The NEPF was developed in 2009 through a consultative process involving stakeholders from the public sector, private sector and civil society groups. It aims to provide a guideline for the development of the energy sector in Nauru for the immediate future and mid and long term. It is driven by its vision statement - *Reliable, affordable and sustainable energy, enabling the socio-economic development of Nauru.*

While financial barriers are clearly causing the delayed achievement of the NERM targets, there are also other reasons behind this. While the country is exerting efforts towards achieving these targets, there are several barriers/issues/concerns that need to be hurdled and eliminated. The major barriers include:

- Policy/Regulatory and Institutional Barriers: Nauru's national energy development and utilization plan is practically the NERM. As it is envisioned, it is to support the country's sustainable economic development and to achieve its climate change mitigation targets. For now, the aspirations set out in the NERM may not be realized in a timely manner due to the inadequate and not updated energy policies and implementing rules and regulations (IRRs) on the various aspects of energy supply, demand and utilization. This is based on the rather limited policies and regulations (e.g., no policies and regulations concerning the quality and energy performance of imported electrical appliances and transport vehicles, no promotion and implementation of demand side management in the end-use sectors), let alone the noticeably unclear delineation of mandates and responsibilities concerning energy matters. Apart from the limited policies and regulations, the other causes of the main policy/regulatory and institutional barriers are: (a) Inadequate enforcement of the NEPF mainly because of lack of specific energy policies and IRRs; (b) Lack of appropriate legislation to enable alternative financing and implementation of RE and EE initiatives by the general public, considering the fact that there is limited banking facilities in the country; (c) Lack of policies on the increased role of the private sector (local and/or foreign) in sustainable energy projects in the country, and how is this facilitated; and (d) No policy on how the country will be less dependent on donor funding and technical assistance to implement sustainable energy programs in the future.

Closely related to the policy/regulatory barriers, is the rather weak institutional framework for energy policy-making, planning and regulation within the GON. There have been very limited resources dedicated to the energy sector to date with energy placed as one of the portfolios of the Environment Division of the DCIE. An Energy Unit at DCIE was formally established in July 2017 and is comprised of the Director for Climate Change and Energy and an Energy Officer (currently a vacant position). Presently, actions on energy related matters done on an "as needed" basis. Because of this, there is limited capacity in the GON on energy planning and analysis. The NUC has some capacity in electricity sector planning. There is also limited energy monitoring, reporting, data processing and management to support national energy planning. Furthermore, there is limited coordination between pertinent agencies in the implementation of the NEPF and NERM. With these constraints and those pertaining to policy barriers, the NERM targets would not be realized and sustained unless these are adequately addressed and removed.

- Financial Barriers: The GON and donor agencies are the main sources of funding for EE and RE initiatives. Finance is a fundamental problem of the energy sector in Nauru, and if nothing is done the NEPF's policy statement of financial sustainability of the energy sector will not be realized. Finance is essential to the implementation of any policy framework, and since the financial resources needed to implement the NEPF cannot be obtained entirely from donor agencies, the GON endeavors to encourage the promotion of partnerships with the private sector through appropriate legal and financial mechanisms. Currently, there are very limited initiatives by the public sector (e.g., state-owned companies) and the private sector (e.g., Capelle & Partners) to implement EE and RE projects. The development and implementation of RE and EE projects, or even the practice of EE among the citizenry, are often hampered by their limited knowledge of planning, designing and implementing, as well as financing such initiatives. Moreover, the current limited financial and banking system in Nauru is a major challenge to enticing private sector investment.
- Technical Barriers: In general, the country lacks technical capacity that is required to enable sustainable energy development, particularly in the areas of energy supply and efficient energy utilization and environmental quality improvement. The introduction of new technologies (RE and

EE) will require new skills particularly within the government and the utility, and for that matter, specialized training will be necessary. Implementing and managing large energy projects in the country will require new set of knowledge base that extends beyond traditional management and technical skills, as well as good understanding of the legal and financial systems necessary to make the project sustainable. In regards the objective of increasing the share of renewable energy in the power generation mix of the country is the integration of more RE-based power generation into the current power grid, which is presently served by diesel power generators. The stability of the current grid is greatly affected by the uptake of variable RE-based power generation units. The DCIE and NUC (and Vital Energy) are supposed to be sources of technical expertise in the energy sector, with the latter two on matters pertaining to electricity and petroleum, respectively. The DCIE has limited knowledge and skills in the identification, design and application of EE and RE technologies that are appropriate and feasible for meeting the country's energy needs. They also lack capacity in carrying out energy-integrated development planning. The NUC and Vital Energy also need technical capacity building on the network and supply aspects of the electricity and petroleum sector, respectively. The private sector technical capacity is also lacking in regards the development and implementation of RE and EE technology projects.

- **RE & EE Awareness Barriers:** Overall, there is low level awareness and knowledge of the government, private sector and communities about the cost-effective application of RE and EE technologies and practices. This is also due to: (a) Limited understanding about and the application of RE and EE technologies by decision makers, the general public and businesses especially on the advantages, disadvantages and costs of RE and EE technologies; (b) Limited public knowledge of the country's energy plans and the NERM policies/strategies; (c) Low level of knowledge of applying feasible RE & EE technologies; (d) Limited opportunities to practice knowledge and skills from RE & EE training; and, (e) Limited reliable information about other potential RE resources.

Previous energy projects in the country also included information dissemination and awareness raising activities. Nonetheless, the lack of opportunities to apply knowledge and skills learned from capacity development on RE and EE technologies applications, and in the operation and maintenance of systems in such applications, the expected impact in terms of the level of knowledge and technical skills of the NUC was not fully realized. These previous capacity building activities also resulted in limited knowledge uptake of the public, private sector entities and the government authorities. In regards knowledge and information on RE and EE technologies, there is a general lack of these. There is also low level of capacity among government institutions in data acquisition, analysis and management, as well as on the use of models for sustainable energy development and utilization.

The abovementioned barriers, if not properly and adequately addressed will continue to prevent the timely and complete achievement of the specific targets in the NERM: (a) reliable grid electricity supply; (b) 50% RE electricity; and, (c) 30% EE improvement in the residential, commercial and government sectors.

1.2. Baseline scenario and any associated baseline projects

The current EE & RE programs/projects in Nauru that are geared towards the achievement of the NERM targets are summarized in Annex A of this document. These baseline programs/projects are also to some extent and in a limited way address the barriers to achieving the NERM targets. These baseline projects/activities are among the NERM action plans¹⁴ that are currently ongoing and yet-to-be

¹⁴ There are six action plans, one for each of the six themes of the NERM: (1) Power (including supply side energy efficiency); (2) Petroleum; (3) Renewable Energy; (4) Demand Side Energy Efficiency; (5) Transport; and, (6) Institutional Strengthening and Capacity Building. These lay out the strategies and activities needed to progress towards the vision, outcomes and targets of

implemented until 2020 by different stakeholders to reach the NERM targets. The implementation of most of these action plans is led by NUC and CIE.

Based on the NERM Review in 2017, the following are the GON's investment plan for the period 2018-2020 for the power sector and RE-based power generation, and in promoting and implementing DSM and energy efficiency initiatives:

Planned NERM Activities	Required Budget, US\$ '000
Power Sector	
Upgrade assets	5,624
Improve planning and management	505
Improve supply-side energy efficiency	646
Move toward full recovery of operation and maintenance costs	441
Develop and safeguard NUC staff	114
Total	7,330
Renewable Energy	
Phased implementation of large-scale solar PV (up to 8.5 MWp)	38,095
Investigation and implementation of other renewable energy resources	904
Build in-country capacity to operate and maintain solar PV systems	46
Total	39,045
Demand Side Management & Energy Efficiency	
Data collection and analysis for preparation for DSM implementation	152
Implementation of demand side energy efficiency	255
Introduction of appliance energy labelling and MEPS	129
Total	536

Source: Review of the NERM 2014 – 2020 (Investment figures converted to USD from original AUD)

It should be emphasized that the GON still must source additional funding to meet the required budget for their planned NERM activities. For example, the proposed budget for new solar PV power generation system is yet to be fully sourced since the GON is not able to provide this completely. Note also that this amount only 45% of the estimated investment cost for installing the required total solar PV capacity to achieve the 50% RE electricity target.

There are opportunities for enhancing most of the planned activities in the Action Plans to realize more energy savings and GHG emission reduction. For example, some activities on demand side management, which are mainly on electricity use, can be enhanced further with EE actions on the utilization of other energy forms. There are individual efforts by some of the private sector entities and some households to deploy RE/EE technology applications for electricity generation and for reducing electricity consumption. However, such limited and fragmented initiatives in the country will not substantially help in increasing the share of RE in the overall national electricity generation mix. Considering the barriers to the planning, financing and implementation of RE and EE projects, the actions plans under the NERM will not be enough nor effective in facilitating such initiatives to significantly contribute to the achievement of the NERM targets. The opportunities for the timely achievement of the NERM targets and for reducing GHG emissions will be lost if only these baseline action plans will be implemented. The realization of significant GHG emission reduction through the implementation of applicable and feasible RE technologies and EE measures, techniques and practices will not be realized if an alternative development path that will achieve the NERM target will not be taken and facilitated. The NERM specifically considered the role of the private sector in supporting the financing and implementation of RE and EE

the Road Map, the NEPF and the NSDS. The identified baseline activities are based on the findings of the recent UNDP-sponsored NERM Review in Nauru conducted by IT Power Australia.

technology projects. However, it is not clear how this will be done. The alternative to this, which will be facilitated by the proposed project is, enhancing through the formulation, approval and enforcement of pertinent support policies and regulations, the role of the private sector in sustainable energy development in Nauru.

1.3. Proposed alternative scenario

Considering the current situation in the country wherein there are significant delays in the implementation of the NUC's strategic plan, and that of the planned NERM activities, the GON endeavors to identify, evaluate and adequately address the reasons for this, apart from the rather obvious limited funds that are available from the government coffers. With the aim of being more sustainable in the production and provision of electricity to its citizens, and gradually reducing reliance on donor funding, the GON endeavors to explore and consider other funding sources for the full implementation of its NERM. While donor funds are expected, the GON intends to tap the private sector (local and foreign) in investing in RE-based power generation projects, from which their collective power generation will count towards the achievement of the 50% RE electricity target. Based on the NUC Monthly Reports 2017 and the NERM Review the following is the forecast adjusted plan for the achievement of the set %RE electricity target:

Year	% Total Power Generation	Annual Solar PV Power Generation, MWh	Annual Installed Solar PV Power Generation Capacity, MW	Cumulative Installed Solar PV Power Generation Capacity, MW	Required Annual Investment, US\$ million
2017	3.3	1,769.7	1.0	1.0	3.0
2018	5	3,152.6	0.8	1.8	2.4
2019	9.5	6,788.2	2.1	3.9	6.2
2020	13	9,728.5	1.7	5.6	5.0
2021	19.5	15,348.3	3.2	8.9	9.5
2022	25.5	21,436.5	3.5	12.4	10.3
2023	33	29,424.0	4.6	17.0	13.5
2024	41	38,557.3	5.3	22.3	15.3
2025	50	49,364.2	6.2	28.5	18.1

To realize the above investment plan for the achievement of the NERM target, there must be actions to take to facilitate this. With the identification and thorough understanding of the barriers/issues/constraints that are hindering such enabling environment, the GON would be able to implement appropriate actions to remove such hindrances. The NERM Review 2017 presented the status of the NERM activities as of November 2017. While the estimated investment cost is available, the data about the available investment for the 2018-2020 period is not available. However, based on discussions with the Department of Commerce, Industry and Environment (DCIE), which is in-charge of energy matters in the country, and with the NUC, a level best estimate of the available investment for the relevant NERM sectors is shown in the table below.

Sector	Estimated Available Investment, US\$ '000
Power	2,500
Renewable Energy	12,475
Demand Side and Energy Efficiency	268
Institutional Strengthening and Capacity Building	248
Petroleum	162
Transport	125
Total	15,778

The enabling of increased applications of feasible renewable energy and energy efficiency technologies for supporting socio-economic development in Nauru in accord with the country's energy roadmap targets is the objective of this proposed GEF project. To achieve this objective, the identified barriers to the cost-effective application of feasible RE technologies, as well in the effective and extensive application of EE measures and techniques that will contribute to the sustainable development of the country must be removed. Hence, this proposed project will employ a barrier removal approach to achieve this objective. With the assistance of the GEF, the proposed project will facilitate the application of appropriate technological, institutional and policy-oriented options that would enable the widespread application of RE and EE technologies for supporting the sustainable development of Nauru. This would involve making use, in a rational and cost-effective manner, of available RE and non-RE resources to enable socio-economic growth that contributes to increased climatic resilience, productivity and income generation of the citizens, and GHG emission reduction. In the baseline scenario, due to the barriers and constraints, the current NERM action plans will most likely only achieve a portion of the country's set RE and EE targets. The alternative scenario will be a situation wherein progress towards achieving the NERM targets are enhanced with the implementation of incremental activities that are meant to remove barriers, make up for the shortcomings, and supplement the baseline actions with enhanced features must be carried out to enable the accelerated implementation of the NERM actions plans. This alternative scenario will be facilitated through this proposed project, which will cover the following:

- Formulation, approval and enforcement of policies and implementing rules and regulations (IRRs) on the application of RE and EE technologies to enable the achievement of the NERM targets, as well as integrated energy planning;
- Establishment of appropriate institutional framework and mechanism for the effective enforcement of policies and IRRs, including the design and development of financial mechanisms for the planning and implementation of RE & EE technologies for energy generation and utilization;
- Demonstration¹⁵ of the application EE and RE technologies in the energy supply and end-use sectors; and,
- Development and conduct of advocacy and promotional programs to improve awareness and knowledge of the government authorities and the citizenry on EE and RE technology applications to support sustainable energy development.

Component 1: Energy Policy & Regulatory Framework Strengthening

This component aims to eliminate barriers related to policies and regulations that hinder the sustainable promotion and application of EE and RE initiatives that will contribute to the achievement of the NERM targets. The enforcement of approved policies and rules and regulations to support widespread application of cost-effective low carbon (RE and EE) technologies for energy production and utilization is the expected outcome from the anticipated deliverables under this component. The expected deliverables will be produced through these indicative activities: (1) Formulation of, and conduct of advocacy work for securing the approval of standards, policies and implementing rules and regulations (IRRs) on the application of RE & EE technologies in the energy generation and energy end use sectors; (2) Conduct of campaigns and advocacy work to enable the enforcement of the approved standards, policies and IRRs to promote and support the implementation of action plans to achieve the RE and EE targets of the NERM, including the close monitoring of the government enforcement and the impacts of the enforced policy instruments; (3). Review and revision of the NERM by end of project, including the updating of the

¹⁵ The demonstrations would be dependent on the target stakeholders/beneficiaries, but can potentially include: (1) Piloting in selected districts of specific policies and strategies for the application of RE and EE techniques, measures and practices (2) Application of integrated energy planning techniques; and, (3) Design, engineering and financing of feasible RE and EE technologies in the energy generation and energy end-use sectors.

national energy balance and action plans including new legislations/IRRs for supporting the development and implementation of EE and RE projects¹⁶; and, (4) Completed energy-integrated development planning at the national level, as well as publication and dissemination of guides and reference documents for the implementation of energy-integrated development planning¹⁷.

Component 2: Supporting RE & EE Initiatives under the NERM

This component will address the barriers related to the rather weak institutional framework in the cross-cutting areas of energy, utilities and sustainable development in Nauru, as well as the limited access to financing for EE and RE technologies applications in the country. Since the implementation EE and RE initiatives are necessary in achieving the NERM targets, the availability of financing for such projects is essential. The expected outcome from the delivery of the relevant outputs under this component is improved institutional and financial mechanisms in the integrated planning and implementation of low carbon technologies for energy generation and utilization. The increased financing and investments from the private sector for RE and EE technologies application projects in the energy supply and demand sectors is a manifestation of the successful realization of such outcome. The expected outputs that will bring about this expected outcome will be delivered by the following indicative activities: (1). Develop, establish and operationalization of an appropriate institutional framework/mechanism that supports the implementation of low carbon (EE & RE) development policies, standards and IRRs, and facilitate the integration of low carbon development with the socio-economic, climate change, infrastructure and disaster management objectives of the country; (2) Conduct of a study to determine practical enhancements to existing financing schemes¹⁸, and where feasible to design and develop other financing models and schemes to facilitate financing of EE and RE projects in the energy end-use sectors, based on the current arrangements and programs of the government for financially supporting socio-economic development and the action plans that were set for implementing the NERM; inclusive of the implementation arrangements, and procedures for financial assistance application process; (3) Conduct of derisking studies of RE-based power generation and grid stability initiatives of the NUC, and grid-connected or decentralized RE-based energy generation at the district level, inclusive of the development of business plans based on the derisking studies for the GON and private sector to facilitate financing and implementation of feasible RE and EE technologies applications; and, (4) Development of a portfolio of potential energy-integrated development projects in the end-use sectors including the mining industry and the regional processing centers, inclusive of oversight of the implementation of approved projects financed either through the developed and implemented financing scheme; or by private sector investments.

Component 3: Promotion of RE & EE Technologies Applications

This component is intended to address the limited technical capacity of the government (DCIE and NUC), and the private sector in the design, engineering, operation and maintenance RE and EE technologies

¹⁶ This includes the conduct of policy research, analysis and assessment on low carbon community development, implementation mechanisms and institutional arrangements that are compatible to the Nauru context, as well as research on low carbon community development policies and measures considered and implemented in other small island developing states (SIDS) and their impacts (social, economic and environmental). This activity will be carried out towards the end of the project since the NERM has just been recently reviewed.

¹⁷ This includes the conduct of advocacy work towards the adoption of the suitable institutional mechanisms that integrate low carbon development with the socio-economic, climate change and disaster management objectives of the country; and, comprehensive evaluation of the performance of the adopted institutional mechanisms, and implemented enhancements of the institutional framework.

¹⁸ The IUCN/UNEP/GEF regional Low Carbon Islands (LCI) project in Nauru launched in January 2017 a low carbon fund (LCF) of approximately US\$80,000 to provide incentive for the private sector (businesses and households) to switch towards energy efficient washing machines, fridges, and freezers. Specifically, LCF provides a 30% capital subsidy when buying new appliances.

applications projects. There will be specific demonstrations that will be designed, implemented and evaluated under this component to showcase to the government and the private sector the relevant aspects of the deployment of applicable EE and RE technologies to support the country's sustainable development. The expected outcome from the realization of the expected outputs under this component is improved confidence in, and application of, RE & EE technologies to support the socio-economic development of Nauru, which is expected to be realized with the involvement of the GON and the private sector. The expected set of outputs under this component will be delivered through these indicative activities: (1) Conduct of comprehensive evaluation of RE and EE technologies that can be feasibly applied/implemented for sustainable energy utilization in the energy and end-use sectors in Nauru; (2) Design and development of the implementation plans of demonstrations of EE and RE technologies that promote and support sustainable development in the country; (3) Implementation of the installation and operation of EE and RE technology application demonstrations in pilot districts/communities¹⁹, including the management of the implementation of the demonstrations; (4) Conduct of annual evaluation of the energy performance and impacts of each demonstration, including the publication and dissemination of energy performance and impact reports; and, (5) Preparation of designs and implementation plans for the scale-up and/or replication of the demonstrated EE and RE technology applications.

Component 4: Improvement of Energy Sector Capacity

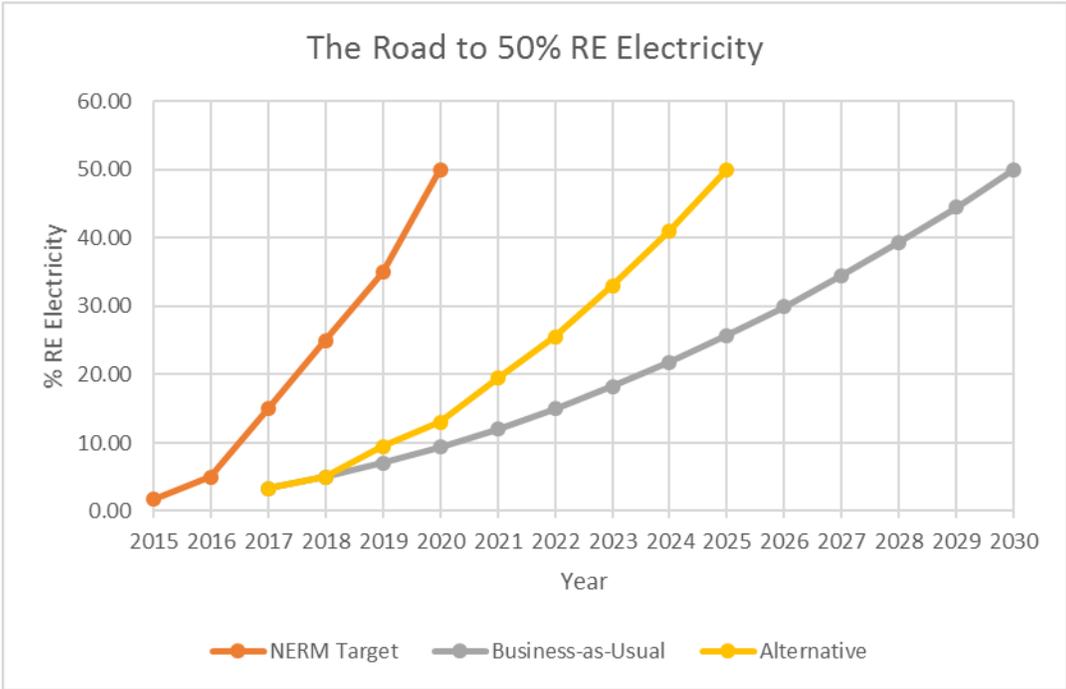
This component is for addressing the low level of awareness and knowledge of the government authorities and the public about the concepts, principles and technologies and practices associated with low carbon development, which is essential in meeting the EE and RE targets in the NERM. The expected outputs that will be delivered under this component will bring about this outcome - Improved awareness and capacity of the government, private sector and communities about the cost-effective application of RE and EE technologies and practices. Such outputs will be delivered through these indicative activities: (1) Design, organization and conduct of a capacity development program for government officials and authorities on low carbon development particularly on energy-integrated development planning, based on assessments of capacity needs and impacts of previous and ongoing capacity development activities that are included in the NERM action plans, and including RE and EE technology applications; (2) Development, establishment, operation and maintenance of an information sharing system for the promotion and dissemination of knowledge on relevant aspects of sustainable energy and low carbon development that can also be shared/linked with similar information networks in the Pacific region; (3) Development, establish and start-up of operation on an energy supply and consumption monitoring, reporting and database system covering all forms of energy utilized in all sectors in Nauru; and, (4) Design, development and implementation of a continuing information, communication and education (ICE) program on the promotion and awareness enhancement on integrated sustainable energy development for Nauruans.

The abovementioned project components will be implemented using budgets from subsumed and co-financed baseline activities and GEF funds for incremental activities (see table below) that will collectively make possible the increased applications of feasible RE and EE technologies for supporting socio-economic development in Nauru in accord with the NERM.

¹⁹ Through energy-integrated development planning, the country can determine the appropriate technologies to implement to achieve the NERM targets. For purposes of the demonstration of the RE and EE technology applications, based on initial assessments, the demos may include applications of RE technologies for RE-based energy systems such as solar PV-based distributed generation facilities; and non-power applications such decentralized solar PV water desalination systems, solar PV water pumping and distribution systems; waste-to-energy schemes; as well as EE technology applications in lighting and air conditioning systems government, commercial and residential buildings, including community infrastructures such as clinics/hospitals, water supply and distribution systems, trade and industry operations, including refrigeration. Other EE schemes that can be considered include those for water system loss management, energy efficient solid waste management, application of EE street lighting technologies, and on demand side management in selected government and commercial buildings.

Sector	Proposed GEF Funding, US\$ '000	Potential GEF-funded Incremental Activities
Power	196	Demos on enhanced solar PV-powered water desalination units in NUC and in pilot districts; Improvements in SCADA system and for enhanced system grid stability;
Renewable Energy	2,500	Design, engineering and financing of feasible RE-based power generation systems; district level decentralized RE-based power generation financed and commercially operated by a private sector entity; Community-owned and operated non-power applications of solar energy (e.g., water supply)
Demand Side and Energy Efficiency	300	GON-funded financing schemes for low income households in the purchase of EE appliances and solar home systems; EE technology applications in lighting and air conditioning systems in government, commercial and residential buildings, including community infrastructures such as clinics/hospitals, water supply and distribution systems, street lighting, etc.
Institutional Strengthening and Capacity Building	150	Piloting in selected districts of specific policies and strategies for the application of RE and EE techniques, measures and practices; Capacity building on the application of integrated energy planning techniques.
Petroleum	0	Not directly covered in SMARTEN Project
Transport	0	Not directly covered in SMARTEN Project
Total	3,146	

The proposed project is aimed at facilitating the achievement of the NERM target through the removal of barriers. Through this project, an alternative scenario that would enhance the pace of solar PV installations in the country, will be facilitated and enable the country to achieve its %RE electricity target by 2025. The chart below illustrates the comparison of the pathway towards the achievement of the NERM target in the baseline (business-as-usual) and alternative scenarios.



By end of the proposed SMARTEN Project (2022), the level of contribution of RE-generated electricity in the country's power generation mix would be halfway through in achieving the NERM target (25.5%) compared to the 15% RE electricity level under the business-as-usual scenario²⁰. Since there are limited number of entities that are currently working on the NERM, it would be fair to conclude that most of this 10.5 percentage points improvement in %RE electricity can be attributed to the GEF project. A more thorough analysis of the baseline and alternative scenario trends and attributions to the proposed GEF project will be carried out during the project design and development stage.

1.4. Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

The NERM is the main basis of the design of the proposed project. The project will build on the ongoing and planned activities in the action plans of the NERM, particularly those focusing on achieving the RE and EE targets. While the action plans of the NERM and other programs with donor agencies in the region, will contribute to the realization of the NERM objectives, with the current pace of implementation of these baseline projects/programs there are still limited to enable the country to achieve the set RE and EE targets in a timely manner. With just these, the full potential for the use of RE for clean energy production, potential for energy and energy cost savings, and low carbon technology applications, and associated local benefits (e.g., improved energy services, increased income generation activities, etc.), and GHG emission reductions from the energy end use sectors will not be realized. Currently, the RE-based generated electricity in the country accounts for just 3.3% of the electricity generation.

Added features that will facilitate enhanced RE-based energy generation in the country, as well as improved energy efficiency (practices, techniques and technologies) in the energy end-use sectors will be incorporated in this proposed project to enhance the baseline initiatives to implement the NERM. These are summarized in Sec. 1.2 of this document. The facilitation of the application of RE and EE technologies will be implemented through a barrier removal approach whereby actions will be carried out to reduce the identified barriers. These barriers are those associated with the low level of enforcement of policies, regulations and institutional mechanisms, limited capacity and knowledge about the application, design, financing and operation of RE and EE initiatives in the country. Most of the incremental activities of the project are the ones for reducing barriers especially those that the GoN will not be, or presently does not have the capacity to adequately address. Incremental support activities will be carried out to facilitate the demonstrations and piloting of the processes and procedures involved in energy-integrated development planning, application of the energy-saving techniques and technologies that will encourage the various energy end use sectors (government, commercial, residential) to embrace, and support these. Otherwise, the achievement of the anticipated alternative scenario in the energy sector in Nauru will not be realized. The incremental activities for establishing and enforcing supportive policy and regulatory frameworks (through effective institutional arrangements, financial/fiscal incentives, information sharing, etc.) will be necessary to sustain the replication of the EE and RE technologies applications in all energy consuming sectors of the country. The substantial sustainable development benefits that result from the application of such initiatives will not be achieved if the removal of barriers will not happen.

1.5. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The anticipated GHG emission reductions that will be attributed to the proposed GEF project would be derived from the displacement of part of the fossil fuel consumption in the power generation at NUC

²⁰ In the baseline scenario, the expected %RE electricity level is 15% by end-of-project and this translates to a 12,571 MWh electricity production that requires about 7.3 MW of installed solar PV power generation capacity. In the alternative scenario, the % RE electricity level is 25.5% by end-of-project. This translates to 21,437 MWh electricity production, which require an installed capacity of about 12.4 MW solar PV power generation system. The incremental added capacity is about 5.1 MW.

through the fuel substitution using available feasible RE resources; as well as from the energy savings derived from the improvement of the energy utilization efficiency in the energy end-use sectors in Nauru. The GHG emissions reductions would come from: (1) Direct emission reductions from completed RE and EE technology application demonstrations and replications; and, (2) Indirect emission reductions from follow-up RE and EE technology application projects as influenced by this proposed GEF project.

Energy-related GHG emissions in Nauru come from the use of fossil fuels in power generation, transport, and household consumption. Emissions from diesel fuel use accounts for about 70% of the total fossil fuel derived GHG emissions. About 87% of such emissions are from power generation. The average annual electricity generation in Nauru during the past 3 years was about 32,013 MWh. By end 2017, the expected electricity generation is 34,625.8 MWh. About 3.3% of this is from solar PV power generation units. From the Nauru Utilities Corporation (NUC) Strategic Plan 2015-2020, the forecast is that the cumulative additional demand (on-grid and off-grid) in the country will be 48,922 MWh by 2020. Based on a conservative 5% annual growth (low scenario) in electricity demand, by 2020 the forecast total electricity demand would be about 71,206 MWh, which will require a total power generation of 74,835 MWh²¹.

At about 3.3% RE electricity and with the rather slow pace of implementation of the NERM action plans, it may not be possible to achieve the 50% RE electricity target by 2020. The UNDP-funded NERM implementation review is currently underway and will be completed by end 2017. It will establish the status of the action plan implementation and possibly estimate the current level of RE electricity share in the country's power generation mix, as well as the level of energy efficiency improvement in the country's commercial, government and residential sectors. Nonetheless, with the existing information from the NUC regarding the current rate of solar PV generated electricity that is fed into the grid, and the NUC strategic plans, it is estimated that by 2020, the % RE electricity level would be at best 13%. Using this estimate, trend analysis shows a conservative estimate of achieving the 50% RE electricity target by 2025. With these ballpark estimates and the NUC electricity demand and generation forecasts (low scenario), it is estimated that by end 2023 (i.e., end of 4-year project) the cumulative reduction in annual electricity generation (as compared to no RE electricity generation) would be about 75.9 GWh, with a corresponding cumulative GHG emission reduction of about 58 ktons CO₂. Considering the 10-year influence period after end-of-project, and the lifetime (25 years) of the installed RE-based power generation units (assuming solar PV), the cumulative direct and consequential GHG emission reduction would be about 1,028.9 ktons CO₂²². This amount is expected to be realized through the interventions and the installed RE-based energy generation (power and non-power) that will be implemented under the proposed GEF project. This estimate does not include the GHG emission reductions from activities that will focus on improving energy efficiency in the end-use sectors. In that regard, the project's cost effectiveness would be better. A more detailed estimate of the potential CO₂ emission reductions will be carried out during the project design and preparation stage.

1.6. Innovativeness, sustainability and potential for scaling up.

Innovation: Achieving the %RE electricity target does not mean that this will only be realized through the installation of RE-based power generation facilities in NUC. Decentralized RE-based energy systems

²¹ This is considering the expected system losses (8%) and station use (2%). The NUC strategic plan also includes forecast for 2 other scenarios, base @ 10% annual growth; and high @ 12% growth, wherein by 2020 the expected electricity demand is estimated at 77,206 MWh and 79,019 MWh, respectively. The corresponding forecast electricity generation to meet the 2020 electricity demand is 78,781 MWh and 80,631 MWh, respectively. All scenarios assume that the additional demand will come from the residential sector as well as from: (a) RONPHOS operations; (b) RPC operations, inclusive of additional new centers; (c) Anabare workers camp; and, (d) expansion plans of Menen Hotel, Capelle & Partners, and other projects.

²² Considering the proposed GEF funding for this project, the unit abatement cost (UAC) is estimated at US\$ 3.67/ton CO₂. This only consider the RE initiatives. The cost effectiveness of the project will be better if the GHG emission reductions from the activities on improving energy efficiency in the end-use sectors will also be considered.

(e.g., solar PV power desalination units in districts) will also be contributing to that, and so is the widespread practice of energy efficiency in the end-use sectors. These will bring about reduced electricity demand, which indirectly help make the 50% RE electricity target easier to achieve. The planning, funding and actual deployment of decentralized RE-based energy systems and large-scale EE technology applications in the country can be optimally carried out through energy-integrated development planning, which in the Nauruan context, is a new approach. Presently, the electricity and water supply infrastructure planning in the country are mainly the purview of the NUC. However, if the involvement of the end-users (e.g., financing from the private sector and communities) in the successful implementation of the NERM is encouraged, a clearer and more holistic development planning that takes into consideration the energy and environmental impacts of all development plans and actions, is required. This is among the innovations that the proposed project will be bringing into the country. Part and parcel of this approach is the promotion of community-based and private sector-financed and commercial business operated energy service provision. This novel approach is aimed at achieving the objectives of the NERM. Such approach is innovative in the sense that presently, the policies and regulations that will facilitate community-based, private sector-financed RE-based electricity systems, as well as energy-integrated development planning are non-existent. Again, in the context of Nauru, another innovation is the initiative to improve the availability/access to financial resources (local and foreign) for financing RE and EE projects, through the development of financing schemes and other financial instruments that consider the current limitations, arrangements and programs of the GON for financially supporting socio-economic development. The project will involve interventions that will enable the establishment of grid-connected and/or decentralized RE-based energy systems in the country, and for improving the energy efficiency in the electricity end use sectors as ways of achieving RE and EE targets in the NERM.

Sustainability: The proposed project involves, among others, the showcasing of the application of feasible energy generation and energy efficiency technologies, along with enabling activities that will facilitate the smooth and sustained operation of these demonstrations. Each of the interventions that involve the planning, design, engineering, installation, operation and maintenance of RE-based energy generation systems, will be supported by appropriate schemes that will sustain their continuous operation, thereby realizing the expected energy savings and associated GHG emission reductions. For example, business plans for the operation of grid-connected, and decentralized solar PV power generation systems, or community-based solar PV-powered water desalination systems will be prepared and implemented to ensure sustainability. The necessary enabling conditions that will encourage/motivate interested investors to actively and continuously participate in the development of the country's electricity sector will be developed, implemented and sustained. To facilitate sustainability of these actions, the appropriate supportive policies/regulations and institutional mechanisms will be developed, adopted, and enforced, thereby ensuring the expected follow through from the stakeholders. And this follow through will be in terms of the increased interest in investing in, and implementing EE & RE technology applications in the country. To facilitate financial support for future RE & EE efforts, the project team will coordinate with the relevant GON agency(ies) on the optimal compliance with the country's financial reform program to catalyze new investments in EE & RE technology applications. The appropriate actions to facilitate sustainability of the policies, regulations, and institutional frameworks that will be established and enforced/implemented will be determined during the project preparation stage of this proposed project.

Potential for Scaling-up: The installation and operation of new solar PV energy generation systems either for electricity production or for non-power applications (e.g., water desalination, water pumping) are intended to demonstrate their benefits, viability and cost-effectiveness so that these can be replicated by others (e.g., private sector entity, community or household) or scaled-up. The successful demonstration of the application of RE & EE technologies (for power and non-power applications) in this proposed project can be expanded or replicated in the other districts of the country if the enabling conditions (in terms of policies, regulations and incentives) are there and are sustained. For example, a successful demo on solar PV water desalination and water distribution in one district, can potentially be expanded (e.g., addition of

another unit) to include also the people in the adjacent district. Furthermore, best practices that will come out from the interventions that will be carried out in the project can also be shared with other PICs and SIDS with similar circumstances as Nauru.

Market Transformation: The awareness raising activities of the proposed project for influencing and effecting a change in the attitude of the energy end-users in the country towards the application of more energy conserving and environment-friendly techniques and practices are expected to gradually transform the country's energy market. The demonstrations on the application of energy efficient household appliances (e.g., air conditioners, freezers/refrigerators), and feasible and cost-effective solar PV powered systems (e.g., water desalination units, solar water heaters, solar home systems) will further supplement this transformation effort. The successful implementation of these two approaches and supported by applicable policies and regulations and institutional mechanisms will help transform the appliance market into something that only promote and sell EE appliances/equipment. Furthermore, the enabling environment (e.g., support policies, institutional and financing mechanisms, enhanced technical capacity and data/information) that will be created by the proposed project is expected to bring in the necessary additional investments from other sources of financing from within the country (e.g., government, private sector, communities) or from interested foreign investors thereby continuously effecting the market transformation. The continuous enforcement of suitable policies and regulations, for example on tariffs for RE-generated electricity will also help in the sustained transformation of the country's energy market.

2. Stakeholders. Will project design include the participation of relevant stakeholders from civil society organizations (yes /no) and indigenous peoples (yes /no)? If yes, identify key stakeholders and briefly describe how they will be engaged in project preparation.

The list of project stakeholders and their expected role in the design and development of the project is presented below.

Stakeholder	Roles and Responsibilities in Project Preparation
Department of Commerce, Industry and Environment (DCIE) – Energy Unit	Responsible for communication and coordination with office of the GEF OFP and UNDP on the PIF development, liaison with local governments, in-charge of project development management. Provision of assistance in the identification and analysis of impacts on the environment of the EE & RE technology application demonstrations under the project. Provision of data inputs and advice on the implementation of the NERM and NEPF, as well as on government-led/sponsored/funded energy projects and other energy-related matters. Provision of advice on linkages of the project with requirements on multilateral environmental agreements, as well as guidance on GEF requirements to comply with in the PIF development.
Nauru Utilities Corporation (NUC)	Provision of data inputs and technical advice on ongoing and planned projects on the provision of power, water supply and sewerage services and the provision, operation and maintenance of all assets associated with service delivery. Provision of assistance in the identification and design of demonstrations for the promotion of EE and RE technology applications in electrical systems
Vital Energy Corporation	Provision of data inputs on plans and programs of the country concerning petroleum fuel supply and consumption in Nauru.
Ministry of Finance (MoF) - Planning and Aid Division (PAD)	Provision of data inputs and advice on the budgets of ongoing and planned sustainable energy development projects, including those for the NERM action plans, including advice on the Public Financial Management Reform. Check on the alignment of the project activities with the NSDS and that there's no duplication of activities with other projects.
Nauru Bureau of Statistics	Provision of information and advice on data gathering and monitoring for the project design particularly of the M&E aspects of the project and that on the planned energy monitoring, reporting and database system.

NGO, Social community and the other social/civic groups	Provision of assistance in the identification and analysis of barriers to the application of RE/EE technologies in community development. Provision of advice in the design of the barrier removal activities of the project.
District communities and households (National Community Councils)	Provision of assistance in the identification and analysis of barriers to the application of RE/EE in community development. Provision of advice in the design of the barrier removal activities of the project; Assistance in the organization, design and preparation of the relevant activities in the project demonstration and replication activities.
Private Sector Entities	Provision of technical advice in the design and development of possible options for public private partnerships that can be demonstrated under the project; Provision of co-financing to specific project activities.

The project development team (PDT) will be working with relevant NGOs, communities in coordination with the national community councils (NCCs) and social/civic groups (e.g., churches) in the identification and analysis of barriers to the application of RE/EE technologies in community development, and the design of the barrier removal activities of the project. Particularly in selected communities that will host demonstrations, the PDT will work together with the relevant NCC in the organization, design and preparation of the relevant activities in the project demonstration and replication activities. These entities will also be involved in the implementation of the demos.

The citizens of Nauru are the indigenous people of the country, and will be the partners and beneficiaries in the design and implementation of the proposed project. Unlike in other countries where there may be special indigenous people to consider, the Nauruans are indigenous to their country.

3. Gender Equality and Women’s Empowerment. Are issues on [gender equality](#) and women’s empowerment taken into account? (yes /no). If yes, briefly describe how it will be mainstreamed into project preparation (e.g. gender analysis), taking into account the differences, needs, roles and priorities of women and men.

Nauruan women working in both management and technical departments of GoN agencies/institutions will have opportunities for direct involvement in the design and implementation of the proposed GEF project. Women who are in, or are qualified for, technical positions in the government and in the private sector can play important roles in the design, development and implementation of this project. During the detailed design and development of this proposed project, further assessment and enhancement of the roles of women in the deployment of RE and EE technologies in the energy generation and end-use sectors of the country will be explored and the results will be used to develop gender-sensitive policies in these sectors with full recognition of the potential contributions of women in the management and implementation of climate change mitigation measures.

The design and preparation of this project will consider the contributions, impacts and benefits of community based EE and RE technology applications, to every Nauruan citizen. Any problems/issues that relate to gender equality and women’s role in sustainable energy development of the country will be considered during the detailed project design stage, particularly during the logical framework analysis (LFA). Where required and feasible, the project design will include activities on (a) supporting gender equity and women empowerment in the sustainable energy development of the country; (b) enhancing opportunities to enhance the role and influence of women in the deployment of EE and RE, as well as other applicable low carbon technologies and climate change mitigation options, and, (3) development of gender-sensitive policies in the efforts to achieve and sustain the NERM targets.

4. Risks

The potential risks that might prevent the achievement of the project objective are as follows:

Risk	Level of Risk	Mitigation Actions
1. Weak capacity of the relevant GON agencies to implement the NERM, which can lead to delays in the implementation, and even non-implementation of some project activities.	Medium	<p>Relevant technical assistance will be provided in coordination with other development partners to assist the GON in the NERM implementation. Close coordination with other ongoing UNDP-GEF projects in the country will be carried out to take advantage of potential synergies in the management of the project implementation, in addition to UNDP country office support that the GON can request.</p> <p>UNDP Pacific Office (UNDP PO) will manage and expedite the procurement of external personnel who will work on the affected project activities in case government capacity remains inadequate. If need be, the affected activities may have to be modified to allow expeditious implementation and completion.</p>
2. The committed level of co-financing for specific activities of the project is not enough or may not become fully available in time.	Medium	<p>The project team will work closely with the project partners that are implementing the subsumed baseline activities to either synchronize the schedule of the project implemented and supervised activities with that of the project partners. The project team shall secure GON assurance of co-funding prior to project start.</p> <p>In case this problem will occur, the reallocation of budget may be considered to support the implementation of affected activities. This may entail the delivery of alternative outputs that will also contribute to the achievement of the relevant project outcome. Constant follow-up with the pertinent co-financers will be conducted either to secure the committed co-financing or negotiate the amount of co-financing.</p>
3. The established enabling conditions for government financing of sustainable energy development actions will not be fully sustained, particularly if there will be continuous reliance to inflows from RPC.	Medium	<p>Close coordination with the GON agency that is involved in the new Nauru Trust Fund established by ADB, to provide the GON with an investment vehicle for excess funds.</p> <p>The development of a sustainable follow-up plan is part of the project activities. This will be useful for the replication of the demonstrated applicable and feasible EE & RE technologies in the end-use sectors of the country.</p>
4. Relevant GoN agencies fail to approve and enforce formulated policies and regulations.	Medium	<p>Advocacy to gain adequate support from the parliament on the adoption of the formulated policies and regulations will be carried out by the implementing partners, with the assistance of UNDP if necessary.</p> <p>In case this happens, DCIE will facilitate discussions with project stakeholders and relevant government authorities through the Project Board to come up with decisions on expediting the approval, or reformulation, of the recommended policies/regulations.</p>
5. Demonstration hosts may not support promptly and sufficiently the planned demos/pilots.	Low	<p>A capable project team comprised of competent local and international experts will be established to assist the DCIE in the project execution and in the coordination of the project implementation with the project partners.</p>

		If the demo hosts are remiss in their obligations and commitments to the demo implementation, follow-up discussions between DCIE, demo host, other relevant GoN agencies and the UNDP Pacific Office (PO) will be carried out to determine and resolve any issue.
6. Adverse climate-related events may hamper the implementation of hardware-related activities.	Low	Adequate compliance with proper engineering and construction design and construction standards that facilitate not only structural integrity but also climate resilience will be done in the design and implementation of EE/RE activities that involve procurement, design/engineering, installation and operation of EE & RE technology system installations ²³ . In case this happens, pre-cautionary and safety procedures will be put in place to at least minimize impacts of gale force winds.
7. Political instability weakens energy policy commitment, and change in administration may influence government support for project	Low	UNDP to maintain policy dialogue with both government and opposition, and will sustain a high level of consultation throughout implementation, and if necessary, UNDP executive management intervention may be called upon to assist. The DCIE, and other government agencies involved in the project will monitor political dynamics and will try to resolve any misunderstanding within the project. Project Board meetings and special meetings with the DCIE will be conducted in case this is happening, to discuss courses of actions to take to sustain the GON's commitment to support the project, and carry out such actions accordingly.
8. Low oil prices will reduce interest in RE-based power generation	Low	Awareness raising activities will be designed to include features that will sustain the overall interest of the country in low carbon development and RE-based energy systems even when the oil prices are relatively low. In case of relatively low oil prices, the project will emphasize energy, environment and economic benefits of RE, and the country's objective to reach the NERM targets and its obligation to achieve its climate change mitigation targets in its NDC to facilitate that the interest of the government in low carbon development is sustained.

The overall risk of this proposed project is medium.

5. Coordination

In designing this proposed project, the DCIE (project proponent) will coordinate with the implementers of the ongoing GEF and non-GEF funded projects that are relevant to the project. The coordination work will be mainly for exploring and possibly making use of potential synergies; for facilitating complementarities and building on best practices and lessons learned from their implementation. Among these projects are:

- All DCIE ongoing and planned activities on EE and RE, which practically those that comprise the action plans of the NERM – Since this government agency is the implementing partner, the project development team (PDT) will coordinate with them to determine how these activities can be utilized

²³ The design and construction of the systems that will be installed will be based on what the major bilateral and multi-lateral donors require for the infrastructure projects they are funding in the Pacific Island region.

as baseline activities of the proposed GEF-project. Apart from the NERM action plans, the other relevant projects are the following:

- Implementing a “Ridge to Reef” approach to protect biodiversity and ecosystem functions in Nauru (R2R Nauru) – *GEF funded project that aims to develop, establish and implement a government and community partnership approach to protecting and increasing livelihoods opportunities, food security, and enhancing climate resilience.*
 - Pacific Islands Ridge to Reef National Priorities - Integrated Water, Land, and Forest & Coastal Management to Preserve Ecosystem Services, Store Carbon, Improve Climate Resilience, and Sustain Livelihoods – *GEF funded regional project that includes Nauru, with focus on waste management and effective IWRM efforts through community participation and skills building as the main interventions for the country.*
 - IUCN/UNEP Low Carbon Islands (LCI) Project – *GEF-funded regional project on the removal of major barriers to the widespread and cost-effective use of grid-based renewable energy supply and to the introduction of energy conservation measures and promotion of low carbon technologies in Tuvalu, Niue and Nauru.*
- The PDT will also coordinate with the implementers of ongoing and planned donor-funded sustainable development projects in the country such as those funded by other development partners in the Pacific region:
- Asian Development Bank (ADB):
 - Ongoing: Nauru: Strengthening Financial Inclusion and Financial Sector Development; Nauru: Electricity Supply Security and Sustainability. This is also through funding from Australia DFAT.
 - Proposed: Nauru: Tariff and Subsidy Policy Reform; Nauru: Sustainable and Climate Resilient Connectivity Project
 - European Union (EU) - *Through the European Development Fund (EDF-11) will concentrate on the energy sector, and contributes primarily to the progressive achievement of SDG 7, ensuring access to affordable, reliable, sustainable, and modern energy for all, as well as promotes progress towards SDG 13, taking urgent action to combat climate change and its impacts.*
- Coordination work will also be carried out with the implementation of ongoing and planned UNDP-GEF projects in the Pacific region that include, among others, the demonstration of the application of RE (e.g., solar PV)-based power generation schemes. Where it will be feasible and practical to do (considering essential factors such as the timing of the project activities, and isolated/remote locations of some project sites), efforts to consolidate the ordering of materials (system hardware and accessories, controls and instrumentations) for the different projects will be done. The PDT will also coordinate and learn from other relevant UNDP projects, e.g., the successful UNDP/Carbon War Room project in the Caribbean, which has demonstrated flexible approaches for promoting integrated planning and renewable power procurement.

The establishment of links with other implementers of related ongoing projects/programs is expected to help in identifying the relevant activities that will build on their respective achievements. The UN Joint Presence Office in Nauru, the UNDP-Fiji Pacific Office, and the UNDP Bangkok Regional Hub will be involved in the project development through their participation in the various stakeholder and co-financing consultation meetings and technical workshops during project development, and in the multipartite review meetings.

6. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes /no). If yes, which ones and how:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The proposed project is consistent with the country's National Energy Policy Framework (NEPF), National Sustainable Development Strategy 2005-2025 (NSDS) and is meant to facilitate the realization of the 2020 RE and EE targets of the country as stated in its NDC. It is also in line with the country's Second National Communications to the UNFCCC, particularly in specific actions and policies related to EE and RE applications in supporting economic and social development. Specifically, the project is in accord with the country's Nauru Energy Road Map (NERM) that aims to achieve the following targets by 2020: (1) 50% renewable energy-based electricity generation; and, (2) 30% energy efficiency improvement in the end use sectors (commercial, government and residential). In that regard, the project is expected to contribute to achieving the national energy saving and climate change mitigation targets.

7. Knowledge Management

The low level of capacity and limitations of the country in the planning, design, and sustainable implementation of low carbon development strategies and measures, as well as in EE & RE technology application projects, warrant a focus approach for knowledge management (KM). In this regard, the KM system that will be employed in the project will consist of the conduct of training courses for specific personnel in the DCIE, and in the energy and utilities sector (NUC and Vital Energy), as well as for national community councils in the different districts of the country. There will be special mentoring sessions for specific group of staff who will be carrying out the operations and maintenance of the various demo/pilot installations that are part of the project. These mentored staff will make up the cadre of in-house experts in the DCIE and NUC (and Vital Energy). The information sharing system that will be established and operationalized under this project will also be for the promotion and dissemination of knowledge on low carbon development (including the application of standardized RE-based power generation and distribution systems) within and outside of the country. Moreover, as part of the design, establishment and operationalization of an energy supply and consumption monitoring and reporting, database development and maintenance will be carried out. This aspect of knowledge management, which involves the drawing on of information from a wide variety of sources, will be implemented, not only for the country's energy planning but also to achieve an organized usage of knowledge about the energy situation in the country.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT²⁴ OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

NAME	POSITION	MINISTRY	DATE
Mavis Depaune	GEF Operational Focal Point, Secretary DCIE	Department of Commerce, Industry and Environment (DCIE)	30 Nov. 2017

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies²⁵ and procedures and meets the GEF criteria for project identification and preparation under GEF-6.					
Agency Coordinator, Agency name	Signature	Date	Project Contact Person	Telephone	Email
Adriana Dinu Director, Sustainable Development (Environment) a.i. Executive Coordinator, Global Environmental Finance		March 28, 2018	Manuel L. Soriano Sr. Tech. Advisor Energy, Infrastructure, Transport & Technology	+66-2-304- 9100 Ext 2720	manuel.soriano @undp.org

C. ADDITIONAL GEF PROJECT AGENCY CERTIFICATION (Applicable Only to newly accredited GEF Project Agencies): N.A.

²⁴ For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

²⁵ GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

Annex A: NERM Activities and their Linkages to the SMARTEN Project

Baseline Projects/Programs	Implementer and/or Sponsor	Linkages to SMARTEN
NERM Power Sector Activities		
<ul style="list-style-type: none"> • Power generation assets upgrading 	NUC/ADB	The baseline activities in the country's power sector can be supplemented with incremental activities in Component 3 for the demonstration of the application of distribution system technologies such as SCADA system upgrade, installation of portable dataloggers for monitoring of power quality at various points on the network to allow proper assessment of loading on circuits to aid planning and component procurement decisions, and for remote logging at points of interest on the distribution network. This can also include where necessary the installation of additional inverters at the NUC powerhouse. The detailed design including network power flow analysis, load monitoring, and load growth forecasting will also form part of the demonstration activities in Component 3.
<ul style="list-style-type: none"> • Improvement of supply-side efficiency (focusing on water production and supply) 	NUC/ADB	The baseline power sector activities under this sub-action plan can be supplemented with incremental activities in Component 3 for the demonstration of the application of the use of HEMs in the water pumps, and the more energy efficient water desalination units. The baseline activity on the feasibility study on improve water supply systems will be supplemented with a detailed design of EE water system supply and distribution system in pilot districts.
NERM Petroleum Sector Activities		
<ul style="list-style-type: none"> • Fossil fuel reduction and alternative fuel utilization 	DCIE	The baseline fuel efficiency and alternative fuel (biofuels) activities in the country's petroleum sector can be supplemented with incremental activities in Component 4 for the promotion of the application improved cook stoves (firewood and LPG), as well as the demonstration of the local production and use of biofuel and biomass fuels for energy generation systems, e.g., for household cooking and heating, and small scale industrial process heating.
NERM Renewable Energy Activities		
<ul style="list-style-type: none"> • Phased implementation of solar PV power systems 	NUC/NZMFAT EU	The detailed study of the systems that will be installed will be carried out during the PPG stage to determine the potential improvements that can supplement the NERM renewable energy activities, particularly in the installation of the solar PV power systems in the NUC designated areas for solar PV power generation. On a demonstration basis, the project will showcase the application of the appropriate technology for the NUC system for increased system reliability by avoiding unwanted grid instability when more solar PV systems will be integrated into it. This may include installation of additional control and monitoring systems. The incremental activities for such demo in NUC and in NUC - designated solar PV power generation sites may include the design and installation of additional inverters, batteries and smart systems for network power flow analysis, load monitoring, load growth forecasting, and optimum dispatch.
<ul style="list-style-type: none"> • Capacity building on the operation and maintenance of solar PV power systems 	DCIE	This sub-action plan will be supplemented with expanded coverage to include non-power solar PV technology installations (e.g., solar PV water pumping, solar PV water desalination) as part of the activities in Components 2 & 3. This will also include technical assistance for the energy efficient operation of installed solar PV powered systems (power and non-power applications), and EE technology application design and operation.

Baseline Projects/Programs	Implementer and/or Sponsor	Linkages to SMARTEN
NERM Demand Side Energy Efficiency Activities		
<ul style="list-style-type: none"> • Design and implementation of DSM program 	DCIE	<p>The country's DSM and EE activities will be supplemented by incremental activities involving the design and implementation of recommended energy saving opportunities as demonstrations in selected buildings, and industrial facilities from the baseline energy audits that will be conducted. Additional energy audits will also be carried out in building types and SMEs that are not covered in the NERM DSM/EE action plan.</p> <p>Considering the limited banking facilities in the country, the design and development of feasible financing schemes (and enhancement of existing ones), and the implementation arrangements will form part of the project's incremental activities, which may include technical assistance in the development and enforcement of policies and regulations in the implementation of financial incentives.</p>
<ul style="list-style-type: none"> • Energy efficiency standards and labeling program 	DCIE/NUC	<p>The planned activities under this program will be supplemented with technical support for the design and development of practical procedures for ascertaining the quality and energy performance of imported electrical appliances into the country, as well as in the design and implementation of awareness raising campaigns. The incremental interventions will also include technical support in the development of energy labeling schemes and MEPS, including formulation of supporting policy and regulatory measures for these, as well as supplementary capacity building support for the government units that will be involved in the implementation of the energy labeling scheme.</p>
NERM Institutional Strengthening & Capacity Building Activities		
<ul style="list-style-type: none"> • Establishment of energy sector policies, regulations and legislation 	DCIE	<p>The activities from this GON initiative will be carried out as part of Component 1 and will be enhanced with technical assistance in the formulation, approval and enforcements of standards, policies and IRRs on the application of RE & EE technologies in the energy and energy end use sectors; including the implementation of action plans to achieve the RE and EE targets of the updated NERM. The other incremental technical assistance will be on: (a) revision and updating of the NEPF, inclusive of updated national energy balance and action plans; (b) energy-integrated development planning at the national level; and, (c) formulation and approval of policies and IRRs for increased participation of the private sector in the energy sector development of the country.</p>
<ul style="list-style-type: none"> • Facilitation of the development of local skills base for the energy sector 	DCIE	<p>The capacity development activities under this GON initiative to strengthen institutional and technical capacity will be supplemented under Component 4 with capacity development on RE and EE technology applications for the end-use sectors. These will augment and enhance the baseline training activities under the sub-action plan for secondary and primary school teachers, managers, small businesses, technicians, tradespeople, etc. The training for trainers on RE and EE technologies applications will also be augmented with the design of appropriate energy curriculum for schools focusing on RE and EE.</p>
<ul style="list-style-type: none"> • Improvement of energy sector governance and accountability 	DCIE	<p>The activities under this GON initiative on improving energy sector governance will be supplemented with technical assistance for capacity development of government personnel (officials/authorities, and technical) on: (a) energy-integrated development planning, including RE and EE technology applications; (b) formulation, implementation and</p>

Baseline Projects/Programs	Implementer and/or Sponsor	Linkages to SMARTEN
		evaluation of energy road maps; (c) energy-integrated development planning; (d) operationalization of energy supply and consumption monitoring and reporting and database system; (e) development and implementation of energy road map M&E plan; (f) operation of an information sharing system for the promotion and dissemination of knowledge on all aspects of sustainable energy and low carbon development; and, (g) energy supply and consumption monitoring and reporting and database system.
<ul style="list-style-type: none"> Promotion of partnership with private sector in energy development 	DCIE	The information dissemination activities under this GON initiative to encourage private sector investment in the country energy sector by providing them the relevant investment and technical information will be enhanced with the design of the information exchange system and supplemented with the documentation and dissemination of information about the energy performance and impact assessments of implemented demonstrations.

Sources: Nauru Energy Road Map (2014-2020); IT Power Australia, Nauru Energy Road Map Review, Nov. 2017